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**of JSC Shchekinoazot
19 Simferopolskaya ul., Pervomayskiy workers' settlement,
Shchekino district, Tula Region**

**Construction of the Methanol M-500 plant at the Shchekinoazot
industrial site (Tula Region)**

Investment feasibility study

ENVIRONMENTAL IMPACT ASSESSMENT

Explanatory note

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2017

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LIST OF ABBREVIATIONS

AA	- atmospheric air
AAPOS	- atmospheric air pollution observation station
APS	- air pollution source
BOD	- biochemical oxygen demand
BTP	- biological treatment plants
DD	- design documentation
EIAP	- environment impact assessment procedure
EM	- estate museum
Env	- environment
EP	- environment protection
ES	- existing situation
FCCW	- Federal classification catalogue of waste
GAM	- gas-air mixture
GB	- government body
HEMC	— Hydrometeorology and Environmental Monitoring Center
MPCad	— maximum permissible concentration of substances (average daily) in community air (mg/m ³)
MPCae	— maximum permissible concentration of substances (acute exposure) in community air (mg/m ³)
MPCcfr	— maximum permissible concentration for water in commercial fishery reservoirs (mg/m ³)
MPCf	— maximum permissible concentration of substances in food (mg/kg)
MPCs (approximate permissible concentration)	- maximum permissible concentration of substances in soil (safe reference level of impact) (mg/kg)
MPCw (approximate permissible level)	- maximum permissible concentration of substances in water of water bodies of household and amenity water use (safe reference level of impact) (mg/dm ³)
MPCwz	— maximum permissible concentration in the air of the workplace zone (mg/m ³)
MPD	- maximum permissible discharge
MPE	- maximum permissible emission
NE	- wastewater
NRD	- national regulatory document
PDS	- permissible discharge standards

PEC - production ecological control

PS - polluting substance

SHW - solid household waste

SPZ - sanitary protection zone

SRLI - safe reference levels of impact (mg/m^3)

SSAS - synthetic surface active substance

SSCAAP — standardized software for calculation of atmospheric air pollutions

WC - water cycle

WGSWDL — waste generation standards and waste disposal limits

M-500 — Methanol M-500 plant (complex of methanol production with a capacity of 500,000 tonnes per year).

INTRODUCTION

At the present time the Environmental Impact Assessment (EIA) is an integral part of the decision making system for corporate and/or any other activities development, including when designing projects for construction of plants, buildings and structures in the territory of the Russian Federation.

Legal acts regulating the obligation of EIA procedure implementation are Federal Law Concerning Environmental Protection [1] and Federal Law Concerning Ecological Examinations [2], Provision on Environment Impact Assessment of Planned Business Operations and Other Activities in Russian Federation [3]. Investor is obliged to study the impact of designed facility on the environment before making decision on the project feasibility and before starting the work.

Environment impact assessment of planned business operations and other activities (hereinafter referred to as EIA) is a process contributing to make a environmentally sensitive management decision on implementation of planned business operations and other activities through the determination of a potential negative impact of an activity on the environment and associated social, economic and other consequences of implementation of a facility to be ecologically studied.

EIA shall be performed to prevent a potential environmental degradation influenced by a planned business operations, to ensure the ecological integrity of a territory where a construction facility is located, to create the favorable living environment and shall precede the making a decision on investment in the project implementation. EIA is intended to determine the nature, intensity and danger level of impact of any planned business operations on environment condition and population health.

It is known that the environmental requirements when developing decisions for any aspects of the investment project, the duty of performance of which is regulated by the Federal Law Concerning Ecological Examinations, shall be taken into account on a staged basis from the moment of selection of an issue which shall be solved through the project prior to its implementation.

This work is one of material of preliminary project documentation of investment feasibility study during the construction of the Methanol M-500 plant at the Shchekinoazot industrial site located in Pervomayskiy workers' settlement, Shchekino district, Tula Region.

The methanol production is based on the **Haldor Topsoe (Denmark)** licence technology. The common facilities shall be designed by the Russian engineering company, **NIIK**.

The work was performed in accordance with the procedure established in [4] and recommendations listed in [5].

The objective of this project is an acquisition of reliable information to assess the current state and to make a forecast of possible environmental changes under the influence of anthropogenous factors when implementing the planned business operations; an evaluation of ecological and associated social and economic and other consequences and their importance; a determination and taking into account of social preferences when the customer takes a decision concerning the planned business operations; a forecast and analysis of mitigation measures for the Methanol M-500 plant construction project impact on biophysical and social environment.

The environmental feasibility study of the planned construction works performed in the EIA section gives an objective assessment to resolve an issue of conservation of environmental assets in the area taking into account the elaboration of relative restrictive measures.

As a part of EIA, the current (background) state of components of the environment in the areas of planned construction works were assessed and the influencing factors during use of the facility were analysed.

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Russian National Classifier of Ownership Patterns 41

All-Russia Classifier of Forms of Ownership 47

All-Russia Classifier of Economic Activities 24.15

All-Russia Classifier of Types of Activity 13111

TRRC (Tax Registration Reason Code) 710150001

Investment project development object: Construction of the Methanol M-500 plant at the Shchekinoazot industrial site (Tula Region)

Place of planned object implementation: territory of the Shchekinoazot industrial site in Pervomayskiy workers' settlement, Shchekino district, Tula Region.

Shchekinoazot is located two kilometres away from Shchekino north-eastwards.

The company facilities are arranged in the same industrial site where the Shchekinoazot structural and subsidiary production units are also located as well as lease holders carrying out their activities on the corporate premises. A part of the Shchekinoazot industrial site belongs to Khimvolokno OJSC. Khimvolokno OJSC does not carry out the production activities and lends the owned estate property for productive use and non-business purposes.

The industrial site has a relatively even surface, absolute surface elevations ranges within 9 m. The areas adjacent to the industrial site are characterized by rolling and hilly topography, elevation changes do not exceed 50 m per 1 km. The area belongs to earthquake-resistant zones.

The working conditions of an enterprise: 24-h/7-day, the total number of working days is 365.

The main activity of Shchekinoazot is the production of caprolactam, methanol, ammonia, formalin, UFC (urea formaldehyde concentrate), household chemical goods (shampoo, cleaning and washing agents). By-products – ammonium sulphate, liquid carbon dioxide, carbon-dioxide ice, soda ash cake, alkali adipate plasticizer, oil and sub-alcoholic fraction, water-acid layer of adipinic acid, thermal and electric power (TPP). The Shchekinoazot assets also include the solid household waste landfill, the solid waste storage pit of III-IV hazard class, the ash disposal area and utility and industrial waste water treatment facilities with silt detention ponds, the ash disposal area.

The location area of the company sites is shown in the planimetric map-scheme (Appendix L) with arrangement of the industrial site and adjacent facilities. The coordinates system of facilities and sources of pollutant emissions is a local, factory coordinates system.

Company's chief executive: Director General, Anatoly Konstantinovich Surba.

Environmental officer: Head of Environmental Protection Department, Igor Petrovich Titchev, tel.: (48751) 9-26-51.

Characteristic of substantiation document type: environmental impact assessment at the stage of pre-investment feasibility study.

2 Explanatory note for substantiation documents

This environmental impact assessment was performed based on the Contract No. 27-17/OVOS (27-17/OBOC) of July 20, 2017, concluded between CECC LLC and Shchekinoazot, and the Technical Specification for elaboration of Environmental Impact Assessment of the Methanol M-500 plant in accordance with the effective Provision on Environment Impact Assessment of Planned Business Operations and Other Activities in Russian Federation (Order of National Environmental Protection Committee of the Russian Federation No. 372 of 16.05.2000) and other supporting documents listed in this publication.

Components of the environment, natural objects and natural complexes [1, art. 4] are sites of environment protection against pollution, depletion, degradation, damage, destruction and other negative impact of business operations and other activities.

Components of the environment are land, earth resources, soil, surface and underground water, atmospheric air, flora and fauna, other organisms, as well as ozone layer and near-Earth space environment, ensuring in total favourable conditions for life on earth [1].

In order to assess the impact of the planned facility on the environment condition in accordance with provisions of Articles 3 and 4 of the Federal Law Concerning Environmental Protection it should determine all kinds of this impact on the atmosphere, territory, geological environments, surface and underground water, geological environments, soil and vegetable cover.

At that, at first instance the following shall be determined:

- gross emissions into atmosphere, types of polluting agents, their quantities, sources and expected ground level concentration of atmospheric air pollution;
- rate of effluents, their composition and concentration of pollutants, purification rate, discharge conditions into water bodies and parameters of effluent dilution;
- nature of the impact on the area (land transfer area, parameters of relief disturbance, degree of possible soil and aboveground pollution, impact on land-use conditions, agricultural sector, etc.);
- level of physical actions (noise, vibration, electromagnetic and radiation emission);
- potential technogenic geological processes;
- designation, quantity and hazard class of produced waste, methods of their storage and disposal;
- nature of the facility impact on social and living conditions in the area of the facility location;
- list and volume of used materials and energy resources.

It should be noted that these impacts are ecological aspects recommended to be included into the technical regulations by GOST R 14.07-2005 Ecological Management. Guide for the inclusion of environmental aspects in technical regulations.

This work shall be performed in accordance with provisions and recommendations listed in [3-5]. The applicability of materials [4, 5] in the real design process is consistent with provisions of Article 46 (para. 1) of Federal Law Concerning Technical Regulation and para. 27 of Provision Concerning the Procedure for Organizing and Conducting State Expert Examination of Planning Documentation and Results of Engineering Surveys (RF Government Decree No. 145 of 05.03.2007).

When carrying out the works, the following materials were used:

a) In order to determine the impact of the planned facility on the environment:

- design decisions (organizational, engineering and technical, process, relating to spatial planning, etc.) which are aimed at achievement of target goal [6-8];
- data from ecological regulatory and permitting documents of similar companies that operate the methanol production plant.

b) In order to assess the current state of the environmental components in the site where the facility is planned to be arranged (materials approved for Shchekinoazot):

- draft rates of maximum permissible emissions of pollutants into the atmosphere [9];
- rates of permissible discharge of substances and microorganisms [10];
- draft rates of waste generation and limits on their placement [11];
- ordinance of the Chief State Sanitary Physician of the Russian Federation No.15 dated 02.02.2017 On Establishing the Size of Sanitary Protection Zone for the Property Complex of a Group of Industrial Facilities and Productions of JSC Shchekinoazot, Pervomayskaya CHPP (JSC Shchekinoazot's Branch), Khimvolokno OJSC Located at the Same Industrial Site on the Territory of Pervomayskiy workers' settlement in the Shchekino district, Tula Region [12];
- other permitting materials and documents regarding the company environment-related activity as well as State Report on 2016 Ecological Situation in the Tula Region [13];
- results of engineering surveys in the area of intended location of the facility [24, 25].

The Environmental Impact Assessment was performed taking into account the following regulatory and procedural documents as in force on the date of the project development:

- Federal Law No. 7-FZ Concerning Environmental Protection dated 10.01.2002;
- Federal Law No. 174-FZ Concerning Ecological Examinations dated 23.11.1995.
- Federal Law No. 96-FZ Concerning Atmospheric Air Protection dated 04.05.1999;
- Federal Law No. 89-FZ Concerning Production and Consumption Waste dated 24.06.1998.
- Federal Law No. 52-FZ Concerning the Sanitary and Epidemiological Welfare of the Population dated 30.03.1999.
- Town-planning Code of Russian Federation No. 190-FZ dated 29.12.2004.
- Land Code of Russian Federation No. 136-FZ dated 25.10.2001 (rev. dated 03.07.2016).
- Water Code of Russian Federation No. 74-FZ dated 12.06.2006.
- Provision on Environment Impact Assessment of Planned Business Operations and Other Activities in Russian Federation approved by the Order No. 372 of the State Ecology Committee of Russian Federation dated 16.05.2000.
- SanPiN 2.2.1/2.1.1.1200–03 Engineering, Construction, Reconstruction and Operation of Enterprises, Settlements Planning. Sanitary Protection Zones and Sanitary Classification of Enterprises, Buildings and Other Facilities. New revision.
- Procedure for Calculation of the Concentration of Harmful Substances in the Atmospheric Air Being Contained in Enterprise Emissions. OND-86, State Committee of Hydrometeorology – L., Hydrometeorology for Publishing, 1987. p. 93.
- Guideline for Calculation, Regulation and Control Pollution Emissions in the Atmospheric Air (revised and corrected edition). // Atmosphere Research and Development Establishment, Integral Company. St. Petersburg. 2012, p. 212.
- Federal Law No. 33-FZ Concerning Specially Protected Natural Areas dated 14.03.1995.
- SanPiN 2.1.4.1110-02 Sanitary Protection Zones of Water Sources and Water Pipelines for Drinking Use.
- SanPiN 2.1.6.1032-01 Hygienic Requirements for Quality Assurance of Atmospheric Air in Inhabited Areas.

- SanPiN 2.1.7.1322-03 Hygienic Requirements Regarding Dumping and Decontamination of Industrial and Consumable Wastes.
- GN 2.1.6.1338-03 Maximum Permissible Concentrations (MPC) of Pollutants in Atmospheric Air of Inhabited Places.
- GN 2.1.6.2309-07 Safe Reference Levels of Impact (SRLI) of Pollutants in Atmospheric Air of Inhabited Places.
- SP 2.2.1.1312-03 Hygienic Requirements to the Designing of New and Reconstructible Industrial Enterprises.
- GN 2.1.7.2041-06 Maximum Permissible Concentration (MPC) of Chemical Substances in Soil.
- SN 2.2.4/2.1.8.562-96 Noise in Working Environment, Rooms of Residential and Public Buildings and in the Territory of Residential Development.
- Practical Guide for Construction Project Designers, Natural Environment Protection. M., TSENTRINVESTproject FGUE 2006.
- SP 14.13330.2014 Seismic Building Design Code (revised edition of SNiP II-7-81*).
- SP 131.13330.2012 Building Climatology (revised edition of SNiP 23-01-99*).
- Federal Law No. 52-FZ Concerning Fauna dated 24.04.1995 (as amended on 07.05.2013).
- Federal Law No. 73-FZ On Objects of the Cultural Heritage of the Peoples of the Russian Federation dated 25.06.2002 (as amended for 23.07.2013).
- GOST 12.1.007-76. Noxious substances. Classification. General safety requirements (with Amendments Nos. 1, 2).
- GOST 17.2.1.04-77. Nature protection. Atmosphere. Meteorological Contamination Aspects and Industrial Blowouts. Basic terms and definitions (with Amendment No. 1).
- GOST 17.1.2.04-77. Indices of state and regulation for valuation survey of fishery waters.
- GOST 17.1.1.01-77*. Nature protection. Hydrosphere. Utilization of water and water protection. Basic terms and definitions (with Amendments Nos. 1, 2).
- GOST 17.1.1.02-77. Nature protection. Hydrosphere. Classification of water bodies (with Amendment No. 1).
- GOST 17.2.4.02-81. Nature protection. Atmosphere. General requirements for determination of pollutants

- GOST 17.2.1.03-84. Nature protection. Atmosphere. Terms and definitions for air pollution control.
- GOST 17.1.1.03-86. Nature protection. Hydrosphere. Classification of water usage.
- GOST R 51769-2001. Resources Saving. Waste Treatment. Documentation and regulation of dealing with production and consumption waste treating. Basic principles.

3 Purpose and need for implementation of planned activities

One of principal directions of added value and commercialization of primary raw materials is a manufacturing of a wide range of chemical products of industry including ammonia, methanol, their derivatives, as well as manufacturing of fertilizers, melamine, etc.

The world demand in methanol continues to increase steadily, at that, in order to keep the competitive capacity at the contemporary market, the quality of produced rectified methanol is more and more critical task.

The application field of methyl alcohol is very large. The use of methanol as a principal source of raw material in the chemical industry is a main area of application, and here the markets of formaldehyde and acetic acid are principal consumers. It should, however, be noted that the growth rates of these sectors are relatively low. Nevertheless, the annual average growth rate of the world market of methyl alcohol before 2022 will be about 6 % per year. Therefore, maintaining the current growth rates, the annual volume of methanol consumption may exceed 107 million tonnes in 2022. The development of methanol consuming and processing industries causes the increase in its home production capacity.

Except for the existing methanol production, the Shchekinoazot Company declared the new investment project – construction of an additional plant with a capacity of 500 thousand tonnes of methanol per year. Once the Methanol-500 plant will be put into operation, the company plans to increase the methanol shipment both for domestic and foreign markets.

The primary purpose of the designed facility is an increase in volume of production due to a new construction of the Methanol-500 plant intended for production of rectified methanol of AA grade (IMPCA).

The project involves the following:

1. Create on the territory of Shchekinoazot a new production complex that would meet the highest world requirements in terms of environmental safety and efficient use of energy.
2. Reduce the consumption of raw materials and energy resources.
3. Ensure the increase in labour productivity.

Primary purposes of planned activities:

1. Create working places for residents of Tula and settlements of Shchekino district, Tula Region.
2. Develop the region infrastructure with the construction of new production facilities.
3. Support the growing needs of domestic and foreign methanol markets, increase the company domestic and foreign market shares in terms of sales of products.

4. Create the production capacities for effective competition in the domestic and foreign methanol markets.
5. Earn a profit, increase the cost efficiency due to expansion of the product chain.
6. Implement the most advanced technology to minimize risks, observe the industrial safety requirements, improve the working conditions, limit the negative impact on human environment and surrounding media.

4 Planned and alternative options to achieve the purpose for the planned activities

4.1 Planned option to achieve the purpose

The Methanol-500 plant (hereinafter referred to as Plant) is located within the main industrial site of Shchekinoazot. The design Plant consists of facilities of main methanol production (sections and units), auxiliary facilities and utilities systems.

The methanol production is based on the Haldor Topsoe (Denmark) licence technology. The target product of the Plant is a production rectified methanol. The Haldor Topsoe (Denmark) Licence Company guarantees the methanol quality which conforms to AA grade as per standard of International methanol producers and consumers association (IMPCA).

The Haldor Topsoe (Denmark) Company designed a large number of tubular reformers, fluidized-bed secondary reformers and autothermal reformers, prereforming adiabatic reactors. Over the last years, Haldor Topsoe presented a new generation of fluidized-bed burners. Therefore, the company is uniquely positioned to compare different schemes of reforming process when selecting the best available technology for a specific raw material and capacity.

The adopted production method is a continuous process of the consecutive vapour conversion of natural hydrocarbons in the prereforming catalytic reactor and then the vapour conversion of methane in the tubular reformer with aftercooling and drying of reformed gas, compression of reformed gas and methanol synthesis as per the circulation scheme under a pressure of 89 bar and a temperature of 256 °C.

The natural gas as well as water for the plant evaporation system are the raw materials for the methanol production.

The processes of natural gas desulfurization, preliminary reforming, methane vapour conversion, methanol synthesis as well as reduction of NO_x contained in flue gas to the molecular nitrogen and the water vapour shall be performed over a catalyst. In all apparatus of the above-mentioned sections, the Haldor Topsoe catalysts shall be used:

- sulfur compound hydrogenation catalyst – aluminium-nickel-molybdenum, TK-261;
- zinc oxide absorber, HTZ-51;
- prereforming catalyst – nickel, AR-401;
- conversion catalyst – nickel, R-67-7H;
- methanol synthesis catalyst based on zinc and copper oxide, MK-151 FENCE™;
- De-NO_x catalyst, DNX-LD3 type.

Haldor Topsoe catalysts combine the high activity and the optimal pressure difference characteristics, that ensures the catalyst stability throughout the service life.

In addition, the AR-401 catalyst is delivered in the pre-reduced form, that ensures the easy and quick start of the prereformer. The result is that the highest activity of the catalyst is achieved, which can not be realized in case of reduction during the start.

The adopted technical solutions allow to better use the heat of converted and flue gas including for heating of source, deaerated and feed water, as well as to provide the heat for the methanol rectification processes.

The advantages of this method are the following:

- availability of raw material base;
- easy process flow;
- high activity, increased mechanical strength, long life of Haldor Topsoe catalysts;
- absence of permanent effluents containing organic matters due to return of gas condensate and distillation residues of fractionating columns to the evaporation process.

The designed methanol production plant is located in the south-eastern part of the existing site with a fully developed infrastructure. The site allocated for the designed unit is currently free of buildings.

The Plant construction is planned with the connection to Shchekinoazot operating networks.

4.2 Alternative options to achieve the purpose

In accordance with the Provision on Environment Impact Assessment of Planned Business Operations and Other Activities in Russian Federation approved by the Order No. 372 of the State Ecology Committee of Russian dated 16.05.2000, the different options to achieve the purpose for the planned economic activity as well as a zero option (refusal of activity) are considered.

In case of refusal to construct the Methanol-500 plant, no changes in environment conditions are occurred. However, this option is not considered as meeting the purposes and needs of planned economic activity, being a factor of economic anti-growth of the region. So let us consider the potential impacts on the environment for the single selected option – construction of the complex.

In accordance with the stated intent, the place for construction project of the Methanol-500 plant is a vacant space in the territory of Shchekinoazot operating enterprise in the south-eastern part of the industrial site. The area for arrangement of designed Methanol-500 plant is located in the territory of operating enterprise with existing functional zoning in the production zone. The industrial site area within the battery limits is 7.51 ha. The building area of the industrial site is 2.38 ha. The built-up density of the industrial site is 0.32. The stretch of automobile roads is 1.85 km. The area of automobile roads and sites is 1.03 ha. This area does

not require the site preparation as it is free of buildings. Therefore, we exclude the necessity of considering the alternative options of the facility location where the minimum level of negative impact of planned activities shall be determined.

The option of the Methanol-500 plant location in the territory of the Shchekinoazot industrial site is optimum as it does not require to set aside the nonindustrial lands. The alternative options were not considered as the option proposed according to design decisions is solely practical one, as the planned economic activity can not be implemented in other industrial sites of Customer due to absence of required infrastructure and resources. The assessment of alternative option impacts in the absence of their feasibility is unreasonable.

Considering the alternative options to achieve the purpose of the planned activities, it should be noted that in accordance with requirements of the Russian environmental legislation, the technology to be implemented shall be the best current one (i.e. the best available technology in effect).

The information and technical handbook regarding the best available technologies, ITS18-2016 Manufacturing of Main Organic Chemical Substances, provides data on methanol production technologies.

The methanol is a first agent of homologous series of monobasic alcohols, one of the major products (by value and scale of production) of basic organic and petrochemical synthesis. The world output of methanol exceeds 50 mln. tonnes per year.

As at the beginning of 2014, in the Russian Federation there were more than 10 operating methanol manufacturers with a total capacity of plants about 4 mln. tonnes/year.

The highest amount of methanol (760 mln. tonnes) goes to the production of formaldehyde which is used for manufacturing of urea-formaldehyde and phenol-formaldehyde resins. The significant amount of methanol is used in the paint-and-varnish industry for manufacturing of solvents in the varnish manufacturing process, producing of biodiesel, MTBE, methyl ether, etc.

There are some known methods of methanol production but the main commercial process is a synthesis from hydrogen and carbon oxide.

Virtually any raw material containing hydrogen and carbon oxides may be used for the methanol synthesis.

At the present time, the following manufacturing processes are used for the methanol production:

a) Methanol synthesis in columns with integrated and non-integrated packings and zinc-chromium catalyst. Used in small and average capacity units. The capacity of one unit is 40

thousand tonnes per year, the gas flow is 1184 m³/tonne, the synthesis pressure is 30 MPa, the synthesis temperature is 320-380 °C.

b) The methanol synthesis with reaction heat removal from the catalytic zone in the zinc-chromium catalyst. The capacity of one unit is 55 thousand tonnes per year, the gas flow is 1152 m³/tonne, the synthesis pressure is 40 MPa, the synthesis temperature is 320-380 °C.

c) The methanol synthesis with the waste-heat boiler operated with the reformed gas and the zinc-chromium catalyst (the capacity of the existing plant is 700 tonnes of rectified methanol per day, 240 thousand tonnes per year). The oil light catalytic cracked gasoline is used as a raw material.

d) The methanol synthesis with low temperature catalysts under low pressure:

- The production capacity is determined by a synthesis gas resource (synthesis gas from the acetylene production) and is 110 thousand tonnes per year, the natural gas consumption is 3542 m³/tonne, the synthesis pressure is 5 MPa, the synthesis temperature is 210-280 °C.

- The production capacity is 400 thousand tonnes per year, the natural gas consumption is 1131 m³/tonne, the synthesis pressure is 9 MPa, the synthesis temperature is 220-290 °C.

- The production capacity is 750 thousand tonnes per year (with 2 operating reactors), the natural gas consumption is 1165 m³/tonne, the synthesis pressure is 9 MPa, the synthesis temperature is 220-290 °C.

As it is seen from the above-mentioned description of used methanol production technologies, in the Shchekinoazot industrial site, taking into account the existing raw materials, only the scheme of methanol production from the natural gas (methane) supplied through the main gas pipeline to the site may be implemented. The use of the methanol synthesis with the low temperature catalysts and under low pressure will allow to reduce the energy cost per one tonne of methanol output in comparison with the methanol production technologies under higher pressure and temperature. In addition, this technology will allow to achieve the target production capacity of 500 thousand tonnes per year.

Haldor Topsoe (Denmark) is a supplier of this technology, it is a worldwide leader in the methanol production technology. The approval of such technology in the industry is demonstrated by the construction and operation of 4 methanol production plants with a capacity from 525 to 3030 tonnes/day.

The adopted production method is a continuous process of the consecutive vapour conversion of natural hydrocarbons in the prereforming catalytic reactor and then the vapour conversion of methane in the tubular reformer with aftercooling and drying of reformed gas, compression of reformed gas and methanol synthesis as per the circulation scheme under a pressure of 89 bar (8.9 MPa) and a temperature of 256 °C.

The natural gas as well as water for the plant evaporation system are the raw materials for the methanol production.

The best available technology selected for an economic entity shall meet the following requirements:

- the technology shall conform to latest domestic and foreign achievements in this industrial sector;
- the technology shall be acceptable in terms of minimization of its impact on the environment;
- the scheme ease increases the plant performance reliability;
- the technology shall be sustainable for an economic entity.

With regard to the facility being examined, the carrying-out of these requirements is provided with the absence of permanent effluents containing organic matters from the plant in the proposed technology due to return of gas condensate and distillation residues of fractionating columns to the evaporation process, the compact design of the plant and ease of its operation, the reduction of NO_x contained in flue gas to the molecular nitrogen and the water vapour.

The implementation of selected construction option for the Methanol-500 plant is optimal as it:

- fulfils the purposes and meet the needs of the planned economic activity;
- does not require to set aside the nonindustrial lands and uses the existing industrial site connected to operating electrical, gas, water and sanitation networks with no need for a new infrastructure;
- provides for use of the best available technology.

The Customer has no other alternative options for construction.

5 Description of potential impacts of planned business operations and other activities (in accordance with planned and alternative options) on the environment

The option proposed according to design decisions is solely practical one. The assessment of alternative option impacts in the absence of their feasibility is unreasonable.

The main impacts of the designed facility (Methanol-500 plant) during operation will be the following:

- emissions of pollutants into the atmospheric air;
- generation of production and consumption waste;
- withdrawal use for domestic, household and practical needs;
- generation of service and storm wastewater;
- physical impacts on the atmosphere.

6 Description of environment which may be impacted by planned business operations and other activities as a result of their implementation

6.1 Atmosphere and air pollution

In order to assess the existing air condition in the area of the planned location of Methanol M-500 plant, the following were determined: climate and air climate characteristics of the zone, level of existing atmosphere pollution with chemical and suspended matters as well as physical actions.

6.1.1 General information about the climatic conditions

The climate in Tula Region is moderately continental, it is characterized by warm summer, moderately cold winter with a seasonal snow cover. In accordance with information given by Tula TsGMS GU (Appendices A, C) and FSBI Russian Institute of Hydrometeorological Information – World Data Center (Appendix D), the mean annual air temperature is 6.2 °C. The coldest month – February (-9.7°C), the warmest month – July (20.6°C).

The mean annual air temperature at 13:00 PM, in July – 22.0°C. The absolute temperature maximum is + 39.2°C, the absolute minimum is - 34.8°.

The yearly average precipitation is 620.6 mm. On average, 22 days with thunderstorm are observed, the largest number of days with thunderstorm equals to 29, the largest number of days with thunderstorm is observed in July – 13, the mean duration of thunderstorm is 1.7 hours.

The mean duration of sunshine per year is 1978.3 hours.

During a year, the winds of south-western directions prevail. The yearly mean wind velocity is 2.3 m/s. The mean wind velocity in winter is 1.2-1.4 m/s higher than in summer.

During a year, on average, 22 days with fogs are observed. The maximum number of days with fogs (7) falls on November. The least number of days with fogs are observed within the period from May until June.

The mean duration of fogs reaches 89 hours, maximum — 113 hours.

Yearly mean duration of fog on the day with fog equals to 3.8 hours.

Climatic data and factors determining the conditions for pollutant scattering in the atmosphere are given in Table 1.

Table 1 — Climatic data and factors determining the conditions for pollutant scattering in the atmosphere

Factor A depending on temperature lamination on the atmosphere	140
Terrain relief coefficient	1.0
Mean maximum open air temperature of the hottest month, $\equiv C$	20.6
Mean maximum air temperature of the coldest month, $\equiv C$	-9.7
Yearly average frequency of wind directions and calmness, %	
N	11
NE	9
E	10
SE	11
S	16
SW	16
W	17
NW	10
Wind velocity U^* (m/s), the exceedance frequency of which (as per long-time average annual data) is 5 %	5.3

6.1.2 Characteristic of atmosphere pollution

The assessment of the existing conditions of the air basin in the area of the planned Methanol-500 plant location is based on the draft MPE rates of Shchekinoazot [9] and data on background concentration in the atmosphere. The background concentration information is determined in accordance with the observation data on the whole in Yasnaya Polyana (Air Pollution Observation Station near the Yasnaya Polyana Estate Museum) taking into account the Shchekinoazot emission contribution; this information is given in Appendix B.

It includes the data on background concentration of six pollutants such as suspended matters, nitrogen dioxide, carbon monoxide, ammonia, sulphur dioxide, methanol – substances which are expected to be discharged from the planned plant and have a summation effect. Content of listed pollutants in the air for the area to be examined may be considered as acceptable.

However, it should be noted that in accordance with [13], the sample national statistical monitoring data in 2016, the air emissions from industrial facilities in Tula Region were 141.8 thousand tonnes and as compared with 2015 it decreased by 7.2 thousand tonnes or by 4.8%. Yearly average, there were 94 kg of emissions per capita in the region that is less than in 2015 by 5.1%, and 5.5 thousand tonnes per 1 sq. km of the territory (in 2015 – 5.8 thousand tonnes).

In 2016, there were 15,593 stationary sources of atmospheric pollutant emission including 11,974 controlled emission sources (76.8%).

In 2016, 669.2 thousand tonnes of pollutants were delivered to the waste treatment facilities, among them 654.1 thousand tonnes (97.8%) were captured and neutralized; in 2015, 516,6 thousand tonnes of pollutants delivered to the waste treatment facilities were captured and 493.7 thousand tonnes (95.6%) were neutralized.

Taking into account the pollutants not delivered for treatment the collection, efficiency was 82.2% (in 2015 – 76.8%). Solids contained in emissions were neutralized by 97.0%, and gaseous and liquid effluents – by 42.2%.

In the total air emissions per 2016, the solids were 11.8%, gaseous and liquid effluent – 83.4%, among them carbon monoxide – 46.5%, nitrogen oxide – 17.1%, sulphur dioxide – 11.8%.

Almost two thirds (63.0%) of air emissions are emissions from manufacturing and metallurgical facilities – 40.7%, from chemical facilities– 8.4% of total emissions. Air emissions from energy, gas and water distribution and production facilities were 26.9%, transport and communications – 3.6% of total emissions.

6.1.3 Characteristic of the enterprise as an air pollution source

Shchekinoazot is located in one industrial site two kilometres away from residential areas of Shchekino north-eastwards. In the north, Shchekinoazot is adjacent to Khimvolokno OJSC, in the north-west, the woodworking integrated plant, concrete works, motor pool, maintenance depot, construction and erection department, and railway terminal are located. The Pervomayskaya TPP being a part of Shchekinoazot heat, water supply and sewage shop is located in the industrial site. The industrial site has a common fence. The unified access control procedure is in force in the industrial site. The Shchekinoazot OJSC industrial site is rectangular in shape extended from South-West to North-East along the Moscow rail road in the direction of Kursk. The plant is located at a distance of approx. 200 km from Moscow and in 0.6 km from Kaznacheevka railway station. At a distance of 3.3 km from the Shchekinoazot OJSC industrial site, there is a federal automobile road, Crimea (M-2) with a traffic capacity of 13 thous. motor vehicles per day and maximum load of 30 tonnes, and at a distance of 855 m, there is the R-148 automobile road. The industrial site area is built on and arranged with automobile hard-surface roads. The distance to the Yasnaya Polyana Museum-Estate is three kilometres north westwards from the industrial site.

Shchekinoazot OJSC is a chemical industry company. Principal nomenclature of products and services includes basic chemicals:

- caprolactam used for the manufacturing of chemical fibres, yarns, nylon resins, capron (about 10% of the Russian production);
- methanol used for the manufacturing of formalin, urotropin, olefins, high-octane fuel additive – MTBE (methyl tertiary butyl ether), acetic acid, drugs and for the moisture pick-up in gas recovery and gas-transport systems;
- ammonium sulphate used in the agricultural sector as a nitrogenous fertiliser;
- sulfuric acid, oleum used for the manufacturing of mineral fertilizers, caprolactam, synthetic fibres, coloring agents, as well as in the oil, metallurgy, textile, and leather industries (about 5% of the Russian production);
- liquid carbon dioxide, carbon-dioxide ice, as well as household products;
- carbamide-formaldehyde concentrate (CFC);
- dimethyl ether;
- ammonia.

The industrial site area is 465.112 ha. The industrial site is rectangular in shape extended from South-West to North-East along the Moscow rail road in the direction of Kursk. The industrial site area is planned, built on, and arranged with automobile hard-surface roads. The Shchekinoazot OJSC industrial site area is 257.99 ha, without an ash-disposal area (the ash-disposal area is 122 ha), the area of production structures and elevated roads is 70.10 ha, the green area is 36.05 ha. The area of Shchekinoazot OJSC Pervomayskiy affiliated branch is 1.56 ha.

In accordance with the requirements of SanPiN 2.2.1/2.1.1.1200-03 [15], the sanitary protection zone of variable size is arranged in the industrial site where the plant is located to mitigate and prevent a negative impact of production facilities on living conditions and population health (Ordinance of the Chief Sanitary Physician of the Russian Federation No. 15 dated 2 February 2017 "On Establishing the Size of Sanitary Protection Zone for the Property Complex of a Group of Industrial Facilities and Productions of Shchekinoazot OJSC, Pervomayskaya CHPP (Shchekinoazot OJSC Affiliated Branch), Khimvolokno OJSC Located at the Same Industrial Site on the Territory of Pervomayskiy Workers' Settlement in the Shchekino District, Tula Region") from the boundary of the main industrial site:

- in a northerly direction – 1,000 meters;
- in a north-easterly direction – from 875 to 1,000 meters;
- in an easterly direction – from 945 to 1,870 meters;
- in a south-easterly direction – from 570 to 1,510 meters;
- in a southerly direction – from 10 to 525 meters;
- in a south-westerly direction – from 95 to 620 meters;

- in a westerly direction – from 625 to 1,000 meters;
- in a north-westerly direction – from 765 to 1,000 meters.

There is no residential development within the sanitary protection zone.

The key plan of the plant area is given in Appendix L.

In accordance with data [9] and Permission No. 254 for air emissions with the period of validity until 15 November 2021 (Appendix E), the plant emission sources give 67 names of pollutants including 40 gaseous and liquid effluents and 27 solids, of hazard classes 1–4. Among them, 62 pollutants including 22 solids and 40 gaseous and liquid effluents are subject to state recording and standardizing. Pollutants discharged by the plant form 15 groups of substances with a summation effect. All pollutants discharged into the atmosphere have set values either MPC or SRLI. The gross emissions are 4842.9175 tonnes/year (606.8135 g/sec), including tonnes/year: nitrogen dioxide – 1955.6742; ammonia – 126.4365; nitrogen oxide – 282.95557; carbon monoxide – 1701.3253; sulphur dioxide – 127.85412.

In accordance with data of the State Statistical Reporting as per Form No. 2-TP (air), in 2016, the actual emissions were 1870.368 tonnes (including nitrogen oxides – 1251.994 tonnes), and a number of sources is 307 pcs., including a number of stationary sources of emissions – 228 pcs.

The plant master plan with air pollution sources shown is given in Appendix M.

The main plant air pollution sources are equipped with the exhaust gas-air mixture cleaning system prior to discharge into the atmosphere. The main cleaning equipment is the following: absorbers, scrubbers, filters, cyclones, catalytic cleaning reactors. The existing units are used for cleaning from carbon monoxide, cyclohexane, cyclohexanone, cyclohexanol, nitrogen oxides, sulphur dioxide, sulfuric acid, methanol, ammonia, ammonium sulphate, formaldehyde, suspended matters, and other with the actual purification rate of 40.00–99.0%. In accordance with data of Form No. 2-TP (air), in 2016, the gross mass of captured and neutralized substances was 22,008.401 tonnes/year.

The main impact of production facilities on the air basin condition is an air emission pollution. The level of this impact is determined by a criterion in which these emissions are within set values of $MPC_{o.t.}$, $MPC_{d.a.}$, SRLI at the boundary of the sanitary protection zone of the plant and in the adjacent residential area.

In accordance with [9], based on the results of the pollutant ground level concentration analysis in existing situation taking into account the background, it is found that for all substances discharged into the atmosphere, there is no MPC exceedance at the boundary of the sanitary protection zone and in the near residential area.

General information about climatic conditions and air basin conditions in the zone of the designed facility location is given in Table 2.

Table 2 – Characteristic of air basin conditions in the zone of the designed facility location

Description of indicator	Measurement unit	Value of indicator
1	2	3
1. Climatic characteristics		
- Climate type		Moderately continental
- Temperature condition:		
Mean air temperatures by month	°C	January – -7.1 °C February – -8.0 °C March – -2.1 °C April – +6.4 °C May – +13.3 °C June – +16.9 °C July – +18.6 °C August – +16.9 °C September – +11.3 °C October – +5.2 °C November – -1.5 °C December – -5.9 °C
Mean air temperature of the coldest month	°C	February mean temperature (-9.7 °C)
Mean and maximum air temperature of the hottest month	°C	July mean temperature (+20.6 °C) July maximum temperature (+39.2 °C)
Duration of a period with positive air temperatures	Day	250
- Precipitation:		
Mean amount of precipitations per year	mm	620.6
Distribution of precipitation throughout the year by month	%	January – 7% February – 5% March – 5% April – 7%

		May – 7% June – 12% July – 14% August – 11% September – 9% October – 9% November – 7% December – 7%
- Wind conditions:		
Frequency of wind directions	%	N – 11% NE – 9% E – 10% SE – 11% S – 16% SW – 16% W – 17% NW – 10%
Mean wind velocity by direction (wind rose)	m/sec	-
Maximum wind velocity	m/sec	30
Maximum wind velocity which exceedance in a year for this region is 5% (U)	m/sec	5.3
- Fogs:		
Frequency	%	-
Duration per year and according to season	hour (day)	During a year, on average, 22 days with fogs are observed. The maximum number of days with fogs (7) falls on November. The least number of days with fogs are observed within the period from May until June. The mean duration of fogs

		reaches 89 hours, maximum — 113 hours.
2. Air climatic characteristics		
- Ground level and raised temperature inversions		-
Frequency	%	-
Duration	hour	-
Height of lower limit of inversion layer	km	-
Inversion layer thickness	km	-
Number of inversion days per year	Day	-
Coincidence of inversion phenomena and calmness preferred season for observation over ground level and raised temperature inversions	%	-
3. Complex characteristics		
- Synoptic situations causing the formation of elevated air pollution levels:		
Stagnant situations:		
Low winds together with the temperature inversion situation frequency – wind velocity is 0–1 m/sec and ground level inversion with lower limit of 0.01–0.05 km	%	11
Situations favorable for photochemical smog formation:		
Frequency of stagnant situations combinations (wind velocity is 0–1 m/sec and ground level inversion) at high intensity of direct and accumulated radiation in warm season	%	11
4. Characteristics of atmosphere pollution		
- Main characteristics of air pollution:		
Types of pollutants yearly and seasonal average values of concentration of pollutants	mg/m ³	-
Frequency of concentrations more than	%	-

1 MPC, 5 MPC, and 10 MPC		
- Main sources of air pollution in the construction area		Main sources of air pollution in the construction area are operating industrial facilities located in Pervomayskiy workers' settlement, Shchekino district, Tula Region
- Data on precipitation of hazardous substances in the territory under examination and chemical precipitation activity (including data on acid and radiation precipitation)		-

6.2 Hydrosphere, conditions and pollution density of surface water bodies

6.2.1 Sources of water supply and disposal and their conditions

The existing conditions of hydrosphere in the area of planned facility location was assessed based on hydrological and hydrochemical characteristics of rivers and reservoirs used for water supply (water disposal), hydrogeological parameters of underground waters in the area under examination, and water use schedule of the area.

Shchekinoazot OJSC is one of the largest water consumers in the Region.

In general, the water is used:

- in manufacturing processes of both main and auxiliary production;
- for cooling, taking into account that in the chemistry more than 80% reactions are exothermic, the major part of water is used for manufacturing process temperature control. In the processes of conversion, rectification, synthesis, absorption, for example, in dust and gas-cleaning plants of methanol, ammonia, chemical agents or for filter washing, dilution, etc.

The plant has a dual water supply: public water supply and industrial water supply. The water supply system is recirculated, recycled and reused, and once-through water supply system.

Water consumption

Water consumption sources for the Shchekinoazot OJSC industrial site are surface waters of Upa river and ground waters of Vozdremkovsky water catchment area.

Total water consumption is 12,837.6 thous. m³/year, including:

- underground water — 2,891.91 thous. m³/year;

- Upa river water — 9,945.69 thous. m³/year (4,970.36 thous. m³ from the Shchekino regional hydroelectric power station are not included).

The plant auxiliaries use 11,307.44 thous. m³/year including:

- underground water for utility and production needs — 1,581.372 thous. m³/year,
- river water — 9,726.068 thous. m³/year.

The Shchekinoazot OJSC water supply systems are used for the make-up of cooling systems and for utility needs of Pervomayskaya CHPP, the technical water is supplied to Pervomayskaya CHPP from the Shchekino regional hydroelectric power station.

For production purposes, Shchekinoazot OJSC uses the surface water of the Upa river, the right-bank tributary of the Oka river, fisheries waters of the first category. The distance between the mouth and the water consumption area is 99 km. The water consumption is realized based on the Water Use Agreement No. 45 dated 18 October 2013, concluded with the Ministry of Natural Resources and Ecology of the Tula Region, valid until 01 November 2018.

The water intake facilities were built in 1953 and include the following: the concrete headwall of the inlet flow pipes and buried pumping station, where 4 (four) 14D-6 pumps are installed. In 1996, the new pumping station was built, where 3 pumps are installed (one duty pump and two stand-by pumps).

The Upa river water is taken by the water intake facilities and the first stage pumping station and delivered to receiver tanks of the second stage station at a distance of 10.3 km. The second stage pumping station feeds the water to the third stage pumping station tanks at a distance of 10.8 km. The water is fed through three steel water pipes, two of them have a diameter of 700 mm and one has a diameter of 1200 mm.

The first stage pumping station inlet is equipped with the fish protection drum-type screens BSB TU 204 RSFSR 912 77 with mesh size of 4*4 mm, with water inflow rate into water intake windows of 0.5 m/s and the fish protection umbrella-type structures (installed in 2003).

The surface water is used in the plant process water supply system including for make-up of water cycles, in cooling systems, for water tank steaming, motor transport washing.

The volume of permissible water intake is 48321.3 m³/days, 17637.265 thous. m³/year. The volume of withdrawn water is recorded with AKRON-01 flowmeters.

Under the terms of the agreement the following works are performed: the periodical inspection of fish protection structures, the cleaning of intake headwalls and the annual diver inspection of fish protection structures in order to determine their operational efficiency, routine observations over the Upa river conditions according to the program agreed upon with Tula Moscow-Oka Basin Department.

Shchekinoazot uses the mineral resources at the Shchekino District water intake area (Vozdremkovsky water catchment area).

The License TUL 06482 VE for the right to use subsurface mineral resources for groundwater extraction of Vozdremkovsky deposit for own utility and process water supply systems and transfer to third parties was granted to Shchekinoazot 05.08.1999, the license expiration date is 31.12.2021.

The water catchment area is located near Vozdremo populated locality, Shchekino District, Tula Region, at a distance of 13 km to the west of Shchekino in valleys of the Vozdremok stream, the right-bank tributary of the Solova river. It is built in 1960-63 in explored reserves of the Upa underground reservoir, Report GKZ USSR No.3077 dated 07.07.1960. In the 80s the additional wells were drilled to the Ozersk-Khovansk underground reservoir. 26 wells in total, the part of them are abandoned. At the present time the water catchment area consists of 14 wells: 10 production wells (Nos. 1,2a,3a,4,5,6,8a,16,17,18) and 4 observation wells (Nos 2, 7a, 12, 16bis) with the depth from 30 m to 69 m, among them 2 wells are equipped for the Upinsk and Ozersk-Khovansk underground reservoirs and the other — for the Upinsk underground reservoir.

In accordance with data specified in the Notice as per Form No.2-TP (water supply) in 2016 the plant withdrawn 9945.69 thous. m³ of river water including for own needs – 99892.81 thous. m³, delivered to other consumers – 28.00 thous. m³. The underground water intake was 2891.91 thous. m³, including for own needs – 1626.27 thous. m³, delivered to other consumers – 1258.01 thous. m³. The water consumption in five recirculated water system was 464720.66 thous. m³.

Water disposal

The industrial site is equipped with black water disposal and stormwater drainage systems.

The total permissible volume of waste water disposal is 22126.0 thous. m³/year including:

to the discharge outlet No. 1 of the Degotnya river, per 2016:

-untreated industrial and storm water — 7546.13 thous. m³/year,

-wastewater treated in biological treatment plants — 8771.19 thous. m³/year.

The industrial wastewater treatment and neutralization plant with a total capacity of 38 000 m³/day performs the mechanical and total biological treatment of utility and industrial wastewater as well as their aftertreatment.

The mechanical treatment section consists of circular traps, sand tank, primary vertical settlers, sludge fields, raw and digested sludge tanks, effluent mixing chamber, pumping station for utility fluids, sediment, drainage waters from the sludge fields.

Biological treatment section: run-off balancing reservoir, aeration tanks, secondary vertical settlers, contact tank, pumping station for return and wasted sludge, turboblowers.

The denitrification installation consists of industrial wastewater receiver tanks, mixer, run-off balancing reservoir, denitrifier, regenerators, secondary vertical settler, trisodium phosphate dilution unit, pumping station for wastewater, balanced run-off, returned activated sludge.

The tertiary wastewater treatment station consists of stations pumping the wastewater to filters, sand traps, sand tanks, clean and dirty washing water tanks, contact tanks, pumping stations to withdraw the dirty washing water, to feed the water for the filter washing, for chlorination (chlorination chamber with chlorine stocks).

Shchekinoazot and Khimvolokno OJSC plants as well as their lease holders have the unified industrial storm wastewater system and the unified soil system. The water is drained through the discharge outlet No. 1 of Shchekinoazot.

The Shchekinoazot industrial site is equipped with 4 sewerage systems:

1. Industrial wastewater system (force main sewerage) which is intended for collection and transmission of polluted wastewater for treatment to the autothermal reforming units of caprolactam production as well as for biological treatment in the O and NPVC shop.
2. Industrial wastewater system (underground system 34) which is intended for collection of heavily polluted wastewater of caprolactam production and transmission of polluted wastewater for incineration in the autothermal reforming units of caprolactam production.
3. System of household waste water which is drained to the existing external waste water disposal system of the plant and then to the biological treatment plants (BTP).
4. Stormwater drainage and clean surface system.

The following is discharged into the stormwater drainage system:

- water cycle blowdown water;
- drawdown and overflow from the tanks of water cycle towers and pumping stations;
- from the tank sumps (after analysis for content of corresponding substances);

Stormwaters from the building roofs and the industrial site;

- washing of heating systems;

- process unpolluted wastewater (in general condensates which meets the specified requirements for this sewerage system).

The stormwater are drained from the industrial site partially through collecting gutters and drainage ways, the rest rain water goes to roadway rainwater inlets. The sewerage systems consists of: gutters, pipelines, pits, pumping stations.

The household waste water and the industrial wastewater of Shchekinoazot, the effluents received from third parties, organizations and housing facilities of Shchekino are treated in the waste treatment facilities with a capacity of 38 thous. m³/day.

The waste treatment facilities are a complex of mechanical and biological treatment. In 1975 the denitrification installation for nitrate containing wastewater of the hydroxylamine sulphate shop in the caprolactam production process with a capacity of 1560 m³/day, and a nitrate nitrogen production capacity of 31 kg/hour was put into operation. The installation consists of a single process flow. In 1982 the nitrogen production capacity of the installation was increased up to 67.4 kg/hour.

In 1987 the tertiary treatment plant with the use of single-layer sand filters was put into operation.

The waste treatment facilities composition:

The mechanical treatment section consists of horizontal traps, sand tank, primary vertical settlers, sludge fields, raw and digested sludge tanks, effluent mixing chamber, pumping station for utility fluids, sediment, drainage waters from the sludge fields.

The biological treatment section consists of: run-off balancing reservoir, 12 two-line aeration tanks equipped with polymer tube aerators, 6 turboblowers, secondary vertical settlers, contact tank, pumping stations for return and wasted sludge.

The denitrification installation consists of industrial wastewater receiver tanks, mixer, run-off balancing reservoir, denitrifier, regenerators, secondary vertical settler, trisodium phosphate dilution unit, pumping station for wastewater, balanced run-off, returned activated sludge.

The tertiary wastewater treatment station consists of stations pumping the wastewater to filters, sand traps, sand tanks, clean and dirty washing water tanks, contact tanks, pumping stations to withdraw the dirty washing water, to feed the water for the filter washing, for chlorination.

The discharge outlet No. 1 is a common discharge outlet of wastewater from the water cycles, untreated industrial and storm water of Shchekinoazot and third parties into the Degotnya river. The wastewater discharge point is located at a distance of 14.4 km from the mouth.

The wastewater is discharged upon a Decision No. 71-0201.01.003.-R-RSBKh-C-2017-01104/00 on the Granting of Water Bodies for Use dated 31.03.2017. The period of water use is until 31.07.2018. The permissible volume of wastewater discharge for the discharge outlet No. 1 – 22126.00 thous. m³/year.

Except for treatment and discharge of own wastewater the Company performs the treatment and discharge of industrial and household wastewater of third parties and populated localities. According to data of state statistical reporting as per Form No.2-TP (water supply) in 2016 the wastewater disposal was: for the discharge outlet No. 1 – 16 317.32 thous. m³.

The commissioning of ash-trench recycling system in the Pervomayskaya TPP, oil-contaminated waste treatment facilities, cooled water recovery scheme allowed to reduce the water consumption and decrease the contaminated runoff discharge. After commissioning of the ash-trench recycling system, oil-contaminated waste treatment facilities and cooled water recovery scheme for the boiler-and-turbine shop equipment the only discharge without the biological treatment is salinized effluents after regeneration of Na-cation filters in the chemistry department and blowdown water of the circulating system which go to the Shchekinoazot stormwater drainage to be diluted prior to discharge into the Degotnya river.

The Pervomayskaya TPP production unit has no its own wastewater discharge outlet and the wastewater is directed to the Shchekinoazot stormwater drainage and the utility fluids go to the biological treatment facilities.

The plant has also the wastewater discharge outlet No. 3 which withdraw the blowdown water of the oxygen shop water cycle to the Degotnya river.

At the present time the construction of waste water treatment facilities for industrial effluents and storm water runoff with a production capacity of 24 120 m³/day is carried out in the plant in accordance with the approved project.

The characteristic of the water bodies

The Tula Region hydrographic network belongs to the Oka and Don river basins. The predominant river feeding is snow one with rain and ground water runoff. In terms of river hydrological regime the Tula Region territory belongs to the South-West part of the the Upper Volga zone. All rivers of this zone are distinguished by significant flow irregularity in the course of the year 74% of flow falls on spring, 17% — on summer and autumn, 9% — on winter.

The rivers begin to freeze at the end November or beginning December. The ice conditions last 3.5 – 4.5 months. The breakup of ice in a river falls in end Mars – beginning April the height of water varies between 2.0 and 4.10 metres. The flood-plains of the river are flooded. The summer and autumn low water is setting in the first fortnight of June, the low water varies slightly (20-30 cm).

The Degotnya river

The Shchekinoazot wastewater is discharged through the outlet No. 1 to the Degotnya river at a distance of 14.4 km from the mouth.

The Degotnya river has its origin in Pervomaysky populated locality, Shchekino District, Tula Region, flows through Shchekino District and runs to the Upa river from the left bank (the Oka river basin) at a distance of 260 km from the mouth.

In accordance with the Russian Federal Fisheries Agency Order No. 818 dated 17.09.2009 on Determination of Water Bodies of Commercial Fishing Importance and Special Aspects of Harvesting (Catching) of Aquatic Biological Resources Inhabiting the Water Bodies and Belonging to Fishery Objects the Degotnya river, left-bank tributary of the Upa river, belongs to fishery water bodies of Category 2.

The fishery characteristic, hydrological data and hydrometrical description of the Degotnya river are given in (Appendices 3 and 4).

The Degotnya river has the following morphometric data: the length is about 17 000 m, the max. width is about 11 m, the average width is about 5 m, the max. depth is about 2 m, the predominant depth is about 0.8 m. The flow velocity is up to 0.15 m/s. The Secchi disk water transparency is up to 0.5 m.

River banks are predominantly flat, gently sloping, high in some places, steep. The bank soils are clayly, muddy. Tree and shrubby vegetation grow along the banks of the river. The shape of bottom is uniform. The bottom soils are stony with sludge deposits. The bottom is clean.

The higher aquatic and streamside vegetation is represented by a complex of stiff semi-aquatic emergent and submersed soft plants: sedge, reed mace, bulrush, arrowhead, duckweed, cane. The overgrowing in the summer is up to 2%.

The Degotnya river fish fauna is represented by the following fish species: roach, carp, bleak, gudgeon, goldfish, pickerel, chub.

At a distance of 260 km from its origin the Degotnya river runs to the Upa river from the left bank which is in its turn a tributary of the Oka river. The total area of the Degotnya river water catchment basin is 85.6 km².

Min. design 30-days water flow of the summer and autumn low water of 95% occurrence is 0.007 m³/s.

For the cross-section of the Shchekinoazot discharge outlet No. 1 to the Degotnya river:

- Water catchment area – 11.0 km²;
- Distance from the mouth – 14.4 km;
- Forest coverage – 6 %;

- Bogginess – 1%;
- Lake percentage – <1%;
- Sinuosity coefficient – 1.1;
- Width – 5.25 m;
- Mean velocity of flow – 0.46 m/s;
- Maximum velocity of flow – 0.65 m/s;
- Mean depth – 0.8 m;
- Maximum depth – 0.9 m.

The background concentration of qualitative composition objectives for the Degotnya river water and relative values of MPC_{cfr} according to [16] are given in Table 3.

Table 3 — Background concentration of qualitative composition objectives for the Degotnya river water

Item No.	Physical and chemical composition objectives of water	Value, mg/dm ³ Degotnya river	MPC _{cfr} , mg/dm ³
1	2	3	4
1	BOD _{total}	2.97	3.0
2	Suspended matter	15.5	background+0.75*
3	Dry residue	818.5	1000
4	Chloride-anion	42.1	300
5	Sulphate-anion	237.6	100
6	Calcium	171.7	180
7	Magnesium	19.9	40
8	Ammonium ion (ammonia nitrogen)	0.97	0.5 (0.4)
9	Nitrite-anion (nitrite nitrogen)	0.04	0.08 (0.02)
10	Nitrate-anion (nitrate nitrogen)	7.24	40 (9)
11	Total ferrum	0.3	0.1
12	Phosphates by phosphorus	0.17	0.2
13	Volatile phenols	0.0005	0.001
14	Formaldehyde	0.02	0.1
15	Oil products	0.03	0.05
16	Anionic surfactants	0.03	0.5
17	Methanol	0.05	0.1

Upa river

The Upa river is a right-bank tributary of the Oka river (the Volga river basin).

The Upa river basin is located in flat, slightly undulating ground. The total water catchment area is 9510 km², in the design cross-section – 1390 km². The Upa river length is 345 km, the distance to the Degotnya river mouth is 260 km. The river bed is shaped, unbranched.

The river valley is well-developed, asymmetrical. The Upa river is characterized by meanders, the sinuosity coefficient is 2.2. The bed width is up to 70 m, the depth is up to 5.5 m, the mid depth is 2-3 m. The bed banks are steep, turfed.

The Upa river regime is characterized by a high water in spring and a low water in summer, autumn and winter.

The young flood is usually observed in the last fortnight of March, the maximum is achieved in the first fortnight of April.

In accordance with long-term observations the flood peak in the Upa river falls on the 5th of April. The long-time average annual maximum level is at the absolute elevation of 155.33 m.

On the average the flooding period comes out by the 23d of April, its average duration is about 30 days. In summer the low water elevations are observed late May and in June, in winter – in December-January. The elevation in the low water period varies only slightly. The annual amplitude of water level variation is 2.79 m on average, the maximum amplitude – 3.55 m, the minimum amplitude – 1.71 m.

The Upa river belongs to sluggish rivers of European type, it has well-defined spring flood, low water in summer and autumn, small and rare rainfall floods and long winter low water.

The banks are thickly wooded with bushes and trees, the bank soils are clayey, muddy, partially pebbly.

The bottom soils are sandy, pebbly, there are occasional stony ridges, mud along the banks. The relief is hallow.

The aquatic vegetation is presented by: water weed, nymphaea, sedge, hornweed, duckweed.

The river food reserve is satisfactory, the zooplankton is presented by several species of rotifers, cladocerans and copepods. Besides throughout the season the planktonic larval stages of chironomids, roundworms and oligochaete alevins are found. The phytoplankton is presented by blue-green algae and diatoms. The zoobenthos and benthic groups of the water body are poor and are presented by the following types of organisms: caddis fly, lake fly, winterweed, collembolans and aquatic mites.

The following fish species form the basis of the fish fauna: roach, bleak, bream, belica, silver bream, sander, ruff, river perch, jackfish, nerfling, goldfish, carp, burbot, chub, fresh-water catfish, asp, crucian carp, sneep, gudgeon.

In the area of interest the Upa river belongs to eutrophic type. The conditions of fish natural propagation are estimated as satisfactory.

The fishery is not conducted in the Upa river but this region there are sport fishermen.

The Upa river water body, Tula Region, the Oka river basin, 1203 km along the right bank from the Oka river mouth, fisheries waters of Category I;

Stream flow length – 345 km.

Distance between the mouth and the water consumption area – 99 km.

Water catchment area – 9510 km².

Width – up to 60 m.

Mid depth in the water consumption area – 3 m.

Max. depth in the water consumption area – 4 m.

Sinuosity coefficient – 1.2.

Minimum 30-day water flow of the summer and autumn low water during dry year of 95% occurrence – 5.1 m³/s.

The hydrographic data and hydrometrical description of the Upa river are given in Tables 4 and 5.

Table 4 – Hydrographic data of the Upa in the design cross-section

Water catchment area, km ²	Distance from the mouth, km	Forest coverage f. л. %	Bogginess f. б %	Lake percentage f. оз. %	Sinuosity coefficient
1400	260	3	1	1	1.16

Table 5 — Flow geometry of Upa river bed

Width, m	Speed, m/s		Depth, m		Bottom	Roughness factor
	mean	the largest	mean	the largest		
15.0	0.20	0.30	0.50	1.10	muddy	0.067

The background concentration of physical and chemical composition objectives for the Upa river water are given in Table 6.

Table 6 — Background concentration of physical and chemical composition objectives for the Upa river water

Item No.	Physical and chemical composition objectives of water	Measurement units	Value, mg/dm ³ Upa river	MPC _{cfr} , mg/dm ³
1	Suspended matter	mg/dm ³	20.40	Background+ 0.25
2	BOD _{total} (BOD ₅)	mg/dm ³	20.55 (13.7)	3.0
3	COD	mg/dm ³	7.43	30

4	Chlorides	mg/dm ³	34.8	300.0
5	Sulphates	mg/dm ³	163	100.0
6	Ammonium ion (ammonia nitrogen)	mg/dm ³	0.144 (0.11)	0.5 (0.4)
7	Nitrite-anion (nitrite nitrogen)	mg/dm ³	0,092 (0,028)	0.08 (0.02)
8	Nitrate-anion (nitrate nitrogen)	mg/dm ³	8.82 (1.99)	40 (9)
9	Total ferrum	mg/dm ³	0.25	0.1
10	Oil products	mg/dm ³	0.021	0.05
11	Volatile phenols	mg/dm ³	0.002	0.001
12	Phosphates (by P)	mg/dm ³	0.006	0.2

6.2.2 Plant impact on the surface water

At the Shchekinoazot industrial site there are the following types of wastewater:

- continious effluents under normal operation;
- periodical effluents during start and shutdown as well as under normal operation;
- emergency effluents.

Depending on degree of pollution the wastewater are directed to existing 4 sewerage systems.

1. Industrial wastewater system (force main sewerage) which is intended for collection and transmission of polluted wastewater for treatment to the autothermal reforming units of caprolactam production as well as for biological treatment in the O and NPVC shop.

2. Industrial wastewater system (underground system 34) which is intended for collection of heavily polluted wastewater of caprolactam production and transmission of polluted wastewater for incineration in the autothermal reforming units of caprolactam production.

3. System of household waste water which is drained to the existing external waste water disposal system of the plant and then to the biological treatment plants (BTP).

4. Stormwater drainage and clean surface system.

The following is discharged into the stormwater drainage system:

- water cycle blowdown water;
- drawdown and overflow from the tanks of water cycle towers and pumping stations;
- from the tank sumps (after analysis for content of corresponding hazardous substances);
- stormwaters from the building roofs and the industrial site;
- washing of heating systems;

- process unpolluted wastewater (in general condensates which meets the specified requirements for this sewerage system).

Vertical land levelling the stormwater are drained from the industrial site partially through collecting gutters and drainage ways, the rest rain water goes to roadway rainwater inlets. The sewerage systems consists of: gutters, pipelines, pits, pumping stations.

The industrial wastewater treatment and neutralization shop consists of one process flow and performs: the total biological treatment of Shchekinoazot and Khimvolokno OJSC industrial wastewater; the mechanical and total biological treatment of household wastewater of Shchekinoazot, Khimvolokno OJSC, Pervomayskaya TPP, Pervomaysky populated locality; the total biological treatment of Shchekino effluents, the treatment of sediment separated out from the household wastewater and waste activated sludge; the aftertreatment of biologically treated effluents, the disinfection of waste waters with liquid chlorine.

The treatment facilities consists of:

- the mechanical treatment section which includes horizontal traps with circular holding, sand tank, primary vertical settlers, sludge fields, raw and digested sludge tanks, effluent mixing chamber, pumping station for utility fluids, sediment, drainage waters from the sludge fields.

- the complex of total biological treatment of wastewater with a design capacity of 38000 m³/day including run-off balancing reservoir, aeration tanks, secondary vertical settlers, contact tank, pumping station for return and wasted sludge, turboblowers;

- the denitrification installation which includes industrial wastewater receiver tanks, mixer, run-off balancing reservoir, denitrifier, regenerators, secondary vertical settler, trisodium phosphate dilution unit, pumping station for wastewater, balanced run-off, returned sludge.

The installation capacity is 1560 m³/day, the nitrate nitrogen production capacity is 67.4 kg/h;

- the tertiary wastewater treatment station which includes stations pumping the wastewater to filters, sand traps, sand tanks, clean and dirty washing water tanks, contact tanks, pumping stations to withdraw the dirty washing water, to feed the water for the filter washing, for chlorination;

- the chlorination chamber with chlorine stocks.

The number of aeration tanks is 12. The aeration tank type is two-line with decentralized supply of mixed effluent and injection of the activated sludge into the aeration tank entry. The number of installed turboblowers is 6.

On the basis of the foregoing the wastewater treatment process in the plant can be considered as a three-stage process: first stage – mechanical treatment, second stage – biological treatment, third stage – aftertreatment. After the third stage a part of treated wastewater can be

fed to the recirculated water system for reutilization, the rest – after oxygen saturation goes to the plant wastewater relief header.

The data on operational efficiency of the plant treatment facilities according to [10] given in table 7 demonstrates the conformity of their operation to the design parameters.

After the treatment facilities (discharge outlet No. 1) the wastewater are discharged into the Degotnya river through the sewer and through the reinforced-concrete headwall with the pipeline of $d = 1400$ m, type of discharge headwall is dissipating.

Table 7 – Wastewater treatment efficiency

Item No.	Substance identification	Mechanical cleaning			Denitrification installation			Biological cleaning			Tertiary treatment plant		
		Inlet concentration, mg/dm ³	Outlet concentration, mg/dm ³	Treatment efficiency, %	Inlet concentration, mg/dm ³	Outlet concentration, mg/dm ³	Treatment efficiency, %	Inlet concentration, mg/dm ³	Outlet concentration, mg/dm ³	Treatment efficiency, %	Inlet concentration, mg/dm ³	Outlet concentration, mg/dm ³	Treatment efficiency, %
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Ammonium ion				45.5	17.3	62.0	43.8	0.69	98.4	0.69	0.4	42.0
2	BOD total							172	10	94.2	10	2.7	73.0
3	Suspended matter	106.5	34.4	67.7				34.4	17.1	50.3	17.1	3.2	81.3
4	Total ferrum							0.23				0.13	43.5
5	Caprolactam							20	0	100.0	0	0	100.0
6	Methanol							29.6	0	100.0	0	0	100.0
7	Nitrate-anion				3021	12.9	99.6	0.35	137				
8	Nitrite-anion							0.48				0.15	68.8
9	SSAS							0.7				0.044	93.7
10	Sulphate-anion							231.7				183.4	20.8
11	Dry residue							1.14				1	12.3
12	Phosphates by phosphorus							1.8				1.08	40.0
13	Chloride-anion							93.5				101.5	

After the treatment in the waste treatment units and storm water runoff treatment facilities of the plant and third parties the industrial and household wastewater is discharged through the discharge outlet No. 1.

The Table 8 gives the values of permissible concentration of pollutants that are fed to the Discharge Outlet No. 1 in accordance with the approved standard rate of permissible discharge of substances (reg. No. 518 dated 07.10.2016, period of validity until 07.10.2019, see Appendix G) and the permit for discharge of pollutants No. 62 dated 05.12.2016 (Appendix H).

Table 8 — Approved standard rate of permissible discharge of substances into water body.

Item No.	Quality levels (substance identification)	Hazard class	Permissible concentration (within Permissible Discharge Standards/within limits), mg/dm ³	Approved standard rate of permissible discharge of substances (within Permissible Discharge Standards/within limits), tonnes/year
1	2	3	4	5
1	Ammonium ion	4	0.5 /1.1	11.065 / 24.339
2	BOD _{total}	-	3.055 / 5.9	67.596 / 130.543
3	Suspended matter	-	15.57/-	344.501/ -
4	Total ferrum	4	0,1 / 0,4	2.214/ 8.851
5	Calcium	4᠑	195.2 / -	4318.997/ -
6	Caprolactam	3	0.01 / -	0.222/ -
7	Magnesium	4	58.0 / -	1283.305 / -
8	Methanol	4	0.19 / -	4.205 / -
9	Oil products	3	0,087 / 0,2	1.921 / 4.424
10	Nitrate-anion	4᠑	99.8 / -	2208.178 / -
11	Nitrite-anion	4᠑	0.153 / 0.33	3.388 / 7.3
12	SSAS	4	0.1 / -	2.214 / -
13	Sulphates	-	100 / 170	2212.606 / 3761.421
14	Dry residue	-	1290 / -	28542.662 / -
15	Phosphate phosphorus	4᠑	0.463 / -	10.244 / -
16	Chlorides	4᠑	270.3 / -	5980.657 / -

17	Phenol	3	0.00191 / 0.002	0.043 / 0.044
18	Formaldehyde	2	0,096 / -	2.123 / -

The Company has an approved schedule for analytical control of quality of discharged wastewater, water from water bodies and operation of treatment facilities. The purpose of this schedule is a monitoring of permissible discharge of pollutants with effluents into the environment and of their impact on water bodies.

This control is performed by certified and accredited Air Monitoring Service laboratories and sanitary laboratory of Shchekinoazot, Federal State-Funded Institution TsLATI for the Central Federal District and Federal State-Funded Healthcare Institution, Centre of hygiene and epidemiology in the Tula Region.

6.3 Assessment of the existing conditions of the territory and geological environments

It is planned to arrange the methanol production plant with a capacity of 500 thous. tonnes/year in the Shchekinoazot industrial plant, Pervomaisky populated location, Shchekino District, Tula Region.

Shchekinoazot is located north eastwards from Shchekino, in two kilometres from near residential development.

In the north Shchekinoazot is adjacent to Khimvolokno OJSC industrial facilities, in the north-west the woodworking integrated plant, Pervomaisky concrete works, motor pool, maintenance depot, construction and erection department, and railway terminal are located.

The Pervomayskaya TPP is situated within the industrial site. The industrial site has a common fence. The unified access control procedure is in force in the industrial site.

The Shchekinoazot industrial site is rectangular in shape extended from South-West to North-West along the Moscow rail road in the direction of Kursk.-

The plant is located at a distance of approx. 200 km from Moscow and in 0.6 km from Kaznacheevka railway station. At a distance of 3.3 km from the Shchekinoazot OJSC industrial site, there is a federal automobile road, Crimea (M-2) with a traffic capacity of 13 thous. motor vehicles per day and maximum load of 30 tonnes, and at a distance of 855 m, there is the R-148 automobile road.

The industrial site area is built on and arranged with automobile hard-surface roads.

The designed methanol production plant is located in the south-eastern part of the existing site with a fully developed infrastructure. The site allocated for the designed unit is currently free of buildings.

The Plant construction is planned with the connection to Shchekinoazot operating networks.

The industrial site area within the battery limits is 7.51 ha. The building area of the industrial site is 2.38 ha. The built-up density of the industrial site is 0.32. The stretch of automobile roads is 1.85 km. The area of automobile roads and sites is 1.03 ha. This area does not require the site preparation as it is free of buildings.

The methanol production quarter dimensions by maximum distances are 444.1 m x 194.3 m, and it is bounded by:

- a circular quarter road from all sides;
- process communication racks and underground in-site railway tracks from the north-western side;
- existing treatment facilities from the north-eastern side;
- existing fencing of the plant from the south and south-eastern side.

No condemnation of land has been provided for the construction of the Metanol M-500 unit.

Morphological parameters, geological engineering conditions, hydrogeological conditions, pattern of exogenic processes, depth of soils, types and forms of the existing technogenic disturbance of the Metanol M-500 unit area are provided based on the previously performed site surveys, information from the materials [24, 25], and shall be taken as reference.

The planned construction site area is located on a flat-lying undulating watershed parcel. The natural area topography has been developed under the influence of erosive and accumulative processes. It shall be noted that the industrial site of the plant in the construction area is designed with fill-up soils and does not have a natural soil mantle.

Based on the results of geological engineering surveys, the thickness of soils down to the explored depth of 10.0 m is non-homogeneous.

There are 4 geological engineering elements standing out within its limits represented by: on the first parcel: quarternary semi-solid and stiff water and glacial loams underlaid by Mesozoic semi-solid and solid clays at a depth of 4.00-4.60 m.

on the second parcel: quarternary stiff and semi-solid mantle loams, by high-plastic to semi-solid water and glacial loams from a depth of 3.40-4.60 m underlaid by Mesozoic semi-solid and solid clays at a depth of 8.80-9.50 m.

Top deposits are covered by fill-up soils of non-uniform density and compressibility with a depth of 1.50-2.90 m.

Based on the corrosion survey data it was determined that in relation to carbon steel the soils have a high corrosive aggressiveness.

The specified depth of seasonal frost penetration of clayey soils for Tula Region is 1.40 m.

According to the area typing criteria by drowning the site is classified as partially drowned.

During the survey period subsurface water was encountered at a depth of 0.40-3.40 m.

Aquiferous soils are represented by quarternary mantle, water and glacial loams, and fill-up soils.

The confining bed of subsurface water consists of Mesozoic clays and was drilled at a depth of 4.00-4.60 m and at a depth of 8.80-9.50 m.

The forecasted level of subsurface water in hydromaximum periods based on seasonal and long-term fluctuations shall be expected at a level 1.0-1.5 m higher than the level marked during the surveys, in some areas it may reach the daylight surface.

There were no caverns or landslide movements observed. The area is classified as a seismically stable region.

6.4 Environmental impact of the plant waste

JSC Shchekinoazot carries out category I-IV waste handling activity based on the License No.(71)-1530-STRB dated 14.09.2016 (Appendix I) on the performance of activities on the collection, neutralization, and disposal of waste of hazard categories I-IV.

According to waste generation standards and waste disposal limits and [20] the list of waste generated at the plant includes 114 items of waste of environmental hazard categories I-V. The total amount of waste is 186,552.784 t, including 5.202 t of hazard category I, 46.649 t of hazard category II, 989.406 t of hazard category III, 120,569.1 t of hazard category IV, and 64,915.427 t of hazard category V.

According to governmental accounting data as per Form No. 2-TP (waste), there had been 88,137.754 t of waste generated at JSC Shchekinoazot in 2016. 14.0 t had been used, 78,415.676 t had been neutralized, and 7,178.91 t had been transferred to other organizations for use, neutralization, and disposal, 2,571.002 t had been allocated at own facilities.

The plant balance sheet includes its own waste disposal facilities located outside of the main production site:

- the Pervomaysk TPP ash-disposal area with a capacity of 8,900,000 tonnes, SRWDS No. 71-00012-Kh-00479-010814, the purpose of the waste disposal facility is waste storage, 8,016,199.327 tonnes had been disposed of as of 01.01.2017, the proposed amount of annual waste disposal is 13,238.05 tonnes/year.

- a solid waste storage pit with a capacity of 7.380 tonnes, SRWDS No. 71-00038-Z-00870-311214, the purpose of the waste disposal facility is waste burial, 5,820.970 tonnes had

been disposed of as of 01.01.2017, the proposed amount of annual waste disposal is 119.685 tonnes/year.

– a solid household waste dump with a capacity of 32,640 tonnes, SRWDS No. 71-00038-Z-00870-311214, the purpose of the waste disposal facility is waste burial, 21,161.649 tonnes had been disposed of as of 01.01.2017, the proposed amount of annual waste disposal is 1,760.619 tonnes/year.

The Pervomaysky TPP ash-disposal area, solid waste storage pit, and solid household waste dump are fitted with observation wells. The state of subsurface water and soils at all facilities is monitored once per quarter.

6.5 General characteristic of the existing man-induced environmental load of the facility area

This material provides a state assessment of the projected Metanol M-500 unit location area based on the information from the effective regulatory and authorization documentation of JSC Shchekinoazot, such as:

– the existing level of impact of the plant on the pollution of the atmosphere, surface water, and area. The plant has determined environmental factors requiring closer attention and has developed measures on the achievement of regulatory values of permissible discharge standards and production and consumption waste management. The level of environmental impact of the plant is classified as permissible;

– the plant undertakes substantive steps towards the reduction of environmental impact, including: decommissioning, reconstruction, and conversion of the most hazardous production works. The plant has adopted a process modernization and stabilization programme aimed at the implementation of environmentally-friendly technologies;

– increased attention is paid to environmental issues at the plant. It has implemented an integrated management system for quality, ecology, occupational health and safety complying with the requirements of ISO 9001, ISO 14001, OHSAS 18001.

The management of significant environmental aspects allows to plan environmental impact reduction measures in a timely manner.

The company understands its corporate social responsibility before the people of the Shchekinsky District, it supports social and cultural activity and provides charity support.

The specified characteristic of the company is indicative of its broad investment, production, and managerial capabilities for further development of its production potential.

Environmental aspects have been assessed based on the provided preliminary estimates, however the production process used at the methanol production plant is virtually

environmentally sound since its feedstock consists of non-toxic hydrocarbons in the form of natural gas.

The planned facility area is an existing production site, which is an established urban area with closed fencing and access control, therefore it will have no impact on the fauna and flora.

The facility does not emit electric and magnet fields. Therefore there will be no electromagnetic impact.

The facility is not an increased noise impact production. At the time of the project development there had been no data on acoustic characteristics of equipment in 8 octane strips, equipment installation locations, characteristics of reflective structures and other parameters required for detailed assessment of the acoustic impact of the new production site on the atmosphere by the noise impact factor, due to which the acoustic impact on the atmosphere will be reviewed in detail at further design stages. At the investment justification stage acoustic impact is reviewed in a generalized sense by the total impact of the equivalent noise level from all sources specified in the TEOI.

No environmental factors preventing the implementation of the planned 500,000 t/year methanol production complex had been identified at this design stage.

7 Environmental impact of the designed facility

7.1 Characteristic of the designed facility

The designed Metanol M-500 unit is located in the south-eastern part of the operating plant with an established infrastructure. The site allocated for the designed unit is currently free of buildings.

The Plant construction is planned with the connection to Shchekinoazot operating networks.

The methanol production quarter dimensions by maximum distances are 444.1 m x 194.3 m, and it is bounded by:

- a circular quarter road from all sides.
- process communication racks and underground in-site railway tracks from the north-western side;
- existing treatment facilities from the north-eastern side;
- existing fencing of the plant from the south and south-eastern side.

New construction will be carried out using the experience of Haldor Topsoe (Denmark) which is one of the main methanol technology Licensors.

Natural gas will be used as feedstock. The methanol production capacity: 500,000 t/year.

The designed methanol production unit area is located on the premises of the existing operating plant with an established functional zoning. The designed unit is located in the production zone.

The methanol production unit has three zones, for production, auxiliary purposes, and storage.

The list of the production zone buildings and structures:

- Gas treatment;
- Compression;
- Interstage compression section equipment;
- Methanol synthesis;
- Fractionation;
- Methanol pump room No. 1;
- Flare unit;
- In-process racks.

The list of the auxiliary zone buildings and structures:

- Energy resources;
- Water circulation cycle;

- Fire-fighting pump room;
- Fire-fighting water tanks;
- Chemically contaminated effluent station;
- Central control room (CCR);
- Administration and on-site facilities (AOF);

The list of the storage zone buildings and structures:

- Methanol tanks;
- Methanol pump room No. 2.

Brief characteristic of the Metanol M-500 unit core production technology

Characteristics and main engineering solutions on the methanol production technology are provided in accordance with the baseline design of Haldor Topsoe (Denmark) prepared in accordance with International Codes and Standards.

The methanol production process using the two-stage steam reforming method includes the following main stages:

- preliminary feed gas treatment;
- removal of sulphur compounds;
- preliminary steam reforming of natural gas hydrocarbons under a pressure of 27.8 bar at a temperature of 520 °C over a catalyst (pre-reforming);
- first catalytic methane conversion under a pressure of 25.3 bar at a temperature of 900 °C over a nickel-based catalyst with the steam-to-gas ratio = 2.8:1;
- flue gas heat recuperation for the treatment of process operating media of the natural gas hydrocarbon conversion process with a partial gas blowdown for process needs of the production;
- converted gas heat recuperation for the generation of steam for process needs of the production, provision of heat for the methanol fractionation process, and heating of feed and demineralized water;
- converted gas compression to 85÷90 bar;
- circulation gas compression to 85÷90 MPa;
- methanol synthesis over a copper-based catalyst under a pressure of 89 bar at a temperature 256 °C;
- synthesis gas heat recuperation for the heating of circulation gas upstream of the methanol synthesis reactor;
- downstream crude methanol fractionation in three fractionation columns (stabilization column, low and high-pressure columns) for the generation of production methanol rectificate of required quality.

Superheated steam with a temperature of 405 ° C with an excessive pressure of 43 bar for process needs is a product of the in-house production generation.

Preliminary feed gas treatment

Natural gas enters is supplied from the battery limit of existing plant networks under a pressure of 33 bar (g).

Preliminary gas feedstock treatment is provided for:

- natural gas dehydration (for the technology and fuel);
- separation of mechanical impurities, liquid hydrocarbons.

Natural gas is then heated up to 250 °C in the feedstock pre-heater (Item E 204-2), mixed with synthesis stage hydrogen-containing gas, and heated up to 380 °C in the feedstock pre-heater (Item E 204-1) in the primary reformer (Item H 201) flue gas heat recovery section, and is then sent for desulphurization.

Removal of sulphur compounds.

Removal of sulphur compounds from natural gas is provided for the exclusion of "poisoning" of methane pre-reforming and conversion catalysts, as well as for the exclusion of pipeline and apparatus corrosion, and, subsequently, deterioration of quality of products. The maximum permissible content of sulphur compounds in stripped natural gas upstream of the tubular reformer is 0.5 mg/m³.

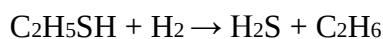
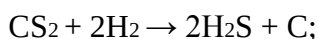
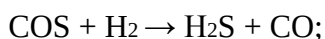
According to GOST 5542-2014 the design total content of sulphur compounds in natural gas feed is assumed equal 56 mg/m³.

Catalytic desulphurization of gas mixture containing at least 5% vol. of hydrogen after the dosing of hydrogen-containing gas is provided for in the two-shelf desulphurization reactor (Item R 201) at a temperature of 380-400 ° C.

Methanol synthesis stage blowdown gas is used as hydrogen-containing gas.

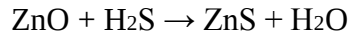
Organic sulphur compounds are hydrogenated to hydrogen sulphide in the first bed of the desulphurization reactor over TK-261 aluminum nickel molybdenum-based catalyst.

Hydrogenation of organic sulphur compounds is performed based on the following reactions:



Hydrogen sulphide is adsorbed over HTZ-51 hydrogen sulphide scavenger in the second reactor bed. HTZ-51 zinc oxide scavenger has a high purity and adsorption capacity which ensures the required removal of hydrogen sulphide from feedstock.

The process is carried out according to the reaction:



The removal of sulphur compounds from natural gas is carried out at a temperature of 380 °C and under a pressure 31.6 bar.

Pre-reforming.

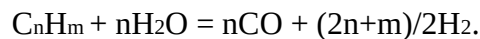
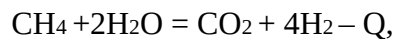
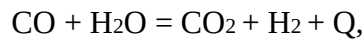
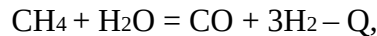
Natural gas stripped of sulphur compounds is saturated by superheated water vapour, heated in the heat-reclaiming apparatus package (HRAP) coil of the reformer convection zone and is then sent to the pre-reforming reactor at a temperature of 520 °C.

There is a provision made for the installation of an adiabatic contact apparatus (Item R 203) for the performance of primary steam conversion of methane homologues in natural gas feed. Pre-conversion process is performed over a highly-active nickel-based AR-401 catalyst within the temperature range of 520÷450 °C.

Superheated gas under an excessive pressure of 28.6 bar and at a temperature of 245 °C is fed to natural gas prior to pre-reforming to the steam-to-gas ratio = 2.8:1.

The pre-reforming stage allows to exclude ash generation at high temperatures and reduce the methane reforming process heat load in the tubular reformer by about 20÷25%.

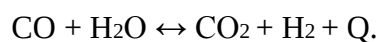
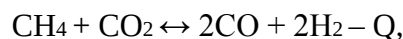
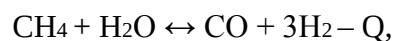
The steam conversion process is based on the following reactions of oxidation of methane and its homologues by water vapour:



Vapour-based catalytic methane conversion.

Vapour-gas mixture consisting of methane, hydrogen, carbon oxides, and water vapour heated up to 635 °C in the heat-reclaiming apparatus package (HRAP) area of the reformer is sent to the catalytic area of the tubular reformer (Item H 201).

Vapour-based catalytic methane conversion process is described in sufficient detail by overall oxidation reaction equations:



In general, the methane conversion process is endothermic, progresses with thermal absorption at a temperature of 900 °C. Thereby, conversion is carried out in the tubular reformer (Item H 201) over a nickel-based catalyst due to fuel gas combustion.

R-67-7H catalyst with a high mechanical strength, high activity and stability over the entire service life is used as conversion catalyst.

Conversion conditions are assumed based on optimal parameters with due regard to methanol generation for above-mentioned conditions, the composition of converted gas is close to equilibrium. Therefore, the most optimal vapour-based conversion operation conditions have been selected.

The effluent converted gas temperature is 900 °C, residual methane content is 3.72 % vol., $H_2:CO$ ratio = 4.66:1, factorial ratio $f = (H_2-CO_2)/(CO+CO_2) = 2.95$ expressed as dry gas.

A mixture of natural gas with methanol synthesis stage blowdown and flash gases is used as fuel gas.

The process flow diagram provides for the recuperation of heat from both converted and flue gases for own needs of the Unit.

The heat-reclaiming apparatus package (HRAP) of the tubular reformer located in the reformer convective area provides for:

- heating of vapour-gas mixture upstream of the reformer reaction are (Item E-201);
- heating of vapour-gas mixture heating prior to pre-reforming (Item E-202);
- superheating of water vapour (Item E-203-1,2;
- heating of natural gas prior to desulphurization (Item 204-1,2);
- partial generation of saturated water vapour for own needs of the methanol production (Item E-205);
- heating of combustion air (Item E-206).

The vapour reformer (Item H-201) is a tubular reactor patented by Haldor Topsoe with side burner layout and is composed of radiant and convective areas.

The reformer radiant area consists of two radiant chambers working as a single apparatus. Two furnace chambers have a common flue gas exhaust into the common section of the reformer convective area.

Catalyst tubes with an internal diameter of 106.7 mm in the number of 364 pcs filled with R-67-7H nickel-based catalyst (43.6 m³) are positioned in one row along the centre line of each chamber.

Process gas passes downstream through catalyst tubes and exits the tubes at a temperature of 900 °C and then through the lined collector is sent for heat recuperation for process media heating.

Heat from fuel gas combustion required for endothermic reforming reactions is supplied through the tube wall.

For the monitoring of equalized heat distribution along the length of catalyst tubes, each chamber is split into 7 sections, in which burners are positioned in five horizontal rows at different different elevations by 3 pcs, the total number of the reformer burners is 420 pcs.

Heat of flue gases generated from fuel gas combustion is used in heat exchangers of the HRAP of the convective reformer area for the heating of process flows and water vapour.

Combustion air is supplied by the blower (Item K-202). 10% air excess is provided to ensure fuel combustion completeness.

Flue gas passes through the DeNO_x reactor (Item R-2510, in which NO_x nitrogen oxides contained in flue gas turn into molecular nitrogen and water vapour without generating secondary pollutants on reaction with gaseous ammonia. Reactor pos. R-251) is located between the coils (Item E-205 and Item E-204-2).

Flue gases with a temperature of 140 °C are vented into the atmosphere by smoke exhausters (Item K-201).

Converted gas heat recuperation.

There is a provision made for three-stage converted gas cooling:

- cooling is carried out due to the generation of vapour under a pressure of 48 bar (g) in the exhaust-heat boiler (Item E-220) and the boiler feed water (BFW) heater (Item E-223);
- then process gas heat is recovered in the methanol fractionation section providing heat to the stabilization column and low-pressure column (LP);
- further cooling of converted gas is carried out in the demineralized water heater (Item E-226) and the end heat exchanger (Item E-228) to a temperature of 38 °C by circulating water supplied from the water circulation cycle (WCC) of the Metanol M-500 unit.

Process condensate created from converted gas cooling is collected in the end separator (Item V-202) and is then transferred for degassing to the stripping column (Item C-610) by the pump (Item P-201).

Compression of converted and circulation gases

Dehydrated converted gas enters the compressor (Item K-431) with the H₂: CO ratio = 4.6:1, pressure of 19.4 bar (g), and temperature of 38 °C.

Compression of converted gas to 90 bar is provided for on the two-stage compressor (Item K-431) on the same shaft with the circulation stage. The compressor is driven by the condensing steam turbine (Item TK-431).

Post-compression gas cooling in the interstage cooler (Item E-431) is provided for by circulating water supplied from the water circulation cycle (WCC) of the Metanol M-500 unit.

Compression of methanol synthesis circulation gas on the compressor (Item K-431) circulation stage is provided for to 90 bar.

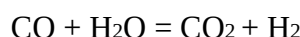
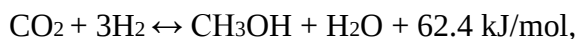
Compressed synthesis gas is mixed with circulation gas (circulation rate is 4.6) and enters the methanol synthesis stage.

Methanol synthesis stage

After synthesis gas is compressed to 90 bar it is heated in the recuperating heat exchanger (Item E-401) by means of synthesis gas heat and then enters the methanol synthesis reactors (Item R-401/1.2).

The use of MK-151 copper, zinc, and aluminum oxide-based catalyst for the methanol synthesis process allows to conduct the process at relatively low temperatures (256 °C) and pressure of 89 bar.

The methanol synthesis process is based on the following reactions:



Synthesis gas circulation with continuous delivery of blowdown gases from the cycle is provided for the achievement of a more complete methanol conversion degree in order to maintain the specified level of inert gases.

The reaction of methanol synthesis over a catalyst starts to take place at a noticeable rate at the minimum temperature of 225 °C. As the catalyst activity grows this temperature increases up to 250-260 °C.

At temperatures exceeding 280 °C the catalyst has a deactivation tendency which leads to:

- the reduction of catalyst selectivity due to the increased rate of secondary product and paraffin generation;
- the reduction of the catalyst service life.

When the catalyst is heated up to over 300 °C it loses activity and strength, and the catalyst breaks up.

There is a provision made for synthesis gas heat recuperation downstream of the synthesis reactor to heat circulation gas entering the reactor. Then partially cooled synthesis gas enters for cooling with further methanol condensation into the air cooler. After gas separation condensed crude methanol is directed to the methanol collector and then, after throttling, to the fractionation stage.

The shell side temperature is controlled through the change of boiler water/gas mixture pressure.

The methanol synthesis process is taking place in the water-cooled tubular reactor.

The methanol synthesis reactors (Item R-401/1,2) are supplied by the licensor firm Haldor Topsoe. The reactors work in parallel and are tubular synthesis reactors in which 32.1 m³ of MK-151 methanol synthesis catalyst is loaded into 3,500 reformer tubes with an internal diameter of 40.23 mm. Effective reaction heat removal is ensured by the supply of boiler feed water into the shell side of the reactor with the generation of saturated vapour under a pressure of 39.6 bar (g) in the steam drum (Item V-401).

At the reactor outlet, synthesis gas is cooled in the recuperator (Item E-401). Further synthesis gas cooling and condensation is provided for in the air cooler (Item 403) and water cooler (Item E-404/1,2).

Condensate methanol is recovered in the high-pressure separator (Item V-402): a major part of synthesis gas is returned to the synthesis cycle as circulation gas.

Blowdown gas is directed into the fuel gas collector for the reformer.

Methanol condensate enters the low-pressure separator (Item V-403), where after the recovery of flash gases crude methanol is collected into a 3,000 m³ RVS-3000 intermediate tank (Item T-451).

Crude methanol fractionation.

Crude methanol contains water and traces of side reaction products such as higher alcohols, dimethyl ether, acetone, and methyl formate.

The purpose of fractionation is to obtain AA production methanol (IMPCA).

There is a provision made for gradual crude methanol purification in 3 tray-type fractionation columns.

Crude methanol is supplied for fractionation by the pumps (Item P-451 A/B). 10% caustic soda solution is fed to crude methanol at the pump suction in the amount of 0.04-0.06 kg of alkali per 1 tonne of crude methanol to neutralize organic acids. Alkali solution is supplied from the alkali solution dosing station (Item X-452).

The stabilization column (Item C-451) is designed for the removal of low-boiling impurities and dissolved gas from crude methanol. The stabilization column is of tray-type (20 trays with a diameter of 2,240 mm).

The stabilization column (C-451) operation conditions are as follows:

- operating pressure: 1.0 bar;
- overhead temperature: 79 °C
- bottom temperature: 88 °C.

The air cooler (Item 454) ensures methanol condensation.

Heat enters the stabilization column (Item C-451) partially from the reboiler (Item E-225) heated by hot converted gas and partially from the reboiler (Item E-451) heated by low-pressure gas under 7 bar.

Then production methanol sequentially recovered in the low-pressure (Item C-452) and medium-pressure (Item C-453) columns, i.e. tray-type columns.

The stabilization column (C-451) operation conditions are as follows:

- operating pressure: 0.8 bar;
- overhead temperature: 68 °C
- bottom temperature: 93 °C.

Heat enters the stabilization column (Item C-452) partially from the reboiler (Item E-224) heated by hot converted gas, and partially from the reboiler (Item E-452) heated by the medium-pressure column (Item C-453) distillate. Production methanol is extracted from top trays of the stabilization column (Item C-452) using the pump (Item P-462 A/B).

Removal of hot-boiling impurities with the release of the stabilization column side-cut and following extraction of production methanol are performed in the medium-pressure column (Item C-453).

The stabilization column (C-453) operation conditions are as follows:

- operating pressure: 3.7 bar;
- overhead temperature: 103 °C
- bottom temperature: 149 °C.
- side-cut temperature: 118 °C.

Heat enters the stabilization column (Item C-453) from the reboiler (Item E-453) heated by the medium-pressure stabilization column (Item C-453) distillate.

After being cooled in the water coolers (Items E-456 and E-457), production methanol with the methanol concentration of at least 99.85% wt. enters 3,000 m³ analysis rectificate methanol tanks (Items T-452 and T-453) through the fine product purification unit (Item X-451) from which the pumps (P-473 A/B) pump it to the JSC Shchekinoazot methanol storage through the intershop rack.

The intermediate crude methanol tank (Item T-451) and rectificate methanol analysis tanks (Items T-452, T-453) are equipped with washing columns for the purification of exhaust gases by demineralized water. Methanol water solution is diverted from the lower scrubber part for re-treatment in fractionation.

Effluent gas is sent for combustion into the reformer (Item H-201).

Side-cut of the medium-pressure stabilization column (Item C-453) enters the collector (Item V-456) with a capacity of 30 m³ and is then sent to the stripping column (Item C-610) as part of a mixture with residue by the pump (Item P-460 A/B).

The process condensate stripping column (Item C-610).

Process condensate contains dissolved gases such as carbon dioxide and organic acids which can cause corrosion in the boiler feed water treatment system and the steam system.

Process condensate from the end separator (Item V-202) of the converted gas heat recuperation section is pumped by the process condensate pump (Item P-201 A/B) and heated up to 209 °C in the process condensate heat exchanger (Item E-611 1/2) before it is fed into the C-610 stripping column.

Residue and higher alcohols from the medium-pressure methanol column (Item C-453) with a temperature of 145 °C are also treated in the stripping column (Item C-610).

Dissolved gases are stripped by medium-pressure steam with a temperature of 400 °C and pressure 41 bar (g) supplied to the lower column part.

The stabilization column (Item C-610) operation conditions are as follows:

- operating pressure: 29.1 bar;
- overhead temperature: 233 °C
- bottom temperature: 234 °C.

Gases from the column overhead are directed for combustion into the reformer. After stripped condensate is cooled in the heat exchangers (Item E-611 1/2, E-219, and E-612) to a temperature of 38 °C it is returned to the energy production of JSC Shchekinoazot.

Unit vapour generation system

Thermal deaeration is provided for in the deaerator (Item V-701) at a temperature 130 °C and under a pressure of 1.7 bar (g).

The deaerator is entered with:

- demineralized water of high-pressure boiler quality from the plant network after being heated in the heat exchangers (Item E-226 and E-219) to a temperature of 120 °C;
- turbine condensate with a temperature of 80 °C;
- steam condensate from the pump (Item P-461), heat exchanger (Item E-453), and condensate catcher (Item V-215) with a temperature of 168 °C;
- low-pressure steam (7 bar (g)) with a temperature of 225.6 °C.

Deaerated boiler feed water is supplied to the boilers (Items E-205, E-220, E-401) by the pumps (P-701 A/B).

In order to prevent scale build-up in the boilers and to exclude oxygen and carbon dioxide corrosion, the Baseline Design provides for the dosing of reagents into feed water from the following units:

- phosphate solution dosing unit (Item X-711);
- ammonia solution dosing unit (Item X-712);
- hydrazine hydrate solution dosing unit (Item X-713).

The Metanol M-500 unit generates steam with the following energy parameters:

– medium-pressure steam with a pressure of 48 bar (g) and temperature of 263 °C generated in the waste-heat boilers (Items E-220 and E-205) with a common steam drum (Item V-201);

– medium-pressure steam with a pressure of 39.6 bar (g) and temperature of 251 °C generated from methanol synthesis reaction heat and emitted from the steam drum (Item V-401);

– low-pressure steam with a pressure of 7 bar (g) and temperature of 227 °C;

– low-pressure steam with a pressure of 3 bar (g) and temperature of 144 °C;

Medium pressure steam generated in the waste-heat boilers (Items E-220 and E-205) and superheated in the heat exchangers (Items E-203/1,2) of the reformer from flue gas heat and supplied to the medium-pressure (41 bar (g)) steam collector with a temperature of 405 °C and pressure of 43 bar (g).

Medium pressure steam is used:

– in the technology for the mixture with natural gas with the following supply of steam-gas mixture (SGM) for reforming;

– in the steam turbine drive of the compressor (Item K-431);

– in the stripping column (Item C-610) for process condensate stripping;

– excessive medium-pressure steam is supplied to the pressure-reducing cooling station ROU-1 for the generation of 7 bar (g) low-pressure steam.

Medium pressure steam of the synthesis cycle enters the 39.6 bar steam collector, and the steam is used:

– in the technology for the mixture with natural gas with the following supply of SGM for reforming;

– in the stripping column (Item C-610) for process condensate stripping.

7 bar low-pressure steam is used:

– in feed water deaeration;

– in the hot water production unit.

Excessive medium-pressure steam is supplied to the pressure-reducing cooling station ROU-2 for the generation of 3 bar (g) low-pressure steam and is used to heat process equipment and pipelines.

For the disposal of periodic and emergency gaseous emissions the Unit is provided with the flare unit (Item X-641). The used flare system is based on smoke-free discharge gas combustion technology using the high-speed flare tip gas discharge method. The bottom part of the flare tip is installed with a separator for the separation of moisture from periodic and emergency emissions. Gas condensate generated in the separator flows into the condensate collection tank by gravity and then to the Customer's facilities for disposal.

The Unit includes a collection station for periodic drainage effluents, emergency discharges and equipment and pipeline spillage, which are then also sent to the Customer's treatment facilities.

The (conditionally clean) boiler discharge collection node is designed for the collection of constant and periodic blowdowns in the Unit steam generation system. Discharge is directed towards the Customer's treatment facilities.

General information on the designed facility is given in Table 8, production characteristic of the facility is given in Table 10, approximate needs in main types of fuel and power resources are given in Table 11.

Table 9 – General information on the designed (reconstructed) facility

Seq. No.	Description	Parameters, properties, etc.
1	2	3
1	Plant name	Joint Stock Company Shchekinoazot (JSC Shchekinoazot)
2	Ministry, government agency	-
3	Form of ownership	Private ownership
4	Owner's name	Joint stock company
5	Plant location	Pervomaysky workers' settlement, Shchekino District, Tula Region, Russian Federation
6	Postal address	Simferopolskaya Ul., D. 19, Pervomaysky workers' settlement, Shchekino District, Tula Region, 301212
7	Name and address of the General Designer, telephone number, telefax	CEPS LLC, Voronezh, Minskaya Ul., D. 2 "A", office 19, +7(920) 467-92-00, nivanov@list.ru
8	Types of output products and production capacity	AA methanol: 500 thous. t per year
9	Cost of core products	8,780 rubles/tonne of methanol
10	Number of employees, persons	132 persons
10.1	including workers	96 persons
11	Production operation time (conditions)	8,760 h/year
12	Commissioning, year of	2021

13	Commencement of construction (date)	-
14	Commencement of operation (date)	2021
15	Estimated amount of investments in prices as of the impact assessment time	18,030,810.13 thous. rub
15.1	including Construction and assembly works	7,660,412.18 thous. rub
16	Cost of fixed production assets	9,566,940.93 thous. rub

Table 10 – Production characteristics of the plant

Seq. No.	Production, shop, unit	Names of output products	Unit of measurement	Annual production volume			Note
				First phase	Second phase	Full development	
1	2	3	4	5	6	7	8
1	Metanol M-500 unit	AA methanol	tonnes	500,000	-	500,000	-

Table 11 – Estimated need for main types of fuel and energy resources of the designed facility (year-on-year)

Seq. No.	Consumer of energy resources	Types of utilities					
		Gas, thous. m ³	Electric power, thous. kWh	Demineralized water, m ³	LP nitrogen, thous. Nm ³	Gaseous ammonia, Nm ³	
1	2	3	4	5	6	7	8
1	Production facilities	433,314	72,074.4	973,840	1,600	136,240	1,600,000
2	Auxiliary facilities	-	-	-	-	-	-
3	Residential and civil facilities	-	-	-	-	-	-
4	Other consumers	-	-	-	-	-	-
Total:		433,314	72,074.4	973,840	1,600	136,240	1,600,000

Characteristics of methanol production feedstock are given in Table 12.

Table 12 – Characteristics of feed

Name of feedstock (semi-products)	GOST, OST, TU, grade	Unit of measurement	Flowrate	Name of products obtained from used feedstock
1	2	3	4	5
1. Critical feedstock				
1.1 Natural gas	GOST 5542-2014	thous. Nm ³ /year	432,016	Methanol

1.2 Demineralized water	In-plant standard	m ³ /year	970,114.32	
2. Auxiliary feedstock				
2.1 Aqueous ammonia	GOST 9-92	t/year	15.2	Methanol
2.2 Gaseous ammonia	GOST 6221-90	t/year	104.905	
2.3 LP nitrogen	GOST 9293-74	thous. Nm ³ /year	1,600	
2.4 Catalysts	Per the supplier's regulations	t/year	252.91	

7.2 Atmospheric impact of the designed facility

The main type of air basin impact is the atmospheric pollution with air pollutant emissions.

Characteristics of pollutant emission sources of the Metanol M-500 unit planned for deployment are determined in process design solutions of the justification of investments.

Gaseous emissions of the Unit are divided into:

- constant emissions caused by the normal process;
- periodic emissions caused by disturbances of process conditions (emergency emissions);
- periodic gaseous emissions during production start-ups and stoppages.

Flue gas generated from natural gas combustion in the steam reformer (Item H-201) passes through the DeNOX reactor (Item R-251) where it is stripped of nitrogen oxides, and then through a pipe it enters the atmosphere for dispersion (stationary source of air pollution No. 0871). According to the provided process design solutions, the efficiency of nitrogen oxide removal from emissions is up to 99%.

To ensure industrial safety during the operation of the designed methanol production in case of a disruption of process conditions, and during its start-ups and stoppages, a flare system is provided for the disposal of process gas discharges. During normal operation this system performs constant combustion of natural gas in pilot burners (stationary source of air pollution No. 0872).

It is possible for pollutants to emit into the atmosphere through openings of outdoor equipment (fugitive sources of emission). Pollutant-containing ventilation emissions from production rooms are released into the atmosphere through openings of indoor equipment (stationary sources of emission). These emissions will be determined at subsequent design stages.

The list of expected pollutant emission sources and names of pollutants released into the atmosphere by the Metanol M-500 unit planned for deployment are given in Table 13.

Table 13 – List of pollutants and expected atmospheric emissions from the designed unit

Emission source No. and name	Source operation time, h/year	Source parameters (height, diameter, GAM volume, GAM speed)	Pollutant name	Maximum single emission, (g/s)	Total emission, (t/year)
1	2	3	4	7	8
0871 H-201 reformer stack Structure 500/01	8000	H = 35 m Diameter = 3.0 m GAM volume = 77.99 m³/s GAM speed = 7.29 m/s Temperature = 140 °C	Nitrogen dioxide	2.4955	71.8704
			Nitrogen oxide	0.4055	11.6784
			Ammonia	0.2276	6.5549
			Sulphurous anhydride (sulphur dioxide)	0.02276	0.6555
			Carbon oxide	0.7799	22.4611
0872 Flare unit. Structure 500/10 1. FDuty burners	8000	H = 46.5 m Diameter = 0.4 m GAM volume = 0.052 m³/s GAM speed = 0.41 m/s Temperature = 1,200 °C	Nitrogen dioxide	0.00005	0.0014
			Nitrogen oxide	0.0255	0.7344
			Carbon oxide	0.00013	0.0037
2. Flaring of converted gas downstream of the waste-heat boiler (Item E-220)	Once per year for 10 h (at start- up)	H = 46.5 m Diameter = 0.4 m GAM volume = 221.39 m³/s Temperature = 1,200 °C	Nitrogen dioxide	0.1284	0.0046
			Nitrogen oxide	51.3667	1.8492
			Carbon oxide	0.1027	0.0037
3. Flaring of converted gas downstream of the waste-heat boiler (Item E-220)	Emerg ency dischar ge	H = 46.5 m Diameter = 0.4 m GAM volume = 221.39 m³/s Temperature = 1,200 °C	Nitrogen dioxide	0.1284	-
			Nitrogen oxide	51.3667	-
			Carbon oxide	0.1027	-
4. Flaring of the pressure-release valve discharge from the V-402 synthesis gas separator	Emerg ency dischar ge	H = 46.5 m Diameter = 0.4 m GAM volume = 8.6 m³/s GAM speed = 68.44 m/s Temperature = 1,200 °C	Nitrogen dioxide	0001	-
			Nitrogen oxide	4.0367	-
			Carbon oxide	0.001	-
Total:					115.8173

Total emission of the production complex will amount to 115.8173 t/year with the emission level authorized for the plant equalling 4,812.9175 t/year (according to the Permit No. 254 for the emission of harmful (polluting) substances into the atmosphere valid until 15.11.2021). Actual emissions of JSC Shchekinoazot in 2016 amounted to 1,870.368 t/year which is less than the authorized amount by 2,972.5495 t/year.

As of the time of the design development, JSC Shchekinoazot planned for the construction of new productions at the production site in Pervomaysky workers' settlement, Shchekino District, Tula Region, which will be commissioned until the project under review is executed. Characteristics of pollutant emission sources of designed productions are reflected in Table 14, and taken into account in the calculations of pollutant dispersion from the Metanol M-500 unit based on existing and potential emission sources. The list of designed productions and data of expert findings on the design documentation for their construction are given in Table 14.

Table 14 – List of designed productions and the design documentation expert review data

Seq. No.	Name of production (project)	Expert finding No.
1	Dimethyl ether production with a capacity of 20,000 t/year located at the address: Tula Region, Shchekino District, Pervomaysky workers' settlement, Simferopolskaya Ul., D. 17	No. 71-2-1-3-0054-16 dated 25.04.16.
2	Construction of the sulphuric acid production unit with a capacity of 200,000 t/year by JSC Shchekinoazot	No. 398-17/GGE-10711/02 dated 17.04.2017.
3	Ammonium sulphate compaction (granulation) unit located at the JSC Shchekinoazot production site at the address: Tula Region, Shchekino District, Pervomaysky workers' settlement, Simferopolskaya Ul., D. 19	77-2-1-3-0058-16 dated 04.05.2016.
4	Methanol production complex with a capacity of 450,000 t/year and ammonia production complex with a capacity of 135,000 t/year	1297-15/GGE-9979/02 dated 22.09.2015.
5	Industrial stormwater treatment facilities at the JSC Shchekinoazot premises with a capacity of 24,120 m ³ /year	77-2-1-3-0085-16 dated 17.05.2016.

According to the draft maximum permissible emission standards and the design documentation data on the construction of new production works, the plant emits pollutants similar to the emissions of the designed facility, which also have total chemical reactivity with these pollutants according to [17]. Similar emissions are the following pollutants:

- nitrogen dioxide;
- nitrogen oxide;
- ammonia;
- sulphurous anhydride (sulphur dioxide);

- carbon oxide;

Pollutants from the sources of atmospheric pollution of the plant form the following total reactivity groups:

- 6003 – ammonia, hydrogen sulphide;
- 6004 – ammonia, hydrogen sulphide, formaldehyde;
- 6005 – ammonia, formaldehyde;
- 6006 – nitrogen dioxide and oxide, fuel oil ash, sulphur dioxide;
- 6007 – nitrogen dioxide, hexane, carbon oxide, formaldehyde;
- 6010 – nitrogen dioxide, sulphur dioxide, carbon oxide, phenol;
- 6034 – lead oxide, sulphur dioxide;
- 6038 – sulphur dioxide, formaldehyde;
- 6040 – sulphur dioxide and sulphur trioxide, ammonia and nitrogen oxides;
- 6041 – sulphur dioxide, sulphuric acid;
- 6043 – sulphur dioxide, hydrogen sulphide;
- 6046 – carbon oxide and cement production dust;
- 6204 – nitrogen dioxide, sulphur dioxide;
- 6205 – sulphur dioxide, hydrogen fluoride.

Parameters of pollutant emissions similar to the designed ones and having a combined impact effect are accepted according to the effective draft standards of maximum permissible emissions of JSC Shchekinoazot [9] and data of the design documentation of the future construction [26, 27, 28, 29, 30].

Parameters of sources of atmospheric pollutant emissions from the designed facility, active and constructed pollutant emission sources located at the JSC Shchekinoazot in Pervomaysky workers' settlement, Shchekino District, Tula Region, are given in Table 16 according to the requirement of [18].

The position of atmospheric pollution sources in relation to the Metanol M-500 unit planned for deployment is specified in Appendix H.

Lists of pollutants emitted into the atmosphere with the specification of maximum permissible concentrations, safe reference levels of impact in the atmospheric air of residential areas, hazard category, maximum single and total atmospheric emissions are given in Table 17.

Categorization of the JSC Shchekinozot plant on the impact of atmospheric pollutant emissions reviewed in this project is carried out automatically per the ECO Centr Unified Atmosphere Pollution Calculation Programme in accordance with [18] and is given in Table 18 for the Metanol M-500 unit planned for deployment based on pollutant emission sources present at the industrial site, and potential construction.

By the impact of reviewed atmospheric emissions, the plant and the Metanol M-500 unit planned for deployment belong to Category 3.

Measures on the reduction of atmospheric pollutant emissions have not been developed since they are not technologically feasible.

The list of noise impact sources of the designed products is given in Table 15.

Table 15 – List of noise sources of the designed production.

Equipment name	Number of workers/stand-bys	Acoustic power
Air cooler EA-403 1/1	1/1	85
Synthesis gas compressor K-431	1	85
Synthesis gas compressor steam turbine TK-431 1/2	1/1	102
Lubricant oil pump	1/1	85
Emergency lubricant oil pump	1	85
Flue gas blower (smoke exhaustor) K-201	1	85
Air blower K-202	1	85
Nitrogen circulation pump K-292	1	85
Process condensate pump P-201 A/B	1/1	85
Crude methanol pump P-451 A/B	1/1	94
Air cooler EA-403 1/1	1/1	85
Stabilized methanol pump P-452 A/B	1/1	85
Stabilization column reflux liquid pump P-453 A/B	1/1	85
Low-pressure column reflux liquid pump P-454 A/B	1/1	85
Medium-pressure column feed pump P-455 A/B	1/1	85
Medium-pressure column reflux liquid pump	1/1	99
Medium-pressure column circulation pump P-457 A/B	1/1	67
Liquid side-cut pump P-459 A/B	1/1	67
Residue pump P-460 A/B	1/1	99
Condensate pump for V-461	1/1	80
Low-pressure column end product pump	1/1	100
Boiler feed water pump P-701 A/B	1/1	110
Condensate pump TK-431	1/1	94
Alkali solution dosing unit X-452:		
– dosing alkali pump;	1	85
– dosing alkali tank mixer.	1	85
Phosphate solution dosing unit X-711:		
– dosing phosphate tank mixer;	1	85

– dosing phosphate solution pump;	1/1	85
– dosing phosphate solution pump.	1/1	85
Ammonia solution dosing unit X-712:		
– dosing amine tank mixer;	1	85
Air cooler EA-403 1/1	1/1	85
– dosing amine solution pump.	1/1	85
Hydrazine hydrate dosing unit X-713:		
– dosing hydrazine hydrate mixer;	1	85
– dosing hydrazine hydrate pump.	1/1	85
Rectificate methanol pumps P-473 A/B	1/1	101
Semi-submersible pump for V-471 P-47	1	101
Semi-submersible pump for V-471 P-472	1	101
Flare unit X-641	1	119
Instrumentation air compressor K-501 1/2	1/1	75
High-pressure instrumentation air compressor K-502	1	109
High-pressure nitrogen compression station	2/1	109
Hot water pumps P-511 A/B	1/1	85
Solution supply pumps P-521 A/B	1/1	94
Flushing pumps P-522 A/B	1/1	101
Steam condensate pumps P	1/1	80
Steam condensate air coolers EA-531	Air cooler unit (12 pcs per unit)	85
Fresh oil pump P-601 A/B	1/1	85
Spent oil pump P-602 A/B	1/1	85
WCC X-901:		
– cold water pump;	1/1	107
– cold water pump;	1	107
Air cooler EA-403 1/1	1/1	85
– cooling tower fan.	7	101
Lubricant oil pump (conversion of structure 500/01)	2/1	85
Lubricant oil pump for P-701 (potable water pump room, structure 500/09.2)	1/1	85
Submersible chemically contaminated effluent pump P-801/1-4	2/2	102
Total acoustic power level, dBA		121

Table 16 – Parameters of pollutant emissions for atmospheric pollution calculations based on the construction of the Metanol M-500 unit

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X₁	Y₁	X₂	Y₂				Code	description	g/s	mg/m³	t/year	maximum purification rate, %		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Facility: 1. JSC Shchekinoazot																												
Site: 1. JSC Shchekinoazot																												
Shop: 1. Cyclohexanone production																												
1. Building 365 (cyclohexanone section)	Industrial warehouse pumps	1	8760	BC-1/1,2 (from the industrial warehouse pump room), bldg. 365	1	0054	-	6	0.4	14.8	1.86	22	1576.7	757.7	-	-	-	-	-	-	0408	Cyclohexane	0.2862	166.287	9.025603	9.025603		
																			-	-	1077	Cyclohexanol	0.00324	1.882	0.102177	0.102177		
																			-	-	1411	Cyclohexanone	0.038358	22.287	1.20909	1.20909		
	Industrial warehouse pumps	1	8760	BC-2/1,2 (from the industrial warehouse pump room), bldg. 365	1	0055	-	6	0.4	14.2	1.784	22	1576.9	791.1	-	-	-	-	-	-	0408	Cyclohexane	0.10057	60.902	3.143508	3.143508		
																			-	-	1077	Cyclohexanol	0.001602	0.97	0.044907	0.044907		
																			-	-	1411	Cyclohexanone	0.009078	5.497	0.286284	0.286284		
	Pumps	1	8760	BC-3 (from the pump room), bldg. 365	1	0056	-	6	0.5	11.1	2.179	22	1531.6	786.9	-	-	-	-	-	-	0408	Cyclohexane	0.04	19.832	1.255133	1.255133		
																			-	-	1077	Cyclohexanol	0.001	0.496	0.031536	0.031536		
																			-	-	1411	Cyclohexanone	0.004	1.983	0.126144	0.126144		
	Exhaust ventilation from the administration building	1	8760	BC-4 (from the administration unit), bldg. 365	1	0057	-	6	0.4	18.9	2.375	22	1532.1	769	-	-	-	-	-	-	0408	Cyclohexane	0.05773	26.266	1.81332	1.81332		
																			-	-	1077	Cyclohexanol	0.00138	0.628	0.04352	0.04352		
																			-	-	1411	Cyclohexanone	0.00736	3.349	0.224852	0.224852		
	Rectificate cyclohexanol tank hydraulic seal 5.8	1	8760	Pipe (tank hydraulic seal 5.8), bldg. 365	2	0060	-	6	0.13	0.2	0.00265	20	1535.51	774.8	-	-	-	-	-	-	0408	Cyclohexane	0.03699	7477.436	1.166517	1.166517		
																			-	-	1077	Cyclohexanol	0.0000098	1.965	0.000298	0.000298		
																			-	-	1411	Cyclohexanone	0.0000333	6.713	0.001039	0.001039		
	Absorber from tanks 3, 6, 9, 20 (tanks and org. beds and cyclohexane)	1	8760	Pipe (absorber from tanks 3, 6, 9, 20), bldg. 365	4	0061	-	6	0.2	0.2	0.00628	20	1529.9	780.1	-	-	-	-	Absorber, Reg. No. 1596	100	96.83	0408	Cyclohexane	0.242723	10365.16	7.654481	7.654481	
																			100	96.1	1077	Cyclohexanol	0.000203	8.669	0.006417	0.006417		
																			100	99.9	1411	Cyclohexanone	0.006727	287.268	0.212107	0.212107		
	Hydraulic seal of tanks 10-17	1	8760	Pipe (hydraulic seal of tanks 10-17), bldg. 365	7	0062	-	6	0.13	0.3	0.00398	20	1540.34	774.61	-	-	-	-	-	-	0408	Cyclohexane	0.060894	2344.68	1.920353	1.920353		
																			-	-	1077	Cyclohexanol	0.0000144	0.551	0.000439	0.000439		
																			-	-	1411	Cyclohexanone	0.007164	275.845	0.002247	0.002247		
	2. Building 358 (cyclohexanone section)	Pumps	1	8760	BC-1 (from the fractionation pump room), bldg. 358	1	0063	-	20	0.8	8.6	4.323	22	1688.8	786.91	-	-	-	-	-	-	0408	Cyclohexane	0.17808	44.515	5.589441	5.589441	
																				-	-	1077	Cyclohexanol	0.01302	3.255	0.397354	0.397354	
																				-	-	1411	Cyclohexanone	0.0168	4.2	0.529805	0.529805	
Pumps		1	8760	BC-2 (from the fractionation pump room), bldg. 358	1	0064	-	20	0.8	8.4	4.222	22	1704.2	787.7	-	-	-	-	-	-	0408	Cyclohexane	0.168	42.995	5.298048	5.298048		
																			-	-	1077	Cyclohexanol	0.0112	2.866	0.353203	0.353203		
																			-	-	1411	Cyclohexanone	0.016	4.095	0.491962	0.491962		
3. Building 358 (cyclohexanone section)	Exhaust ventilation from the fractionation section, elev. 6.0	1	8760	BC-3 (from the fractionation section, elev. 6.0), bldg. 358	1	0065	-	20	0.8	7.5	3.77	22	1674.8	770.7	-	-	-	-	-	-	0408	Cyclohexane	0.13468	38.604	4.2356	4.2356		
																			-	-	1077	Cyclohexanol	0.00518	1.485	0.151688	0.151688		
																			-	-	1411	Cyclohexanone	0.01517	4.348	0.466733	0.466733		
	Exhaust ventilation from the fractionation section, elev. 6.0	1	8760	BC-4 (from the fractionation section, elev. 6.0), bldg. 358	1	0066	-	20	0.8	7.4	3.72	22	1685	770.2	-	-	-	-	-	-	0408	Cyclohexane	0.10416	30.259	3.28479	3.28479		
																			-	-	1077	Cyclohexanol	0.005208	1.513	0.152508	0.152508		
																			-	-	1411	Cyclohexanone	0.010788	3.134	0.328479	0.328479		
2. Building 358 (cyclohexanone section)	Exhaust ventilation from the dehydration room	1	8760	BC-5 (from the dehydration room), bldg. 358	1	0070	-	20	0.6	16.2	4.58	22	1730	798	-	-	-	-	-	-	0408	Cyclohexane	0.035266	8.32	1.097705	1.097705		
																			-	-	1411	Cyclohexanone	0.010076	2.377	0.303313	0.303313		

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
num-ber	descript-ion	description	q-ty, pcs	num-ber of working hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
					355																							
		E-30 tank for gland drainages of the pumps, Items 115/1-4	1	8760	Pipe (from the drainage tank E-30), bldg. 355	1	0026	-	11	0.1	0.102	0.0008	19.7	1652.6	506.4	-	-	-	-	-	-	0408	Cyclohexane	0.0065608	8789.27	0.2069	0.2069	-
																				-	-	0602	Benzene	0.000064	85.739	0.00201	0.00201	
7. Building 384 (cyclohexane and compression section)	Pump glands, Items 4/1,2 and Items 7/1,2	4	8760	BC-1 (from pump glands, Items 4/1,2 and Items 7/1,2), bldg. 384	1	0028	-	6	0.3	9.479	0.67	19.7	1692.37	447.24	-	-	-	-	-	-	0408	Cyclohexane	0.006968	11.15	0.21763	0.21763	-	
																			-	-	0602	Benzene	0.001742	2.787	0.054936	0.054936		
																			-	-	0902	Trichloroethylene	0.002211	3.538	0.069727	0.069727		
																			-	-	1077	Cyclohexanol	0.002613	4.181	0.082404	0.082404		
																			-	-	1411	Cyclohexanone	0.000871	1.394	0.027468	0.027468		
																			-	-	1412	Cyclohexanone oxime	0.000335	0.536	0.010565	0.010565		
	Pump glands, Items 6/1,2 and Items 8/1,2,3	5	8760	BC-2 (from pump glands, Items 6/1,2 and Items 8/1,2,3), bldg. 384	1	0029	-	5	0.3	7.781	0.55	19.7	1690.9	429.1	-	-	-	-	-	-	0408	Cyclohexane	0.00748	14.581	0.23415	0.23415	-	
																			-	-	0602	Benzene	0.002145	4.181	0.067645	0.067645		
																			-	-	0902	Trichloroethylene	0.002695	5.254	0.08499	0.08499		
																			-	-	1077	Cyclohexanol	0.0011	2.144	0.03469	0.03469		
																			-	-	1411	Cyclohexanone	0.00044	0.858	0.013876	0.013876		
																			-	-	1412	Cyclohexanone oxime	0.000605	1.179	0.01908	0.01908		
	Hydraulic seal (Item 505) from the tanks, Items 2,3,5,501/1-2,4/1-2,7/1-2	1	8760	Pipe (of the hydraulic seal, Item 505), bldg. 384	1	0030	-	5	0.13	0.625	0.0083	19.7	1682	419.8	-	-	-	-	-	-	0408	Cyclohexane	0.5579509	72110.66	7.03834	7.03834	-	
																			-	-	0602	Benzene	0.0156953	2028.491	0.49497	0.49497		
																			-	-	0902	Trichloroethylene	0.003462	447.436	0.010915	0.010915		
																			-	-	1077	Cyclohexanol	0.000391	50.534	0.012329	0.012329		
																			-	-	1411	Cyclohexanone	0.000259	33.474	0.008167	0.008167		
																			-	-	1412	Cyclohexanone oxime	0.0003652	47.199	0.011517	0.011517		
8. Building 372a (cyclohexane and compression section)	Pumps	1	8760	BC-1 (from adiabatic and mixed effluent pump glands), bldg. 372a	1	0031	-	5.5	0.4	8.037	1.01	19.7	1643.81	431.6	-	-	-	-	-	-	0408	Cyclohexane	0.007676	8.149	0.23889	0.23889	-	
																			-	-	0602	Benzene	0.00101	1.072	0.031852	0.031852		
																			-	-	0902	Trichloroethylene	0.003434	3.645	0.108295	0.108295		
																			-	-	1077	Cyclohexanol	0.000505	0.536	0.015926	0.015926		
																			-	-	1411	Cyclohexanone	0.002121	2.252	0.066888	0.066888		
																			-	-	1412	Cyclohexanone oxime	0.000909	0.965	0.028667	0.028667		
9. Building 353 (cyclohexane and compression section)	Compressors 2/4-9	6	8760	BC-1a (from the ammonia compressors, Item 2/4-9), bldg. 353	1	0032	-	10	0.65	5.244	1.74	19.7	1625.4	643.2	-	-	-	-	-	-	0303	Ammonia	0.07106	43.783	2.23559	2.23559	-	
	Compressors 2/10-14	5	8760	BC-2a (from the ammonia compressors, Item 2/10-14), bldg. 353	1	0033	-	10	0.65	5.244	1.74	19.7	1721.9	649.9	-	-	-	-	-	-	0303	Ammonia	0.0348	21.442	1.09745	1.09745	-	
	Compressors 2/4-9	6	8760	BC-1 (from tunnels of the compressors, Items 2/4-9), bldg. 353	1	0034	-	10	0.9	7.074	4.5	19.7	1626.11	650.1	-	-	-	-	-	-	0303	Ammonia	0.027	6.433	0.83728	0.83728	-	
	Compressors 2/10-14	5	8760	BC-2 (from tunnels of the compressors, Items 2/10-14), bldg. 353	1	0035	-	10	0.9	7.074	4.5	19.7	1722.2	644.4	-	-	-	-	-	-	0303	Ammonia	0.0225	5.36	0.069537	0.069537	-	
10. Platform near building 384b	Cyclone furnace No. 1, 2	1	8760	Pipe (cyclone furnace No. 1, 2)	1	0036	-	40	1.6	4.143	8.33	270	1711.31	454.15	-	-	-	-	-	-	0155	Disodium carbonate	0.33781	80.661	10.627	10.627	-	
																			-	-	0301	Nitrogen dioxide	0.5695693	136	17.96194	17.96194		

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
(cyclohexane and compression section)																				-	-	0303	Ammonia	0.1675204	40	5.282923	5.282923	
																				-	-	0330	Sulphur dioxide	0.3154	75.31	0.96847	0.96847	
																				-	-	0337	Carbon oxide	3.3504072	800	105.6584	105.6584	
																				-	-	0304	Nitrogen oxide	0.092555	22.1	2.918814	2.918814	
11. Building 353a: repair bay (cyclohexane and compression section)	Welding station	1	350	BC-1 (from the repair section), bldg. 353a	1	0041	-	4	0.3	15	1.06	18	1755	534	-	-	-	-	-	-	0123	Diiron trioxide	0.0160467	16.132	0.007897	0.007897	-	
																			-	-	0143	Manganese and its compounds	0.0001756	0.177	0.000142	0.000142		
																			-	-	0203	Chromium	0.0000368	0.037	0.0000066	0.0000066		
																			-	-	0301	Nitrogen dioxide	0.0120133	12.077	0.005673	0.005673		
																			-	-	0304	Nitrogen oxide	0.0019522	1.963	0.000922	0.000922		
																			-	-	0337	Carbon oxide	0.0160067	16.092	0.008084	0.008084		
																			-	-	0342	Gaseous fluorine compounds	0.000229	0.23	0.000094	0.000094		
																			-	-	0344	Low soluble fluorides	0.0003117	0.313	0.000056	0.000056		
	Sharpener	1	400															-	-	2908	Inorganic dust: 20-70% SiO2	0.0001322	0.133	0.000024	0.000024			
																		-	-	2930	Abrasive dust	0.0026	2.614	0.001123	0.001123			
12. Building 360 (cyclohexane and compression section)	Benzene melter	1	1200	BC5/81,2 (from the benzeme melter), Item 360	1	0116	-	11.5	0.9	11.949	7.602	19.7	1730.6	349.6	-	-	-	-	-	-	0408	Cyclohexane	0.01216	1.715	0.049248	0.049248	-	
																			-	-	0602	Benzene	0.00456	0.643	0.016416	0.016416		
	Benzene melter of the pumps, Items 300/4,5	2	1200	BC-6/1,2 (from the benzene melter of the pumps Items 300/4,5), bldg. 360	1	0117	-	11.5	0.9	10.705	6.81	19.7	1739.99	349.5	-	-	-	-	-	-	0408	Cyclohexane	0.023835	3.752	0.100026	0.100026	-	
																			-	-	0602	Benzene	0.004086	0.643	0.017652	0.017652		
																			-	-	0902	Trichloroethylene	0.001362	0.214	0.005885	0.005885		
10. Platform near building 384b (cyclohexane and compression section)	Cyclone furnace No. 3	1	8760	Pipe (cyclone furnace No. 3)	1	0344	-	40	2.2	5.13	19.501	350	1720.4	453.2	-	-	-	-	-	-	0301	Nitrogen dioxide	1.2305230	144	38.80577	38.80577	-	
																			-	-	0303	Ammonia	0.3418120	40	10.77938	10.77938		
																			-	-	0330	Sulphur dioxide	0.09165	10.725	2.82878	2.82878		
																			-	-	0337	Carbon oxide	8.5452980	1000	269.4845	269.4845		
																			-	-	0304	Nitrogen oxide	0.19996	23.4	6.305939	6.305939		
	Cyclone furnace No. 4	1	8760	Pipe (cyclone furnace No. 4)	1	0345	-	40	2.2	5.13	19.501	350	1729.3	452.5	-	-	-	-	-	-	0301	Nitrogen dioxide	1.2305230	144	38.80577	38.80577	-	
																			-	-	0303	Ammonia	0.3418120	40	10.77938	10.77938		
																			-	-	0330	Sulphur dioxide	0.0819	9.584	2.5213	2.5213		
																			-	-	0337	Carbon oxide	8.5452980	1000	269.4845	269.4845		
																			-	-	0304	Nitrogen oxide	0.19996	23.4	6.305939	6.305939		
6. Building 355 (cyclohexane and compression section)	Exhaust ventilation from the compressor room B-112	2	8760	BC-18/1,2 from the compressor room Item B-112), bldg. 355	1	0346	-	10	0.35	4.158	0.4	19.7	1678.51	507.25	-	-	-	-	-	-	0408	Cyclohexane	0.01596	42.774	0.50205	0.50205	-	
																			-	-	0602	Benzene	0.00068	1.822	0.02018	0.02018		
13. Platform near building 355g (cyclohexane and compression section)	Drainage tank E-17 for the dehydration units 1, 2, 3	3	8760	Pipe (drainage tank E-17)	1	0347	-	3.5	0.08	1.651	0.0083	19.7	1625.1	483	-	-	-	-	-	-	0408	Cyclohexane	0.0011205	144.762	0.03534	0.03534	-	
																			-	-	0602	Benzene	0.0007446	96.198	0.02345	0.02345		
14. Building 421 (cyclohexane and compression section)	Pumps, Items 360/1,2, 361/1,2	4	8760	BC-3, BC-4 (from the pump room, Items 360/1,2 and 3618/1,2), bldg. 421	1	0348	-	25	0.6	11.318	3.2	19.7	1815	114	-	-	-	-	-	-	0408	Cyclohexane	0.03776	12.651	1.18071	1.18071	-	
																			-	-	0602	Benzene	0.03104	10.4	0.96879	0.96879		

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
12. Building 360 (cyclohexane and compression section)	Exhaust ventilation from necks of tankers, pumps (Items 300/1,2,3,5)	8	1200	BC-11, BC-12, BC-13 (from necks 300,300/1,2,3,5), bldg. 360	1	0350	-	25	0.5	81.487	16	19.7	1728	356.6	-	-	-	-	-	-	0408	Cyclohexane	0.00128	0.086	0.004839	0.004839	-	
																			-	-	0602	Benzene	0.5968	39.992	2.578176	2.578176		
																			-	-	0902	Trichloroethylene	0.16	10.722	0.6912	0.6912		
15. Platform near building 421 (cyclohexane and compression section)	Hydraulic seal (Item 365) for benzene loading	1	8760	Pipe (hydraulic seal, Item 365)	1	0374	-	6	0.1	7	0.055	19.7	1877.5	114.1	-	-	-	-	-	-	0408	Cyclohexane	0.001155	22.523	0.03642	0.03642	-	
																			-	-	0602	Benzene	0.0017325	33.785	0.05446	0.05446		
16. Building 362 (cyclohexane and compression section)	Cyclohexane loading into railroad tankers	1	1200	Neck (tanker loading)	1	6186	-	4	-	-	-	-	-	1495.5	335.6	1496	336.1	0.5	-	-	-	0408	Cyclohexane	1.836	-	0.5841	0.5841	-
10. Platform near building 384b (cyclohexane and compression section)	Cyclone furnace No. 5	1	8760	Pipe (cyclone furnace No. 5)	1	0919	-	40	1.6	9.699	19.501	350	1702.33	455.08	-	-	-	-	-	-	0301	Nitrogen dioxide	1.2305348	144	38.80615	38.80615	-	
																			-	-	0303	Ammonia	0.3418153	40	10.77949	10.77949		
																			-	-	0330	Sulphur dioxide	0.078	9.128	2.45981	2.45981		
																			-	-	0337	Carbon oxide	8.5453806	1000	269.4871	269.4871		
																			-	-	0304	Nitrogen oxide	0.1999620	23.4	6.306002	6.306002		
6. Building 355 (cyclohexane and compression section)	Blowdown tank E-12	1	8760	Pipe (blowdown tank E-12), bldg. 355	1	0920	-	2	0.2	0.02827	0.00089	19.7	1665	506	-	-	-	-	-	-	0408	Cyclohexane	0.0452897	54674.38	1.42824	1.42824	-	
																			-	-	0602	Benzene	0.000474	572.22	0.01493	0.01493		
17. Building 352 (cyclohexane and compression section)	Pumps, Items 189/1, 221/1-2, 224/1-2, 227 with elev. 0.0	6	8760	BC-1 (from the pumps Items 189/1, 221/1-2, 224/1-2, 227 with elev. 0.0), bldg. 352	1	0001	-	27	0.6	7.675	2.17	18	1371.97	624.2	-	-	-	-	-	-	0408	Cyclohexane	0.2835	139.256	0.894046	0.894046	-	
																			-	-	1077	Cyclohexanol	0.00294	1.444	0.079471	0.079471		
																			-	-	1411	Cyclohexanone	0.00294	1.444	0.086093	0.086093		
	Pumps, Items 105/1-2, 104/4-5, 125/1-2 with elev. 0.0	6	8760	BC-2 (from the pumps Items 105/1,2, 104/4-5, 125/1-2 with elev. 0.0), bldg. 352	1	0002	-	27	0.6	9.196	2.6	18.2	1435.93	624.16	-	-	-	-	-	-	0408	Cyclohexane	0.08398	34.452	2.640194	2.640194	-	
																			-	-	1077	Cyclohexanol	0.0065	2.667	0.016399	0.016399		
																			-	-	1411	Cyclohexanone	0.00026	0.107	0.008199	0.008199		
	Pumps (Items 152/1-2) and from the exhaust ventilation from the reactor section production room with elev. 0.0	1	8760	BC-3 (from the pumps (Items 152/1-2) and from the reactor section production room with elev. 0.0.), bldg. 352	1	0004	-	27	0.6	13.369	3.78	18.2	1374.09	624.3	-	-	-	-	-	-	0408	Cyclohexane	0.02516	7.1	0.78177	0.78177	-	
																			-	-	1077	Cyclohexanol	0.00259	0.731	0.07011	0.07011		
																			-	-	1411	Cyclohexanone	0.00185	0.522	0.046673	0.046673		
	Exhaust ventilation from the pumps from sample cabinets and from the reactor section room with elev. 0.0	1	8760	BC-4 (from sample cabinets and from the reactor section production room with elev. 0.0), bldg. 52	1	0005	-	27	0.7	9.874	3.8	18.1	1434.38	624.07	-	-	-	-	-	-	0408	Cyclohexane	0.03838	10.77	1.200765	1.200765	-	
																			-	-	1077	Cyclohexanol	0.001596	0.448	0.047935	0.047935		
																			-	-	1411	Cyclohexanone	0.000722	0.203	0.021571	0.021571		
	Exhaust ventilation from the reactor section production room with	1	8760	BC-5 (from the reactor section production room	1	0006	-	27	0.7	9095	3500.17	18.1	1375.85	624.48	-	-	-	-	-	-	0408	Cyclohexane	0.0826	0.025	2.593836	2.593836	-	
																			-	-	1077	Cyclohexanol	0.003535	0.00108	0.110008	0.110008		
																			-	-	1411	Cyclohexanone	0.001785	0.00054	0.055556	0.055556		

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
		elev. 6.0			with elev. 6.0), bldg. 352																							
	Exhaust ventilation from the reactor section production room with elev. 6.0	1	8760	BC-6 (from the reactor section production room with elev. 6.0), bldg. 352	1	0007	-	27	0.7	9.224	3.55	18.2	1432.53	624.08	-	-	-	-	-	-	0408	Cyclohexane	0.092655	27.841	2.910773	2.910773	-	
																			-	-	1077	Cyclohexanol	0.0014555	0.437	0.044781	0.044781		
																			-	-	1411	Cyclohexanone	0.002556	0.768	0.079486	0.079486		
	Exhaust ventilation from the pumps 192/1-2 and from the reactor section room, elev. 0.0	1	8760	BC-7 (from the pumps (Items 192/1-2) and from the reactor section production room, elev. 0.0), bldg. 352	1	0008	-	27	0.7	8.705	3.35	18	1377.52	624.61	-	-	-	-	-	-	0408	Cyclohexane	0.09581	30.485	3.0109	3.0109	-	
																			-	-	1077	Cyclohexanol	0.00201	0.64	0.052823	0.052823		
	Exhaust ventilation from the reactor section production room with elev. 6.0	1	8760	BC-8 (from the reactor section production room, elev. 6.0), bldg. 52	1	0009	-	27	0.7	8.575	3.3	18.1	1430.69	624.09	-	-	-	-	-	-	0408	Cyclohexane	0.05313	17.167	1.665101	1.665101	-	
																			-	-	1077	Cyclohexanol	0.001353	0.437	0.041628	0.041628		
																			-	-	1411	Cyclohexanone	0.001716	0.554	0.052728	0.052728		
	Exhaust ventilation from the mixer (Item 201/4) and the production room, elev. 12.0	1	8760	BC-9 (from the mixer (Item 201/4) and from the production room, elev. 12.0), bldg. 352	1	0010	-	27	0.7	9.354	3.6	18	1379.55	624.67	-	-	-	-	-	-	0408	Cyclohexane	0.3528	104.466	1.11259	1.11259	-	
																			-	-	1077	Cyclohexanol	0.00216	0.64	0.056765	0.056765		
																			-	-	1411	Cyclohexanone	0.00036	0.107	0.011353	0.011353		
	Exhaust ventilation from gas analyzers, elev. 9.0	1	8760	BC-13 (from gas analyzers, elev. 9.0), bldg. 352	1	0012	-	27	0.2	0.541	0.017	18	1410.3	600.1	-	-	-	-	-	-	0408	Cyclohexane	0.0008177	51.271	0.025733	0.025733	-	
																			-	-	1077	Cyclohexanol	0.0008177	51.271	0.025733	0.025733		
																			-	-	1411	Cyclohexanone	0.000017	1.066	0.000536	0.000536		
	Hydraulic seal (Item 234) from the catalytic reformer 213	1	8760	Pipe (hydraulic seal (Item 235) from the catalytic reformer 213), bldg. 352	1	0016	-	29	0.05	0.0509	0.0001	18.1	1390.22	624.67	-	-	-	-	-	-	0408	Cyclohexane	0.00157	16750.65	0.049512	0.049512	-	
																			-	-	1077	Cyclohexanol	0.0000009	9.602	0.000026	0.000026		
																			-	-	1411	Cyclohexanone	0.0000151	161.105	0.000475	0.000475		
	Absorption columns 136, 136A	2	200	Pipe (absorption columns 136, 136A), bldg. 352	1	0018	-	29	0.2	8.849	0.278	18.3	1387.37	600.67	-	-	-	Absorption columns KA-136, KA-136A, Reg. No. 1749	100	99.8	0337	Carbon oxide	0.0196268	75.333	0.014112	0.014112	-	
																			100	99.9	0408	Cyclohexane	0.0000278	0.107	0.000021	0.000021		
																			100	99.8	1077	Cyclohexanol	0.0006394	2.454	0.000441	0.000441		
																			100	99.8	1411	Cyclohexanone	0.0010286	3.948	0.000721	0.000721		
	Absorption columns 127, 130	2	200	Pipe (absorption columns 127, 130), bldg. 352	1	0019	-	29	0.5	15.584	3.06	18.4	1399.59	600.96	-	-	-	Absorption column KA-127, KA-130, Reg. No. 1748	100	99.8	0337	Carbon oxide	0.179622	62.658	0.129108	0.129108	-	
																			100	99.8	0408	Cyclohexane	0.004284	1.494	0.002865	0.002865		
																			100	99.8	1077	Cyclohexanol	0.00306	1.067	0.000813	0.000813		
																			100	99.8	1411	Cyclohexanone	0.00153	0.534	0.0386	0.0386		
	Drainage pumps E-232	5	8760	Pipe (from drainage pumps E-232) of build. 352	1	0343	-	6	0.08	0.00398	0.00002	18.4	1401.31	624.73	-	-	-	-	-	-	0408	Cyclohexane	0.0024	128051.7	0.075686	0.075686	-	
																			-	-	1077	Cyclohexanol	0.000002	106.71	0.000061	0.000061		
																			-	-	1411	Cyclohexanone	0.0000097	517.542	0.000303	0.000303		
18. Platform near building 352 (cyclohexane and compression)	Catalytic treatment unit	1	8760	Pipe (catalytic treatment unit)	1	0500	-	20	0.8	7.182	3.61	448	1291.43	637.5	-	-	-	Catalytic treatment unit P-2601, Reg. No.	100	99.9	0337	Carbon oxide	0.5202493	380.6	16.40658	16.40658	-	
																			100	99.9	0408	Cyclohexane	0.037905	27.73	1.183988	1.183988		
																			100	99.9	1077	Cyclohexanol	0.026353	19.279	0.819684	0.819684		
																			100	99.9	1411	Cyclohexanone	0.03971	29.051	1.252295	1.252295		

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
section)																			1747									
19. Building 352-C (cyclohexane and compression section)	Pumps	1	8760	BC-1 (from the pump room), bldg. 352C	1	0841	-	27	0.4	11.937	1.5	18.1	1499.64	606.65	-	-	-	-		-	-	0408	Cyclohexane	0.07485	53.207	2.355739	2.355739	-
																				-	-	1077	Cyclohexanol	0.0015	1.066	0.047304	0.047304	
																				-	-	1411	Cyclohexanone	0.00105	0.746	0.028382	0.028382	
18. Platform near building 352 (cyclohexane and compression section)	Flare unit X-1	1	8760	Flare unit X-1	1	0842	-	60	0.5	1.5	0.2945	150	1380.21	641.44	-	-	-	-		-	-	0301	Nitrogen dioxide	0.0017143	9.019	0.054062	0.054062	Stoppage and start-up
																				-	-	0304	Nitrogen oxide	0.0002786	1.466	0.008785	0.008785	
																				-	-	0337	Carbon oxide	0.0142857	75.155	0.450514	0.450514	
																				-	-	0410	Methane	0.0000358	0.188	0.011263	0.011263	
17. Building 352 (cyclohexane and compression section)	Exhaust ventilation from the reactor section production room with elev. 12.0	1	8760	BC-10 (from the reactor section production room with elev. 12.0), bldg. 352	1	0011	-	27	0.7	9.874	3.8	18.4	1428.54	624.08	-	-	-	-		-	-	0408	Cyclohexane	0.16112	45.258	5.069097	5.069097	-
																				-	-	1077	Cyclohexanol	0.00418	1.174	0.13182	0.13182	
																				-	-	1411	Cyclohexanone	0.0076	2.135	0.239674	0.239674	
20. Building 356 (cyclohexane and compression section)	Welding operations	1	100	BC-1 (welding station), bldg. 356	1	0924	-	6	0.3	1.03	0.0728	22	1400.37	563.52	-	-	-	-		-	-	0123	Diiron trioxide	0.0013128	19.484	0.000247	0.000247	-
																				-	-	0143	Manganese and its compounds	0.0001634	2.425	0.0000196	0.0000196	
																				-	-	0203	Chromium	0.0000369	0.548	0.000006	0.000006	
																				-	-	0301	Nitrogen dioxide	0.00051	7.569	0.0000276	0.0000276	
																				-	-	0304	Nitrogen oxide	0.0000829	1.23	0.0000045	0.0000045	
																				-	-	0337	Carbon oxide	0.0031403	46.608	0.00017	0.00017	
																				-	-	0342	Gaseous fluorine compounds	0.0002291	3.4	0.000053	0.000053	
																				-	-	0344	Low soluble fluorides	0.0000945	1.403	0.0000051	0.0000051	
																				-	-	2908	Inorganic dust: 20-70% SiO2	0.0000945	1.403	0.0000051	0.0000051	
(cyclohexane and compression section)	Analytical laboratory exhaust hood	1	8760	BC-11 (from exhaust hoods of the analytical laboratory), bldg. 340	1	0925	-	10	0.315	11.42	0.89	18.2	1578.35	645.68	-	-	-	-		-	-	0408	Cyclohexane	0.01335	16	0.421006	0.421006	-
																				-	-	1077	Cyclohexanol	0.00445	5.333	0.140335	0.140335	
																				-	-	1411	Cyclohexanone	0.005073	6.08	0.157175	0.157175	
	Finished product laboratory exhaust hoods	1	8760	BC-12 (from exhaust goods of the final product laboratory), bldg. 340	1	0926	-	10	0.25	18.131	0.89	18.2	1587.88	644.78	-	-	-	-		-	-	0408	Cyclohexane	0.003382	4.053	0.103845	0.103845	-
																				-	-	1077	Cyclohexanol	0.000979	1.173	0.028067	0.028067	
																				-	-	1411	Cyclohexanone	0.000534	0.64	0.014034	0.014034	
Shop: 2. Caprolactam production																												
4. Building 494 (hydroxylamine sulphate section)	Exhaust ventilation with elev. 0.0 (Stage 100)	1	8760	BC-1 (from the room, elev. 0.0), bldg. 494	1	0076	-	22	0.3	18.816	1.33	18.8	1431.61	778.54	-	-	-	-		-	-	0301	Nitrogen dioxide	0.2155328	173.215	6.809052	6.809052	-
																				-	-	0304	Nitrogen oxide	0.0350336	28.155	1.106321	1.106321	
																				-	-	0303	Ammonia	0.0330027	26.523	1.065791	1.065791	
	Exhaust ventilation, with elev. 6.0 (Stage 100)	1	8760	BC-2 (from the room, elev. 6.0), bldg. 494	1	0077	-	22	0.4	13.608	1.71	18.8	1441	778.2	-	-	-	-		-	-	0301	Nitrogen dioxide	0.007182	4.489	0.22649	0.22649	-
																				-	-	0303	Ammonia	0.000855	0.534	0.02696	0.02696	
	Exhaust ventilation with elev. 0.0 (Stage 100) from the cont. app. of gas blowers 120	1	8760	BC-21 (cont. app. of gas blowers 120, elev. 0.0), bldg. 494	1	0078	-	22	0.66	13.913	4.76	18.8	1444.69	750.5	-	-	-	-		-	-	0301	Nitrogen dioxide	0.033796	7.589	1.06579	1.06579	-
-																				-	0303	Ammonia	0.269892	60.605	8.51131	8.51131		
Exhaust ventilation with	1	8760	BC-3 (from the	1	0079	-	22	0.7	12.161	4.68	18.8	1325.8	738.3	-	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.024336	5.558	0.76746	0.76746	-

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note		
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		
		elev. 6.0 (Stage 300)			room, elev. 6.0), bldg. 494															-	-	0303	Ammonia	0.00468	1.069	0.14759	0.14759			
		Exhaust ventilation with elev. 6.0 (Stage 300)	1	8760	BC-4 (from the room, elev. 6.0), bldg. 494	1	0080	-	22	0.7	12.265	4.72	18.8	1403.6	713.9	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.01652	3.741	0.52097	0.52097	-	
		Exhaust ventilation with elev. 6.0 (Stage 300)	1	8760	BC-5 (from the room, elev. 6.0), bldg. 494	1	0081	-	22	0.7	11.901	4.58	18.8	1383.7	693.3	-	-	-	-	-	-	-	0303	Ammonia	0.003304	0.748	0.10419	0.10419		
																					-	-	0301	Nitrogen dioxide	0.025648	5.986	0.80884	0.80884		
		Exhaust ventilation with elev. 0.0 (Stage 300)	1	8760	BC-6 (from the room, elev. 6.0), bldg. 494	1	0082	-	22	0.7	11.901	4.58	18.8	1424.18	778.46	-	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.027022	6.306	0.85217	0.85217	-
																						-	-	0303	Ammonia	0.003206	0.748	0.1011	0.1011	
Exhaust ventilation from the gas blower 310 and pumps P-210 (Stage 300)	1	8760	BC-22 (from the gas blowers 310, pumps P-210), bldg. 494	1	0083	-	22	0.4	13.449	1.69	18.8	1198.2	650.01	-	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.00642	4.06	0.20785	0.20785	-		
3. Bld. 494 platform (hydroxylamine sulphate section)		Wastewater collector B-406 (Stage 400)	1	8760	Pipe (wastewater collector B-406)	1	0084	-	8	0.08	0.0398	0.0002	18.7	1561.89	525.5	-	-	-	-	-	-	0303	Ammonia	0.0000019	9.83	0.000058	0.000058	-		
4. Building 494 (hydroxylamine sulphate section)		Locksmith's workshop (sharpener)	1	254	Sharpener, bldg. 494	1	0085	-	2	0.5	1	0.1963	22	1578.8	526.4	-	-	-	-	-	-	-	-	0123	Diiron trioxide	0.0174	95.759	0.015911	0.015911	-
																						-	-	2930	Abrasive dust	0.0114	62.739	0.010425	0.010425	
3. Bld. 494 platform (hydroxylamine sulphate section)		Sulphuric acid collector B-220 (Stage 200)	1	8760	Pipe (sulphuric acid collector B-220)	1	0086	-	8	0.08	2.586	0.013	18.8	1546.8	532.8	-	-	-	-	-	-	0322	Sulphuric acid	0.0002327	19.133	0.00734	0.00734	-		
		Hydroxylamine sulphate tank B-330 (stage 300)	1	8760	Pipe (tank B-330)	1	0089	-	6	0.1	0.1146	0.0009	18.8	1537.9	532.3	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0000198	23.515	0.00062	0.00062	-		
		Scrubber A-131 from the wastewater collector B-131 (Stage 100)	1	8760	Pipe (scrubber A-181)	1	0091	-	8	0.08	2.487	0.0125	18.7	1465.17	535.69	-	-	-	Scrubber A-131, Reg. No. 1745	100	94.7	0301	Nitrogen dioxide	0.000001	0.085	0.000032	0.000032	-		
4. Building 494 (hydroxylamine sulphate section)		Drainage tank B-127 (Stage 100)	1	8760	Pipe (drainage tank B-127)	1	0092	-	12	0.05	0.2037	0.0004	18.7	1465.8	552.6	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0000832	222.246	0.00262	0.00262	-		
		Scrubber A-330 (Stage 300)	1	8760	Pipe (scrubber A-330), bldg. 494	1	0093	-	22	0.08	0.2387	0.0012	18.7	1478.4	535.5	-	-	-	Scrubber, Reg. No. 058	100	72	0301	Nitrogen dioxide	0.0008868	789.628	0.02797	0.02797	-		
		Tanks B-322A/B: sulphuric acid head tank (Stage 300)	1	8760	Pipe (tank B-322 A, B), bldg. 494	1	0096	-	22	0.05	0.509	0.001	18.7	1523.8	541.73	-	-	-	-	-	-	0322	Sulphuric acid	0.0000959	102.468	0.00302	0.00302	-		
		Tanks B-322C: sulphuric acid head tank (Stage 300)	1	8760	Pipe (tank B-322 C), bldg. 494	1	0098	-	22	0.05	0.509	0.001	18.8	1559.4	563.79	-	-	-	-	-	-	0322	Sulphuric acid	0.0000063	6.734	0.0002	0.0002	-		
		Circulation tank B-324 (stage 300)	1	8760	Pipe (circulation tank B-324), bldg. 494	1	0100	-	22	0.05	0.509	0.001	18.8	1538.2	563.8	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0000179	19.133	0.00056	0.00056	-		
		Flare unit A-340	1	8760	Pipe (flare A-340), bldg. 494	1	0266	-	24	0.1	11.937	0.0937	150	1498.4	535.9	-	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.6289142	10394.36	1.577952	1.577952	Stoppage and start-up
																						-	-	0304	Nitrogen oxide	0.1021986	1689.085	0.256417	0.256417	
																						-	-	0337	Carbon oxide	5.2409514	86619.69	13.1496	13.1496	
-	-	0410	Methane	0.1310238																		2165.492	0.32874	0.32874						
5. Building 367		BC Exhaust ventilation	1	8760	BC-11 (from the	1	0321	-	22	0.4	19.099	2.4	18.8	1257.5	508.7	-	-	-	-	-	-	0322	Sulphuric acid	0.000936	0.417	0.02952	0.02952	-		

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
(hydroxylamine sulphate section)		from the pump room, bldg. 367			pump room), bldg. 367																							
4. Building 494 (hydroxylamine sulphate section)	Exhaust ventilation from the room (Stage 400)	1	8760	BC-8 (from the room, St. 400), bldg. 494	1	0355	-	22	0.6	14.501	4.1	18.8	1495.5	560.9	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.01025	2.672	0.32324	0.32324	-
	Exhaust ventilation from the acid room (Stage 400)	1	8760	BC-10 (from the acid room), bldg. 494	1	0356	-	22	0.4	5.889	0.74	18.8	1498.2	561.1	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.001924	2.779	0.06068	0.06068	-
	Dosage B-410, 415 tanks B-410-415 (Stage 400)	1	8760	Pipe (dosage meter B-410, 415), bldg. 494	2	0357	-	22	0.08	0.0398	0.0002	18.8	1521.21	563.4	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0000016	4.115	0.000049	0.000049	-
	Gas blower B-401, collector B-402 (Stage 400)	1	8760	Pipe (gas blower B-401, dosage meter B-402), bldg. 494	2	0358	-	22	0.15	10.186	0.18	18.8	1526.5	563.8	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.001296	3.848	0.04087	0.04087	-
	Coll. catalyst B-313 (Stage 300)	1	8760	Pipe (coll. catalyst B-313), bldg. 494	1	0360	-	22	0.05	0.1019	0.0002	18.7	1539.7	552.7	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0000066	34.94	0.00021	0.00021	-
3. Bld. 494 platform (hydroxylamine sulphate section)		Drainage tank E-1	1	8760	Pipe (drainage tank E-1)	1	0361	-	6	0.05	0.1019	0.0002	18.7	1460.9	516.4	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0000006	2.992	0.000018	0.000018	-
1. Platform near bldg. 344 (hydroxylamine sulphate section)		Tank E-2-55 scrubber	1	8760	Pipe (tank E-2-5 scrubber)	4	0362	-	12	0.08	3.979	0.02	18.8	1565.8	490.9	-	-	-	Scrubber, Reg. No. 1744	100	99.7	0301	Nitrogen dioxide	0.008512	113.727	0.26843	0.26843	-
6. Platform near bldg. 367 (hydroxylamine sulphate section)	Sulphuric acid tank 51/1	1	8760	Pipe (sulphuric acid tank 51/1)	1	0363	-	10	0.08	1.194	0.006	18.8	1305.6	518.2	-	-	-	-	-	-	-	0322	Sulphuric acid	0.0023148	412.369	0.073	0.073	-
	Sulphuric acid tank 51/2	1	8760	Pipe (sulphuric acid tank 51/2)	1	0364	-	10	0.08	1.194	0.006	18.8	1287.3	517.7	-	-	-	-	-	-	-	0322	Sulphuric acid	0.0019674	350.481	0.06204	0.06204	-
2. Building 344 (hydroxylamine sulphate section)		Exhaust ventilation from production rooms	1	8760	BC-2 (from the room), bldg. 344	1	0365	-	12	0.4	15.12	1.9	18.8	1549	475.5	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0038	2.138	0.11984	0.11984	-
8. Building 377-B (hydroxylamine sulphate section)		BC-4 Exhaust ventilation from the room, bldg. 377-V	1	8760	BC-4 (from the room), bldg. 377-V	1	0367	-	6	0.3	11.8	0.834	18.8	1274.9	408.6	-	-	-	-	-	-	0322	Sulphuric acid	0.0042534	5.451	0.13414	0.13414	-
4. Building 494 (hydroxylamine sulphate section)		Drainage tank B-316 (Stage 300)	1	8760	Pipe (drainage tank B-316), bldg. 494	1	0368	-	9	0.03	0.1132	0.00008	18.8	1529.7	537.2	-	-	-	-	-	-	0303	Ammonia	0.0000005	6.52	0.000015	0.000015	-
5. Building 367 (hydroxylamine sulphate section)		Sulphuric acid tank 57/2	1	8760	Pipe (sulphuric acid tank 57/2), bldg. 367	1	0375	-	10	0.1	1.019	0.008	18.8	1258.4	516.7	-	-	-	-	-	-	0322	Sulphuric acid	0.002736	365.552	0.08628	0.08628	-
2. Building 344 (hydroxylamine sulphate section)		Pumps	1	8760	BC-1 (from pump glands), bldg. 344	1	0376	-	12	0.4	14.881	1.87	18.8	1549.3	466.5	-	-	-	-	-	-	0301	Nitrogen dioxide	0.007293	4.169	0.22999	0.22999	-
7. Building 411 (hydroxylamine sulphate section)		Absorber K-1 of the tank U-1	1	8760	Pipe (absorber K-1, tank E-1), bldg. 411	1	0531	-	1.5	0.1	3.82	0.03	18.8	1249.6	465.6	-	-	-	Absorber K-1, Reg. No. 059	100	99.9	0322	Sulphuric acid	0.002196	78.241	0.06925	0.06925	-
4. Building 494 (hydroxylamine sulphate section)	Flare unit A-140	1	8760	Pipe (flare A-140), bldg. 494	1	0916	-	24	0.2	11.937	0.375	150	1493	536.2	-	-	-	-				0301	Nitrogen dioxide	0.0565714	233.746	1.784037	1.784037	Constantly
																						0304	Nitrogen oxide	0.0091929	37.984	0.289906	0.289906	

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-vent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
num-ber	descript-ion	description	q-ty, pcs	num-ber of working hours per year						speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
sulphate section)																				-	-	0337	Carbon oxide	0.4714286	1947.881	14.866971	14.866971	
																				-	-	0410	Methane	0.0117857	48.697	0.371674	0.371674	
		Exhaust ventilation from the room (Stage 400)	1	8760	BC 7 (from the room, Stage 400), bldg. 494	1	0354	-	22	0.6	13.546	3.83	18.8	1492.5	560.9	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.01149	3.207	0.36235	
3. Bld. 494 platform (hydroxylamine sulphate section)		Sulphuric acid tank B-331	1	8760	Pipe (sulphuric acid tank B-331)	1	0922	-	6	0.1	0.1146	0.0009	18.8	1478	543.8	-	-	-	-	-	-	0301	Nitrogen dioxide	0.000021	24.905	0.00066	0.00066	-
5. Building 367 (hydroxylamine sulphate section)		Sulphuric acid tank 57/3	1	8760	Pipe (sulfuric acid tank 57/3), bldg. 367	1	0923	-	10	0.1	1.019	0.008	18.8	1275.35	517.27	-	-	-	-	-	-	0322	Sulphuric acid	0.00272	363.414	0.08578	0.08578	-
9. Building 351 (caprolactam section)		Exhaust ventilation from the production room with elev.12.0	1	8760	BC-1 (from the production room, elev. 12.0), bldg. 351	1	0038	-	25	0.66	19.262	6.59	18.6	1397.5	803.6	-	-	-	-	-	-	0303	Ammonia	0.02795	4.53	0.860933	0.860933	-
																				-	-	1411	Cyclohexanone	0.02405	3.898	0.073795	0.073795	
																				-	-	1412	Cyclohexanone oxime	0.00845	1.37	0.204984	0.204984	
		Exhaust ventilation from the production room with elev.0.0	1	8760	BC-2 (from the production room, elev. 0.0), bldg. 351	1	0039	-	25	0.5	16.603	3.26	18.6	1431.61	778.54	-	-	-	-	-	-	0303	Ammonia	0.017604	5.768	0.544879	0.544879	-
																				-	-	1411	Cyclohexanone	0.013366	4.379	0.411229	0.411229	
																				-	-	1412	Cyclohexanone oxime	0.002934	0.961	0.082246	0.082246	
		Exhaust ventilation from the production room with elev.6.0	1	8760	BC-3, BC-7 (from the production room, elev. 6.0), bldg. 351	1	0040	-	25	0.66	6.781	2.32	18.7	1392.2	775.89	-	-	-	-	-	-	0303	Ammonia	0.00483	2.225	0.145066	0.145066	-
																				-	-	1411	Cyclohexanone	0.0023	1.059	0.072533	0.072533	
																				-	-	1412	Cyclohexanone oxime	0.0023	1.059	0.072533	0.072533	
		Exhaust ventilation from the production room with elev.6.0	1	8760	BC-4, BC-5 (from the production room, elev. 6.0), bldg. 351	1	0042	-	15	0.6	9.054	2.56	18.6	1441	778.2	-	-	-	-	-	-	0303	Ammonia	0.09725	40.577	3.058992	3.058992	-
																				-	-	1411	Cyclohexanone	0.0125	5.216	0.3942	0.3942	
																				-	-	1412	Cyclohexanone oxime	0.0125	5.216	0.3942	0.3942	
10. Building 351a (caprolactam section)		Pumps	1	8760	BC-13 (from the pump room), bldg. 351a	1	0044	-	6	0.25	14.26	0.7	18.6	1444.8	745.3	-	-	-	-	-	-	0303	Ammonia	0.00287	4.379	0.088301	0.088301	-
																				-	-	0902	Trichloroethylene	0.0049	7.477	0.154526	0.154526	
		Pumps	1	8760	BC-38 (from the pump room), bldg. 351a	1	0045	-	6	0.4	11.459	1.44	18.6	1444.69	750.5	-	-	-	-	-	-	0303	Ammonia	0.009936	7.37	0.308801	0.308801	-
																				-	-	0902	Trichloroethylene	0.02304	17.09	0.726589	0.726589	
11. Building 764 (caprolactam section)		SIOT (Item 6) from crystallizer pans (Items 1, 2, 3, 4) and the packing line (Item 17)	1	8760	The SIOT pipe (Item 6) from the crystallizer pans (Items 1, 2, 3, 4) and the packing line (Item 17)	1	0051	-	20	0.5	14.107	2.77	18.7	1167.29	668.2	-	-	-	SIOT, Item 6	100	99.9	1530	Epsilon-Caprolaktam	0.08289	31.975	2.59699	2.59699	-
12. Building 345 (caprolactam section)		Exhaust ventilation from the production room, 1st floor (treatment section)	1	8760	BC-3 (from the production room, 1st floor), bldg. 345	1	0052	-	15	0.8	19.099	9.6	18.7	1325.8	738.3	-	-	-	-	-	-	1530	Epsilon-Caprolaktam	0.00285	0.317	0.059918	0.059918	-
13. Platform near building 342 (caprolactam section)		Exhaust ventilation from the tanker loading production room (oleum storage)	1	8760	BC-6 (from the tanker loading room)	1	0053	-	15	0.4	15.12	1.9	18.7	1404.3	698.5	-	-	-	-	-	-	1530	Epsilon-Caprolaktam	0.00494	2.778	0.149796	0.149796	-
14. Building 342		Exhaust ventilation	1	8760	BC-7 (from the	1	0238	-	4	0.66	1.578	0.54	18.7	1403.6	713.9	-	-	-	-	-	-	0322	Sulphuric acid	0.0000216	0.043	0.000511	0.000511	-

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
(caprolactam section)		from the tanker loading room (oleum storage)			pump room), bldg. 342																							
9. Building 351 (caprolactam section)	Hydraulic seal downstream of the ammonia water collector, tank Item 639	1	8760	Pipe (hydraulic seal), bldg. 351	1	0432	-	24	0.09	1.125	0.00716	18.7	1415.6	781.7	-	-	-	-	-	-	-	0303	Ammonia	0.00287	428.478	0.08831	0.08831	-
																				-	-	1411	Cyclohexanone	0.0049	731.547	0.154526	0.154526	
																				-	-	1412	Cyclohexanone oxime	0.009936	1483.399	0.308801	0.308801	
13. Platform near building 342 (caprolactam section)	Absorption oleum storage tank	1	8760	Pipe (absorption oleumn storage tank)	1	0433	-	10	0.1	0.979	0.00769	18.6	1383.7	693.3	-	-	-	Absorption tank, Reg. No. 1436	100	99.68	0322	Sulphuric acid	0.0082632	1147.891	0.260588	0.260588	-	
15. Platform near building 351a (caprolactam section)	Scrubber C-6	1	8760	Pipe (scrubber C-6)	1	0512	-	15	0.1	1.019	0.008	18.6	1394.2	757.09	-	-	-	-	Scrubber C-6	100	99.68	0303	Ammonia	0.0010904	145.528	0.034362	0.034362	-
																				100	98.43	0902	Trichloroethylene	0.1174704	15677.95	3.704521	3.704521	
																				100	90	1411	Cyclohexanone	0.0000184	2.456	0.000555	0.000555	
9. Building 351 (caprolactam section)	Scrubber C-7	1	8760	Pipe (scrubber C-7), bldg. 351	1	0516	-	15	0.1	0.764	0.006	18.7	1424.18	778.46	-	-	-	-	Scrubber C-7	100	96.33	0303	Ammonia	0.0005202	92.632	0.016386	0.016386	-
																				100	99.9	1411	Cyclohexanone	0.0004896	87.183	0.015421	0.015421	
	Scrubber C-8	1	8760	Pipe (scrubber C-8), bldg. 351	1	0517	-	20	0.08	1.592	0.008	18.7	1422.89	803.2	-	-	-	-	Scrubber C-8	100	97.05	0303	Ammonia	0.0017432	232.76	0.054948	0.054948	-
100																				90	1411	Cyclohexanone	0.0017216	229.876	0.054267	0.054267		
11. Building 764 (caprolactam section)	Exhaust ventilation from the crystallization section production room	1	8760	BC-9 (from the production room), bldg. 764	1	0601	-	8	0.66	11.37	3.89	18.7	1198.2	650.01	-	-	-	-	-	-	1530	Epsilon-Caprolaktam	0.10892	29.919	3.373564	3.373564	-	
12. Building 345 (caprolactam section)	Exhaust ventilation from the production room, 1st floor	1	8760	BC-2 (from the production room, 1st floor), bldg. 345	1	0921	-	15	0.8	19.099	9.6	18.7	1305.4	738.3	-	-	-	-	-	-	1530	Epsilon-Caprolaktam	0.0048	0.534	0.121098	0.121098	-	
16. Building 354 (ammonium sulphate section)	Transporter, Item 32	1	8760	BC-1 (from the transporter, Item 32), bldg. 354	1	0125	-	10	0.5	18.335	3.6	18.7	1497.1	701.7	-	-	-	-	-	-	0351	Diammonium sulphate	0.08892	26.391	2.79283	2.79283	-	
	Transporters, Items 35-39	5	8760	BC-2B (from the transporters, Item 35-39), Blg. 354	1	0126	-	25	0.6	12.732	3.6	18.8	1515.7	702.8	-	-	-	Cyclone SIOT, Reg. No.	100	96.6	0351	Diammonium sulphate	0.35604	105.714	11.2167	11.2167	-	
	Drier, Item 33A	1	8760	Pipe (drier, Item 33A), bldg. 354	1	0127	-	22	0.8	9.689	4.87	48.8	1534.4	725.3	-	-	-	Scrubber, Reg. No. 085	-	-	0351	Diammonium sulphate	0.25728	62.27	8.09844	8.09844	-	
	Exhaust ventilation from the production room	1	8760	BC-8 (from the production room), bldg. 354	1	0129	-	23	0.5	16.807	3.3	18.7	1512.4	727.8	-	-	-	-	-	-	0303	Ammonia	0.01617	5.236	0.49953	0.49953	-	
	Drier, Item 33B	1	8760	Pipe (drier, Item 33B), bldg. 354	1	0373	-	22	0.8	9.689	4.87	48.8	1540	703.1	-	-	-	-	-	-	0351	Diammonium sulphate	0.306323	74.14	9.64484	9.64484	-	
17. Building 386 (ammonium sulphate section)	Ammonium sulphate tank	1	8760	Pipe (ammonium sulphate tank), bldg. 386	1	0434	-	10	0.15	0.566	0.01	18.7	1433.42	708.3	-	-	-	-	-	-	0303	Ammonia	0.000357	38.138	0.01123	0.01123	-	
16. Building 354 (ammonium sulphate section)	Abs., Item 60 (collectors, Items 12,45,82,108,146,161, and cond., Items 107/1 and 126/1)	8	8760	Pipe (absorber, Item 60)	1	0513	-	24	0.2	10.504	0.33	18.7	14.91	727.1	-	-	-	-	Scrubber	-	-	0303	Ammonia	0.066	213.7	2.08138	2.08138	-
																				-	-	0902	Trichloroethylene	0.495	1602.747	15.6103	15.6103	
																				-	-	1411	Cyclohexanone	0.016467	53.318	0.51826	0.51826	
18. Railroad tanker loading	Ammonium sulphate loading (arm loading	1	8760	Ammonium sulphate loading	1	6031	-	4	-	-	-	-	1574.02	700.27	1574.12	696.9	23.5	-	-	-	2701	Ammophos	0.0070418	-	0.0496	0.0496	-	

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
num-ber	descript-ion	description	q-ty, pcs	num-ber of working hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X₁	Y₁	X₂	Y₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
section near bldg. 354 (ammonium sulphate section)		into cars)			section																							
Shop: 3. UFC and urotropine shop																												
1. Platform near bldg. 451-A		Methanol tank, Item 80/4	1	8760	Pipe (methanol tank, Item 80/4)	1	0170	-	8	0.15	0.396	0.007	18	2016.9	363.3	-	-	-	-	-	-	1052	Methanol	0.0021546	328.094	0.06793	0.06793	-
2. Building 450-V		Flare unit ФЛ-1	1	8760	Flare unit, Item FL-1, bldg. 450-V	1	0242	-	50	0.5	8.505	1.67	50	1804.19	268.34	-	-	-	-	-	-	0301	Nitrogen dioxide	2.2602636	1601.336	19.735295	19.735295	Period. discharge from the absorp-tion column
		Flare unit ФЛ-1	1	100		-	-	0304	Nitrogen oxide	0.3672928	260.217	3.206985	3.206985															
						-	-	0337	Carbon oxide	18.83553	13344.47	164.46080	164.46080															
						-	-	0410	Methane	0.4708882	333.612	4.11152	4.11152															
3. Building 451-A		Exhaust from pump station	1	8760	BC-1 (from pump station) building 451-A	1	0397	-	10	0.4	12.732	1.6	19.5	2008.4	345.6	-	-	-	-	-	-	0303	Ammonia	0.0008	0.536	0.02523	0.02523	-
																				-	-	1052	Methanol	0.02672	17.893	0.8376	0.8376	
																				-	-	1325	Formaldehyde	0.00032	0.214	0.01009	0.01009	
4. Building 450-A		Catalytic afterburner UFC-85	1	8760	Afterburner (installation catalit. Afterburner UFC-85) building 450A	1	0801	-	9	0.6	10.803	3.055	220	2002.8	269.5	-	-	-	Catalytic afterburner UFC-85	100	97.6	0330	Sulphur dioxide	0.1407894	83.235	4.4303	4.4303	-
																				100	99.5	0337	Carbon oxide	1.0994522	650	34.67232	34.67232	
																				100	99.99	1052	Methanol	0.01771	10.47	0.5586	0.5586	
																				100	98.6	1325	Formaldehyde	0.001527	0.903	0.03852	0.03852	
				Carbon filter	1	8760	Carbon filter building 450A	1	0802	-	4	0.04	0.223	0.00028	50	2019.1	268.6	-	-	-	-	-	-	1103	Dowtherm	0.0081202	34311.82	0.25607
5. Building 452		Exhaust from carbamide storage	1	8760	BC-3 (carbamide storage) b.452	1	0803	-	6	0.3	1.5	0.106	22.4	1938.55	346	-	-	-	-	-	-	1532	Carbamide	0.0022048	22.501	0.0692	0.0692	-
Shop: 4. Ammonia synthesis and compression shop (ЦКНСА)																												
2. Building 505		San. column №3,4	1	8760	Pipe (sanitary column №3,4)	1	0240	-	5	0.6	8.382	2.37	22.4	1200.8	876.1	-	-	-	Sanitary columns KAB-3 and KAB-4 reg. №1746	100	99.9	0303	Ammonia	0.282978	129.197	8.91652	8.91652	-
1. Building 506		Gas analyzers	1	8760	Pipe (after gas analyzer) Bld. 506	1	0244	-	10	0.5	9.88	1.94	15	1256.12	885.32	-	-	-	-	-	-	0303	Ammonia	0.0000524	0.0285	0.00159	0.00159	-
4. Building 517		Exhaust ventilation from control room	1	8760	BC-1 (from control room) bld. 517	1	0245	-	10	0.5	12.987	2.55	22	1311.47	276.09	-	-	-	-	-	-	0303	Ammonia	0.0106193	4.5	0.33489	0.33489	-
1. Building 506		Exhaust ventilation from control room	1	8760	BC-6 (from control room), bld. 506	1	0314	-	5	0.3	14.713	1.04	22.4	1277.29	885.24	-	-	-	-	-	-	0303	Ammonia	0.001352	1.407	0.03936	0.03936	-
3. Building 515		Ammonia storage	1	8760	BC-4 (Ammonia storage) Bld. 515	1	0316	-	10	0.4	12.573	1.58	22.4	1311.92	296.33	-	-	-	-	-	-	0303	Ammonia	0.030336	20.775	0.95169	0.95169	-
2. Building 505		Sanitary column №5,6	1	8760	Pipe (sanitary column №5,6)	1	0380	-	5	0.3	14.854	1.05	15	1209.63	881.85	-	-	-	Absorption columns 15/5 and 15/6 reg. №074	100	99.9	0303	Ammonia	0.09807	98.532	3.08942	3.08942	-
5. Building 808/23		Vent from ammonia synth. department	1	8760	BC--9 (from methanol department) building 808/23	1	0213	-	22	0.65	17.358	5.76	22	598.2	862.7	-	-	-	-	-	-	0303	Ammonia	0.077184	14.48	2.41591	2.41591	-
																				-	-	0337	Carbon oxide	0.078912	14.804	2.4704	2.4704	
Shop: 5. Household chemical goods shop																												
1. Building 860		Exhaust ventilation from machine hall	1	8760	BC-1 (from the production room	1	0460	-	5	0.3	14.713	1.04	19.4	1630.9	515.5	-	-	-	-	-	-	0337	Carbon oxide	0.000832	0.857	0.02296	0.02296	-

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note													
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X₁	Y₁	X₂	Y₂					Code	description	g/s	mg/m³	t/year															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29													
					of machine hall), bld. 860																																				
	Ethylene processing machines	1	8760	BC-2 (ethylene processing machines) bld.860	1	0461	-	5	0.6	8.382	2.37	19.5	1625.4	643.2	-	-	-	-	-	-	-	0337	Carbon oxide	0.0056406	2.55	0.17713	0.17713	-													
	Plastic shredder	1	8760	BC-3 (plastic shredder) bld. 860	1	0462	-	5	0.3	0.099	0.007	19.5	1711.31	454.15	-	-	-	-	-	-	-	1611	Epoxyethane	0.0001659	0.075	0.00448	0.00448														
	Reactors position 33, 51	1	8760	BC-1 (reactors position 33, 51) bld. 860	1	0466	-	10	0.5	9.88	1.94	19.5	1720.4	453.2	-	-	-	-	-	-	-	2902	Suspended matter	0.000007	1.071	0.00011	0.00011	-													
	Packaging equipment	1	8760	BC-3 (packaging equipment) bld. 860	1	0470	-	10	0.5	12.987	2.55	19.5	1815	114	-	-	-	-	-	-	-	-	-	-	0303	Ammonia	0.0007665	0.322	0.01608	0.01608	-										
	Packaging equipment	1	8760	BC-4 (packaging equipment) bld. 860	1	0471	-	10	0.4	12.573	1.58	19.5	1702.33	455.08	-	-	-	-	-	-	-	-	-	-	0303	Ammonia	0.0005846	0.396	0.01794	0.01794											
																																-	-	0316	Hydrochloride	0.0001275	0.054	0.00402	0.00402		
																																-	-	0337	Carbon oxide	0.000051	0.0214	0.00161	0.00161		
																															-	-	1611	Epoxyethane	0.000306	0.129	0.00965	0.00965			
	Packaging equipment	1	8760	BC-4 (packaging equipment) bld. 860	1	0471	-	10	0.4	12.573	1.58	19.5	1702.33	455.08	-	-	-	-	-	-	-	-	-	-	0303	Ammonia	0.0005846	0.396	0.01794	0.01794	-										
	Packaging equipment	1	8760	BC-4 (packaging equipment) bld. 860	1	0471	-	10	0.4	12.573	1.58	19.5	1702.33	455.08	-	-	-	-	-	-	-	-	-	-	-	-	0316	Hydrochloride	0.0001106	0.075		0.00349	0.00349								
																																		-	-	0337	Carbon oxide	0.00079	0.536	0.00249	0.00249
																																		-	-	1611	Epoxyethane	0.0001106	0.075	0.00349	0.00349
																															-			-	1611	Epoxyethane	0.0001106	0.075	0.00349	0.00349	
	Pumps pos. H-5, H-6	1	8760	BC-9 (pumps pos. H-5, H-6) bld. 860	1	0901	-	7.6	0.32	8.082	0.65	19.5	1374.09	624.3	-	-	-	-	-	-	-	-	-	-	0316	Hydrochloride	0.0000325	0.054	0.00102	0.00102	-										
	Reactor pos. P-3, P-4	1	8760	BC-10 (reactors R-3, R-4) bld.860	1	0902	-	9.6	0.2	16.234	0.51	19.5	1377.52	624.61	-	-	-	-	-	-	-	-	-	-	0316	Hydrochloride	0.0000357	0.075	0.00113	0.00113	-										
	Packing of УПФ bottles	1	8760	VS-14 (packaging of УПФ bottles) bld. 860	1	0903	-	7.6	0.25	10.186	0.5	19.5	1390.22	624.67	-	-	-	-	-	-	-	-	-	-	0337	Carbon oxide	0.0001	0.214	0.00315	0.00315	-										
	Packing of УПФ bottles	1	8760	VS-14 (packaging of УПФ bottles) bld. 860	1	0903	-	7.6	0.25	10.186	0.5	19.5	1390.22	624.67	-	-	-	-	-	-	-	-	-	-	1611	Epoxyethane	0.000095	0.204	0.003	0.003											
	Manual packing units	1	8760	BC-13 (manual packing units) bld.860	1	0904	-	7.6	0.35	11.849	1.14	19.5	1291.43	637.5	-	-	-	-	-	-	-	-	-	-	0316	Hydrochloride	0.000057	0.054	0.0018	0.0018	-										
	Reactor pos. P-1, P-2	1	8760	BC-11 (reactors R-1, R-2) bld. 860	1	0905	-	25	0.56	15.753	3.88	19.5	1400.37	563.52	-	-	-	-	-	-	-	-	-	-	0316	Hydrochloride	0.0002716	0.075	0.00857	0.00857	-										
	Polyethylene processing machines	1	8760	BC-1 (polyethylene processing machines) bld.860	1	0908	-	7.4	0.44	10.588	1.61	19.5	1984.3	727.5	-	-	-	-	-	-	-	-	-	-	0337	Carbon oxide	0.01127	7.5	0.35541	0.35541	-										
Polyethylene processing machines	1	8760	BC-1 (polyethylene processing machines) bld.860	1	0908	-	7.4	0.44	10.588	1.61	19.5	1984.3	727.5	-	-	-	-	-	-	-	-	-	-	1611	Epoxyethane	0.0000966	0.064	0.00305	0.00305												
2. Building 505	DSL units	1	8760	BC-1 (DSL units) building 505	1	0912	-	13	0.63	12.704	3.96	19.5	1922.1	694.41	-	-	-	-	-	-	-	-	-	0337	Carbon oxide	0.0005544	0.15	0.01748	0.01748	-											
	DSL units	1	8760	BC-1 (DSL units) building 505	1	0912	-	13	0.63	12.704	3.96	19.5	1922.1	694.41	-	-	-	-	-	-	-	-	-	1611	Epoxyethane	0.0005544	0.15	0.01748	0.01748												
	Automatic units making PET bottles	1	8760	BC-2 (Automatic units making PET bottles) building 505	1	0913	-	13	0.63	12.704	3.96	19.5	1991.8	697.5	-	-	-	-	-	-	-	-	-	0337	Carbon oxide	0.0014256	0.386	0.04371	0.04371	-											
	Automatic units making PET bottles	1	8760	BC-2 (Automatic units making PET bottles) building 505	1	0913	-	13	0.63	12.704	3.96	19.5	1991.8	697.5	-	-	-	-	-	-	-	-	-	1611	Epoxyethane	0.000198	0.054	0.00624	0.00624												
	Semiautomatic packing units	1	8760	BC-1/2 (semiautomatic packing unit) building 505	1	0914	-	13	0.63	12.704	3.96	19.5	1933.9	695.1	-	-	-	-	-	-	-	-	-	0303	Ammonia	0.0005544	0.15	0.01748	0.01748	-											
Reactors R-1, R-2	1	8760	BC-2/2 (reactors R-1, R-2) bld. 505	1	0915	-	10	0.32	10.693	0.86	19.5	1989.2	727.5	-	-	-	-	-	-	-	-	-	-	0303	Ammonia	0.0000602	0.075	0.0019	0.0019	-											
Shop: 6. Carbon dioxide shop																																									
1. Building 860	Flare (inert gas discharge)	1	8760	Flare bld. 860	1	0456	-	11	0.08	13.926	0.07	22.4	1294	927.1	-	-	-	-	-	-	-	-	-	0337	Carbon oxide	0.0026201	40.5	0.08263	0.08263	-											

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X₁	Y₁	X₂	Y₂					Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Shop: 7. Road transport shop (RTS)																												
1. Gas station site	Gas station	1	8760	Gas station	1	6172	-	3	-	-	-	-	970.3	645.2	970.3	645.2	0	-	-	-	0333	Hydrogen sulphide	0.0000467	-	0.00004	0.00004	-	
																			-	-	0415	Mixture of saturated hydrocarbons C1-C5	5.1899080	-	0.152173	0.152173		
																			-	-	0416	Mixture of saturated hydrocarbons C6-C10	1.9181262	-	0.056241	0.056241		
																			-	-	0501	Pentilenes	0.1917360	-	0.005622	0.005622		
																			-	-	0602	Benzene	0.1763971	-	0.005173	0.005173		
																			-	-	0616	Dimethylbenzene	0.0222414	-	0.000653	0.000653		
																			-	-	0621	Methylbenzene	0.1664268	-	0.00488	0.00488		
																			-	-	0627	Ethyl benzene	0.0046017	-	0.000135	0.000135		
2. Building 124	Battery charging	1	8760	BC-5 (battery charging room) bld.124	1	0521	-	6	0.3	7.074	0.5	22.4	996.1	644.7	-	-	-	-	-	-	0322	Sulphuric acid	0.0000338	0.073	0.000070	0.000070	-	
																			-	-	0322	Sulphuric acid	0.0000338	0.073	0.000070	0.000070		
																			-	-	0322	Sulphuric acid	0.0000338	0.073	0.000070	0.000070		
																			-	-	0322	Sulphuric acid	0.0000338	0.073	0.000070	0.000070		
																			-	-	0322	Sulphuric acid	0.0000338	0.073	0.000070	0.000070		
																			-	-	0322	Sulphuric acid	0.0000338	0.073	0.000070	0.000070		
																			-	-	0322	Sulphuric acid	0.0000338	0.073	0.000070	0.000070		
																			-	-	0322	Sulphuric acid	0.0000338	0.073	0.000070	0.000070		
3. Building 865	Vehicle engines	1	8760	BC-10 (area for servicing and repair of cars) bld.865	1	0523	-	5	0.2	15.915	0.5	22.4	256.1	973.7	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0000256	0.055	0.0000038	0.0000038	-	
																			-	-	0304	Nitrogen oxide	0.0000042	0.009	0.0000007	0.0000007		
																			-	-	0330	Sulphur dioxide	0.0000071	0.0153	0.0000011	0.0000011		
																			-	-	0337	Carbon oxide	0.0021389	4.629	0.000316	0.000316		
																			-	-	2704	Petrol	0.000291	0.63	0.000043	0.000043		
	Welding station	1	350	BC-11 (welding station), bld. 865	1	0524	-	5	0.2	15.915	0.5	22.4	310.5	1007	-	-	-	-	-	-	-	0123	Diiron trioxide	0.0012278	2.657	0.001033	0.001033	-
																				-	-	0143	Manganese and its compounds	0.0001634	0.354	0.000120	0.000120	
																				-	-	0301	Nitrogen dioxide	0.0085	18.395	0.001778	0.001778	
																				-	-	0304	Nitrogen oxide	0.0013813	2.989	0.000289	0.000289	
																				-	-	0337	Carbon oxide	0.0031403	6.796	0.001846	0.001846	
																				-	-	0342	Gaseous fluorine compounds	0.0001771	0.383	0.000137	0.000137	
																				-	-	0344	Low soluble fluorides	0.0003117	0.674	0.000169	0.000169	
																				-	-	2908	Inorganic dust: 20-70% SiO2	0.0001323	0.286	0.000072	0.000072	
																				-	-	0301	Nitrogen dioxide	0.031358	-	0.03458	0.03458	
-	-	0328	Soot	0.0012270	-	0.001300	0.001300																					
-	-	0330	Sulphur dioxide	0.0057484	-	0.006816	0.006816																					
-	-	0337	Carbon oxide	0.6471287	-	0.576741	0.576741																					
-	-	2704	Petrol	0.0988384	-	0.081492	0.081492																					
4. Parking of vehicles	Vehicle engines	1	8760	Open parking of vehicles	1	6022	-	5	-	-	-	-	289.47	1005.23	289.41	1031.81	16.123	-	-	-	0301	Nitrogen dioxide	0.031358	-	0.03458	0.03458	-	
																			-	-	0328	Soot	0.0012270	-	0.001300	0.001300		
																			-	-	0330	Sulphur dioxide	0.0057484	-	0.006816	0.006816		
																			-	-	0337	Carbon oxide	0.6471287	-	0.576741	0.576741		
																			-	-	2704	Petrol	0.0988384	-	0.081492	0.081492		
																			-	-	2732	Kerosene	0.0252709	-	0.029182	0.029182		
5. Building 124a	Vehicle engines	1	8760	Car wash bld.124A	1	6023	-	5	-	-	-	-	221.28	1049.2	221.2	1061.02	9.513	-	-	-	0301	Nitrogen dioxide	0.0001556	-	0.000056	0.000056	-	
																			-	-	0304	Nitrogen oxide	0.0000253	-	0.000010	0.000010		
																			-	-	0328	Soot	0.0000109	-	0.0000031	0.0000031		
																			-	-	0330	Sulphur dioxide	0.0000340	-	0.0000109	0.0000109		
																			-	-	0337	Carbon oxide	0.0010278	-	0.000197	0.000197		
																			-	-	2704	Petrol	0.0001285	-	0.0000093	0.0000093		
																			-	-	2732	Kerosene	0.0001223	-	0.000038	0.000038		
6. Parking of special-purpose machinery	Special machinery engines	1	8760	Open parking of special machinery	1	6028	-	5	-	-	-	-	244.35	996.06	244.3	1008.68	44.187	-	-	-	0301	Nitrogen dioxide	0.0267752	-	0.021468	0.021468	-	
																			-	-	0328	Soot	0.0141112	-	0.007959	0.007959		
																			-	-	0330	Sulphur dioxide	0.0052681	-	0.003946	0.003946		

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equiva-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
num-ber	descript-ion	description	q-ty, pcs	num-ber of wor-king hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
																				-	-	0337	Carbon oxide	0.1851439	-	0.115557	0.115557		
																				-	-	2732	Kerosene	0.0301323	-	0.018366	0.018366		
																				-	-	0304	Nitrogen oxide	0.0043497	-	0.003488	0.003488		
2. Building 124		Tire repair	1	8760	Tire repair section bld. 124	1	6050	-	2	-	-	-	-	273.73	976.68	273.44	992.72	2.382	-	-	-	2704	Petrol	0.02	-	0.009	0.009	-	
																				-	-	2978	Rubber vulcanizate dust	0.0226	-	0.000440	0.000440		
5. Building 124a		Vehicle engines	1	8760	Station for control of outc. gases bld.124A	1	6052	-	5	-	-	-	-	249.25	1053.2	249.35	1055.2	2.736	-	-	-	0301	Nitrogen dioxide	0.0017334	-	0.001454	0.001454	-	
																				-	-	0304	Nitrogen oxide	0.0002817	-	0.000237	0.000237		
																				-	-	0328	Soot	0.0002867	-	0.000228	0.000228		
																				-	-	0330	Sulphur dioxide	0.0002138	-	0.000195	0.000195		
																				-	-	0337	Carbon oxide	0.0105	-	0.014015	0.014015		
																				-	-	2704	Petrol	0.000588	-	0.000593	0.000593		
																				-	-	2732	Kerosene	0.002035	-	0.001612	0.001612		
2. Building 124		Welding station	1	350	Welding station bld.124	1	6116	-	2	-	-	-	-	245.67	979.36	245.67	976.89	18.767	-	-	-	0123	Diiron trioxide	0.000935	-	0.000108	0.000108	-	
																				-	-	0143	Manganese and its compounds	0.0001634	-	0.000015	0.000015		
																				-	-	0342	Gaseous fluorine compounds	0.0000945	-	0.0000109	0.0000109		
		Engines of cargo vehicles	1	8760	Station for servicing and repair of cargo vehicles bld.124	1	6173	-	2	-	-	-	-	-	261.88	988.75	262.14	983.75	5	-	-	-	0301	Nitrogen dioxide	0.0000634	-	0.000245	0.000245	-
																					-	-	0304	Nitrogen oxide	0.0000103	-	0.00004	0.00004	
																					-	-	0328	Soot	0.0000033	-	0.000012	0.000012	
																					-	-	0330	Sulphur dioxide	0.000009	-	0.000036	0.000036	
																					-	-	0337	Carbon oxide	0.0001942	-	0.000716	0.000716	
																					-	-	2732	Kerosene	0.0000324	-	0.000119	0.000119	
Special machinery engines	1	8760	Station for servicing and repair of special machinery bld.124	1	6174	-	2	-	-	-	-	-	232.48	988.98	232.46	983.98	5	-	-	-	0301	Nitrogen dioxide	0.0003447	-	0.000228	0.000228	-		
																			-	-	0304	Nitrogen oxide	0.0000561	-	0.000038	0.000038			
																			-	-	0328	Soot	0.0000179	-	0.0000115	0.0000115			
																			-	-	0330	Sulphur dioxide	0.0000237	-	0.0000155	0.0000155			
																			-	-	0337	Carbon oxide	0.0043762	-	0.002939	0.002939			
Washing of parts and components	1	8760	BC-2 (engine department) bld.124	1	0917	-	5.5	0.3	7.074	0.5	39.2	239.01	995.2	-	-	-	-	-	-	2732	Kerosene	0.00008	-	0.000053	0.000053	-			
																		Repair of fuel equipment	1	8760									
Shop: 8. Heat, water supply and sewage shop (power generation) — HWSS																													
1. Building 495 (Section of water circulation cycles)		Cooling towers БОЦ-7	1	8760	Cooling tower БОЦ-7	1	0422	-	40	15	1.726	305.001	24.4	1881.32	558.99	-	-	-	-	-	-	0303	Ammonia	0.00107	0.0038	0.032359	0.032359	-	
21. Building 811/82 (Section of water circulation cycles)		Cooling towers БОЦ-3	1	8760	Cooling tower БОЦ-3	1	0423	-	40	15	4.244	750	24.4	1188	522	-	-	-	-	-	-	0303	Ammonia	0.005852	0.0085	0.17696	0.17696	-	
2. Building 381a/7 (Section of water circulation cycles)		Cooling towers БОЦ-4	1	8760	Cooling tower БОЦ-4	1	0424	-	40	15	4.244	750	24.4	1980.7	610.3	-	-	-	-	-	-	0303	Ammonia	0.000336	0.00049	0.010174	0.010174	-	
4. Building 381a/5 (Section		Cooling towers БОЦ-5	1	8760	Cooling tower БОЦ-5	1	0425	-	40	15	4.244	750	24.4	1929	611.3	-	-	-	-	-	-	0303	Ammonia	0.018828	0.0273	0.056937	0.056937	-	

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
num-ber	descript-ion	description	q-ty, pcs	num-ber of working hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
of water circulation cycles)																													
1. Building 871a (Section of water circulation cycles)		Cooling towers BOЦ-6	1	8760	Cooling tower BOЦ-6	1	0426	-	40	15	1.726	305.001	24.4	-22	814	-	-	-	-	-	-	0303	Ammonia	0.00238	0.0085	0.071971	0.071971	-	
6. Building 523a (Service of emergency repair for sewage and water supply)		Vehicle engines	1	8760	Parking bld.523a	1	6011	-	5	-	-	-	-	182.8	1067.48	187.18	1067.49	4.727	-	-	-	0301	Nitrogen dioxide	0.0025703	-	0.003611	0.003611	-	
																				-	-	0304	Nitrogen oxide	0.0004177	-	0.000587	0.000587		
																				-	-	0328	Soot	0.00129	-	0.001340	0.001340		
		Tractor engines	1	8760																-	-	0330	Sulphur dioxide	0.0005337	-	0.000698	0.000698		
																				-	-	0337	Carbon oxide	0.0390953	-	0.029349	0.029349		
																				-	-	2704	Petrol	0.0018834	-	0.000844	0.000844		
																				-	-	2732	Kerosene	0.002845	-	0.003219	0.003219		
7. Building 523 (Service of emergency repair for sewage and water supply)		Welding station	1	350		1	6123	-	2	-	-	-	-	199.58	1042.91	196.61	1042.89	1.578	-	-	-	0123	Diiron trioxide	0.0184792	-	0.043368	0.043368	-	
																				-	-	0143	Manganese and its compounds	0.0002709	-	0.000883	0.000883		
																				-	-	0301	Nitrogen dioxide	0.0041556	-	0.009051	0.009051		
																				-	-	0304	Nitrogen oxide	0.0006753	-	0.001471	0.001471		
																				-	-	0337	Carbon oxide	0.0061042	-	0.017481	0.017481		
																				-	-	0342	Gaseous fluorine compounds	0.0001771	-	0.000243	0.000243		
																				-	-	0344	Low soluble fluorides	0.0007792	-	0.001066	0.001066		
8. Building 126 (Service of emergency repair for sewage and water supply)		Parking	1	8760	Parking bld.126	1	6175	-	2	-	-	-	-	121.5	988.3	121.88	987.37	1	-	-	-	0301	Nitrogen dioxide	0.0009112	-	0.000437	0.000437	-	
																				-	-	0304	Nitrogen oxide	0.0001481	-	0.000071	0.000071		
																				-	-	0330	Sulphur dioxide	0.0001349	-	0.000068	0.000068		
																				-	-	0337	Carbon oxide	0.0960153	-	0.041259	0.041259		
																				-	-	2704	Petrol	0.0211639	-	0.008438	0.008438		
9. Building 166 (Section of networks of external heat supply)		Welding works	1	120	BC-6 (welding station) bld.166	1	0109	-	2	0.3	2.5	0.1767	22	970.3	645.2	-	-	-	-	-	-	0123	Diiron trioxide	0.0118467	72.441	0.003573	0.003573	-	
																				-	-	0143	Manganese and its compounds	0.0001756	1.074	0.00007	0.00007		
																				-	-	0301	Nitrogen dioxide	0.0120134	73.46	0.003497	0.003497		
																				-	-	0304	Nitrogen oxide	0.0019522	11.937	0.000569	0.000569		
																				-	-	0337	Carbon oxide	0.0160667	98.246	0.004854	0.004854		
																				-	-	0342	Gaseous fluorine compounds	0.0002196	1.343	0.0000227	0.0000227		
																				-	-	0344	Low soluble fluorides	0.0000945	0.578	0.0000068	0.0000068		
																				-	-	2908	Inorganic dust: 20-70% SiO2	0.0000945	0.578	0.0000068	0.0000068		
		Sharpener	1	20	BC-2 (from the grinding machine) bld.166	1	0174	-	2	0.13	8.15	0.1082	24.4	969.3	674.1	-	-	-	-	-	-	0123	Diiron trioxide	0.016	161.125	0.001152	0.001152	-	
																				-	-	2930	Abrasive dust	0.0108	108.76	0.000778	0.000778		
		Welding works (mobile unit)		1	70	Welding works (mobile unit) bld. 166	1	6115	-	2	-	-	-	-	956.36	668.71	956.46	662.1	7.5	-	-	-	0123	Diiron trioxide	0.0013128	-	0.00026	0.00026	-
																					-	-	0143	Manganese and its compounds	0.0001634	-	0.00003	0.00003	
																					-	-	0301	Nitrogen dioxide	0.00051	-	0.000067	0.000067	
																					-	-	0304	Nitrogen oxide	0.0000829	-	0.0000108	0.0000108	
																					-	-	0337	Carbon oxide	0.0031403	-	0.000407	0.000407	

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate		Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
num-ber	descript-ion	description	q-ty, pcs	num-ber of wor-king hours per year						speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X₁	Y₁	X₂	Y₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
																				-	-	0342	Gaseous fluorine compounds	0.0002196	-	0.000038	0.000038	
																				-	-	0344	Low soluble fluorides	0.0000945	-	0.0000123	0.0000123	
																				-	-	2908	Inorganic dust: 20-70% SiO2	0.0000945	-	0.0000123	0.0000123	
	Vehicle engines	1	8760	BC-3, BC-4, BC-5 (Heated parking of vehicles) bld.166	1	0918	-	9	0.5	2.5	0.491	18	996.1	644.7	-	-	-	-		-	-	0301	Nitrogen dioxide	0.0003023	0.656	0.00051	0.00051	-
																				-	-	0304	Nitrogen oxide	0.0000492	0.107	0.000083	0.000083	
																				-	-	0328	Soot	0.0000135	0.0293	0.000022	0.000022	
																				-	-	0330	Sulphur dioxide	0.000086	0.187	0.000154	0.000154	
																				-	-	0337	Carbon oxide	0.0041389	8.988	0.00483	0.00483	
																				-	-	2704	Petrol	0.000491	1.066	0.000446	0.000446	
																				-	-	2732	Kerosene	0.0002942	0.639	0.000447	0.000447	
10. Site near building 199a (Electric substation water treatment department)	Lime storage	1	8760	Lime warehouse	1	6219	-	2	-	-	-	-	637.5	599.52	637.64	588.22	10	-	-	-	2909	Inorganic dust: SiO2<20%	0.0008	-	0.00036	0.00036	-	
	Welding station	1	375	Welding area	1	6220	-	2	-	-	-	-	509.9	663.7	510.69	664.7	1	-	-	-	0123	Diiron trioxide	0.0014857	-	0.00107	0.00107	-	
11. Building 94 (Electric substation water treatment department)	Sharpeners	1	125	Sharpeners	1	6221	-	2	-	-	-	-	495.3	662.2	496.3	663.2	1	-	-	-	0123	Diiron trioxide	0.0102	-	0.002106	0.002106	-	
																			-	-	2930	Abrasive dust	0.0066	-	0.001343	0.001343		
13. OC site (area of structures and communications of external heat and water supply)	Sharpeners	1	300	Mechanical department	1	0974	-	12	0.3	2.8	0.198	20	55.2	599	-	-	-	-	-	-	0123	Diiron trioxide	0.0098856	53.607	0.006151	0.006151	-	
																			-	-	0143	Manganese and its compounds	0.0001568	0.85	0.000056	0.000056		
																			-	-	0301	Nitrogen dioxide	0.0041556	22.535	0.001496	0.001496		
	Welding station	1	450		-	-	0304	Nitrogen oxide	0.0006753	3.662	0.000243	0.000243																
					-	-	2908	Inorganic dust: 20-70% SiO2	0.0000387	0.21	0.000014	0.000014																
					-	-	2930	Abrasive dust	0.0052	28.198	0.000535	0.000535																
12. Building 94 (Water treatment department)	Hydrosine storage capacity	1	8760	Riser (hydrozine storage) bld.94	1	0975	-	15	0.018	0.6	0.00015	20	497.48	723.81	-	-	-	-	-	-	0303	Ammonia	0.0164	115282.3	0.516365	0.516365	-	
	Ammonia water tank	1	8760	Riser (ammonia water tank) bld.94	1	0976	-	12	0.018	0.6	0.00015	20	497.6	740.2	-	-	-	-	-	-	0303	Ammonia	0.0194564	136767	0.399496	0.399496	-	
13. OC site (area of structures and communications of external heat and water supply)	Oil separator OC	1	8760	Oil separator	1	6216	-	2	-	-	-	-	82.3	599.2	83.3	600.2	1	-	-	-	0415	Mixture of saturated hydrocarbons C1-C5	0.00293	-	0.04625	0.04625	-	
	Tank for collecting oil products	1	8760	Tank for collecting oil products	1	6217	-	2	-	-	-	-	56.1	628.1	56.48	627.18	1	-	-	-	0415	Mixture of saturated hydrocarbons C1-C5	0.000018	-	0.000285	0.000285	-	
14. Woodworking site (Area of utilities for external heat and water supply)	Woodworking machinery	1	250	Woodworking equipment	1	6218	-	2	-	-	-	-	61.3	598.7	61.67	597.77	1	-	-	-	2936	Timber dust	0.195	-	0.4302	0.4302	-	
15. Flare unit area	Flare unit	1	8760	Flare unit	1	0269	-	63.4	3.47	14.442	136.577	1670	577.9	706.4	-	-	-	-	-	-	0301	Nitrogen dioxide	6.4041885	333.65	36.525167	36.525167	Periodically from various workshops	
	Flare unit	1	100																0304	Nitrogen oxide	1.0406806	54.218	5.93534	5.93534				
	Flare unit	1	100																0337	Carbon oxide	53.368238	2780.414	304.37640	304.37640				
	Flare unit	1	100																0410	Methane	1.3342059	69.51	7.60941	7.60941				

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa- valent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
num-ber	descript-ion	description	q-ty, pcs	num-ber of wor-king hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Shop: 9. Electrical shop (power generation)																												
1. Area for repair of electric motors bld.161	Drying chamber	1	400	BC-2 (from drying chamber) bld.161	1	0147	-	11	0.5	5.602	1.1	40	2005.9	912.5	-	-	-	-	-	-	0621	Methylbenzene	0.1866899	194.585	0.080037	0.080037	-	
																			-	-	1042	1-butanol	0.0366899	38.241	0.015777	0.015777		
																			-	-	1061	Etanol	0.0416667	43.429	0.0189	0.0189		
																			-	-	1119	2-Ethoxyethanol	0.0467593	48.737	0.018825	0.018825		
																			-	-	1210	Butylacetate	0.0622686	64.902	0.024893	0.024893		
	Dipping bath	1	100	Dipping bath	1	0148	-	3.5	0.25	12.427	0.61	40	1981.4	927.6	-	-	-	-	-	-	0616	Dimethylbenzene	0.0094445	17.751	0.0034	0.0034	-	
																			-	-	0621	Methylbenzene	0.0151806	28.532	0.005465	0.005465		
																			-	-	1042	1-butanol	0.0067362	12.661	0.002425	0.002425		
																			-	-	1119	2-Ethoxyethanol	0.0074778	14.055	0.002692	0.002692		
																			-	-	1210	Butylacetate	0.0109389	20.56	0.003938	0.003938		
	Welding station	1	350	BC-11 (from welding station) bld.161	1	0149	-	9	0.4	15.12	1.9	22.4	1947.6	936.89	-	-	-	-	-	-	0123	Diiron trioxide	0.0013128	0.748	0.001176	0.001176	-	
																			-	-	0143	Manganese and its compounds	0.0001634	0.093	0.000108	0.000108		
																			-	-	0301	Nitrogen dioxide	0.0028334	1.614	0.00306	0.00306		
																			-	-	0337	Carbon oxide	0.0031403	1.788	0.002261	0.002261		
																			-	-	0342	Gaseous fluorine compounds	0.0002196	0.125	0.000182	0.000182		
																			-	-	0344	Low soluble fluorides	0.0000945	0.054	0.000068	0.000068		
																			-	-	2908	Inorganic dust: 20-70% SiO2	0.0000945	0.054	0.000068	0.000068		
	Soldering area	1	60	BC-3 (from soldering station) bld.161	1	0150	-	6	0.3	9.903	0.7	22.4	1962.92	890.2	-	-	-	-	-	-	0168	Tin oxide	0.0000908	0.14	0.0000196	0.0000196	-	
																			-	-	0184	Lead and its compounds	0.0001653	0.255	0.000036	0.000036		
	Painting chamber №1	1	400	Painting chamber №1 (bld. 161)	1	0528	-	19	0.5	14.26	2.8	22.4	1936.5	935.91	-	-	-	Hydraulic filter reg.№1756	-	-	0621	Methylbenzene	0.012446	4.81	0.00844	0.00844	-	
																			-	-	1042	1-butanol	0.002446	0.945	0.00166	0.00166		
																			-	-	1061	Etanol	0.0027778	1.073	0.001913	0.001913		
																			-	-	1119	2-Ethoxyethanol	0.0031173	1.205	0.00208	0.00208		
																			-	-	1210	Butylacetate	0.0041513	1.604	0.002765	0.002765		
																			-	-	1401	2-propanone	0.0012963	0.501	0.000893	0.000893		
	Painting chamber №2	1	400	Painting chamber №2 (bld. 161)	1	0529	-	11	0.5	14.26	2.8	22.4	1994.9	936.1	-	-	-	Hydraulic filter reg.№086	-	-	0621	Methylbenzene	0.017713	6.845	0.01913	0.01913	-	
																			-	-	1042	1-butanol	0.0034908	1.349	0.00377	0.00377		
																			-	-	1061	Etanol	0.0041667	1.61	0.0045	0.0045		
																			-	-	1119	2-Ethoxyethanol	0.0041852	1.617	0.00452	0.00452		
																			-	-	1210	Butylacetate	0.0055371	2.14	0.00598	0.00598		
																			-	-	1401	2-propanone	0.0019445	0.751	0.0021	0.0021		
	Winding and wire firing kiln	1	400	BC-1 (From winding and wire firing kiln)	1	0930	-	20	0.25	14.433	0.708	35	1921.5	897.8	-	-	-	-	-	-	0301	Nitrogen dioxide	0.00275	4.379	0.001188	0.001188	-	
																			-	-	0316	Hydrochloride	0.0139	22.135	0.000525	0.000525		
																			-	-	0328	Soot	0.00005	0.08	0.0000216	0.0000216		
																			-	-	0337	Carbon oxide	1.667	2654.588	0.109416	0.109416		
	2. Department of electrical equipment	Welding operations	1	150	Grinding machine and weld. station (switchgear area)	1	6211	-	2	-	-	-	-	393.6	733.3	393.98	732.37	1	-	-	-	0123	Diiron trioxide	0.0056856	-	0.002692	0.002692	-
																				-	-	0143	Manganese and its compounds	0.0001568	-	0.000085	0.000085	

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equiva-lent purifica-tion rate		Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
num-ber	descript-ion	description	q-ty, pcs	num-ber of wor-king hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X₁	Y₁	X₂	Y₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
building 92					bld.92															-	-	0301	Nitrogen dioxide	0.0041556	-	0.001496	0.001496		
		Sharpener	1	125																-	-	0304	Nitrogen oxide	0.0006753	-	0.000243	0.000243		
																				-	-	2908	Inorganic dust: 20-70% SiO2	0.0000387	-	0.000021	0.000021		
																				-	-	2930	Abrasive dust	0.0026	-	0.00117	0.00117		
		Sharpener	1	125	Grinding machine (mech. area) bld.92	1	6212	-	2	-	-	-	-	394.8	747.4	395.17	746.47	1	-	-	-	0123	Diiron trioxide	0.0034	-	0.00153	0.00153	-	
																				-	-	2907	Inorganic dust: SiO2>70%	0.0028	-	0.00126	0.00126		
		Sharpener	1	125	Grinding machine (cable farm) bld.92	1	6213	-	2	-	-	-	-	421.31	747.85	421.68	746.92	1	-	-	-	0123	Diiron trioxide	0.0042	-	0.00189	0.00189		
																				-	-	2907	Inorganic dust: SiO2>70%	0.0026	-	0.00117	0.00117		
3.Department of electrical equipment (Oil facility of electrical workshop)		Oil tanks	1	8760	Oil storage tanks	1	6214	-	2	-	-	-	-	146.85	684.31	146.86	670.01	32.85	-	-	-	2754	Alkanes C12-19	0.0405	-	0.000481	0.000481	-	
2. Department of electrical equipment building 92		Soldering area	1	320	Soldering area bld. 90	1	6215	-	2	-	-	-	-	440.4	842.9	440.78	841.98	1	-	-	-	0184	Lead and its compounds	0.000005	-	0.0000058	0.0000058	-	
Shop: 10. Repair shop																													
1. Building 107 (OCP)		Shot blasting machine	1	1004	Pipe (from a blasting machine) bld.107	1	0454	-	6	0.3	7.8	0.551	22.4	881.7	611.84	-	-	-	Cyclone reg.№1752	-	-	2907	Inorganic dust: SiO2>70%	0.0150828	29.601	0.054515	0.054515	-	
		Sharpener	1	996	BC-1 (from grinding machine) bld.107	1	0455	-	6	0.3	6	0.424	22.4	888.3	627.9	-	-	-	Cyclone reg.№1762	100	96	2930	Abrasive dust	0.000912	2.327	0.000165	0.000165		
																				100	96	0123	Diiron trioxide	0.001392	3.551	0.000251	0.000251		
		Welding station	1	8760	BC-2 (from welding station) bld.107	1	0931	-	4	0.25	12.456	0.611	22.4	882.1	628.4	-	-	-	-	-	-	0123	Diiron trioxide	0.0013128	2.323	0.001237	0.001237		
																				-	-	0143	Manganese and its compounds	0.0001029	0.182	0.000120	0.000120		
																				-	-	0203	Chromium	0.0000227	0.04	0.0000204	0.0000204		
																				-	-	0301	Nitrogen dioxide	0.00051	0.903	0.000368	0.000368		
																				-	-	0304	Nitrogen oxide	0.0000829	0.147	0.00006	0.00006		
																				-	-	0337	Carbon oxide	0.0031403	5.557	0.002261	0.002261		
																				-	-	0342	Gaseous fluorine compounds	0.0003778	0.669	0.000499	0.000499		
																				-	-	0344	Low soluble fluorides	0.0000944	0.167	0.000068	0.000068		
																				-	-	2908	Inorganic dust: 20-70% SiO2	0.0000944	0.167	0.000068	0.000068		
		Grinding, turning and cutting machines and circular grinding machines	1	40	Metal-working equipment bld.107	1	6176	-	2	-	-	-	-	914.85	615.6	914.96	606.79	5	-	-	-	0123	Diiron trioxide	0.0386	-	0.05184	0.05184		
																				-	-	2930	Abrasive dust	0.017	-	0.022032	0.022032		
2. Building 215 (OCP)		Welding station	1	350	BC-2 (from welding station) bld.215	1	0932	-	22	0.5	10.852	2.131	22.4	1379.7	943.5	-	-	-	-	-	-	0118	Titanium dioxide	0.0000029	0.00144	0.0000013	0.0000013		
																				-	-	0123	Diiron trioxide	0.0008406	0.427	0.000715	0.000715		
																				-	-	0143	Manganese and its compounds	0.0000756	0.038	0.000073	0.000073		
																				-	-	0203	Chromium	0.0000803	0.041	0.000065	0.000065		

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note															
num-ber	descript-ion	description	q-ty, pcs	num-ber of working hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29															
																				-	-	2908	Inorganic dust: 20-70% SiO2	0.0000944	0.216	0.000048	0.000048																
																				-	-	2930	Abrasive dust	0.0076	17.381	0.004050	0.004050																
		Grinding and lathe machines	1	400	BC-13 (welding machines) bld.501	1	0946	-	6.5	0.3	4.136	0.2924	22.4	804.4	840.9	-	-	-	-		-	-	0123	Diiron trioxide	0.011855	43.877	0.007686	0.007686															
																					-	-	0143	Manganese and its compounds	0.0001039	0.385	0.000061	0.000061															
		Welding station	1	350																	-	-	0203	Chromium	0.0000227	0.084	0.0000082	0.0000082															
																					-	-	0342	Gaseous fluorine compounds	0.0003778	1.398	0.000176	0.000176															
																					-	-	2930	Abrasive dust	0.0052	19.246	0.003744	0.003744															
9. Building 801/25 (OP30)	Special machinery engines	1	8760	Tractor parking bld.801/25																	1	6182	-	2	-	-	-	-	717	767	718	768	1	-	-	-	0301	Nitrogen dioxide	0.0024627	-	0.001186	0.001186	
																																			-	-	0304	Nitrogen oxide	0.0004002	-	0.000193	0.000193	
					-	-	0328	Soot	0.00129	-	0.000447	0.000447																															
					-	-	0330	Sulphur dioxide	0.0004889	-	0.000225	0.000225																															
					-	-	0337	Carbon oxide	0.0175717	-	0.006835	0.006835																															
					-	-	2732	Kerosene	0.002845	-	0.001073	0.001073																															
10. Building 388 (OP30)	Grinding and lathe machines	1	400	Welding, machine tools bld. 388	1	6183	-	2	-	-	-	-	1405	471	1406	471.99	1	-	-	-	0123	Diiron trioxide	0.0385819	-	0.019241	0.019241																	
																			-	-	0143	Manganese and its compounds	0.0002574	-	0.00013	0.00013																	
																			-	-	0301	Nitrogen dioxide	0.00051	-	0.000257	0.000257																	
																			-	-	0304	Nitrogen oxide	0.0000829	-	0.000042	0.000042																	
	Welding station	1	350																-	-	0337	Carbon oxide	0.0031403	-	0.001583	0.001583																	
																			-	-	0342	Gaseous fluorine compounds	0.0002196	-	0.000111	0.000111																	
																			-	-	0344	Low soluble fluorides	0.0002361	-	0.000119	0.000119																	
																			-	-	2908	Inorganic dust: 20-70% SiO2	0.002361	-	0.000119	0.000119																	
																			-	-	2930	Abrasive dust	0.019	-	0.00855	0.00855																	
																			-	-	0123	Diiron trioxide	0.0013123	3.815	0.000869	0.000869																	
7. Building 26 (OP30)	Welding station	1	350	BC-1 (welding station) bld. 26	1	0947	-	15	0.3	5.265	0.372	22.4	717	848.9	-	-	-	-	-	-	0143	Manganese and its compounds	0.0001039	0.302	0.000088	0.000088																	
																			-	-	0203	Chromium	0.0000227	0.066	0.0000049	0.0000049																	
																			-	-	0301	Nitrogen dioxide	0.00051	1.483	0.000147	0.000147																	
																			-	-	0304	Nitrogen oxide	0.0000829	0.241	0.000024	0.000024																	
																			-	-	0337	Carbon oxide	0.0031403	9.13	0.000905	0.000905																	
																			-	-	0342	Gaseous fluorine compounds	0.0003778	1.098	0.000188	0.000188																	
																			-	-	0344	Low soluble fluorides	0.0000944	0.274	0.000028	0.000028																	
																			-	-	2908	Inorganic dust: 20-70% SiO2	0.0000944	0.274	0.000028	0.000028																	
11. Building 102/89 (OP30)	Welding station	1	350	BC-1 (welding station (electric welding)) bld.102 / 89	1	0948	-	6.5	0.3	4.27	0.302	22.4	239.6	918.1	-	-	-	-	-	-	0123	Diiron trioxide	0.0009227	3.308	0.00058	0.00058																	
																			-	-	0143	Manganese and its compounds	0.0001634	0.586	0.000101	0.000101																	
																			-	-	0203	Chromium	0.0000227	0.081	0.0000057	0.0000057																	
																			-	-	0342	Gaseous fluorine compounds	0.0003778	1.354	0.000147	0.000147																	
	Welding station	1	350	BC-2 (welding station (gas	1	0949	-	6.5	0.3	4.27	0.302	22.4	248	916.7	-	-	-	-	-	-	0123	Diiron trioxide	0.0013128	4.706	0.000688	0.000688																	
-																			-	0143	Manganese and its	0.0001039	0.372	0.000068	0.000068																		

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equiva-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
num-ber	descript-ion	description	q-ty, pcs	num-ber of wor-king hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
																				-	-	1401	2-propanone	0.0011667	1.553	0.01428	0.01428		
																				100	96	2902	Suspended matter	0.00012	0.16	0.001469	0.001469		
Shop: 12. Railway transport shop (RTP)																													
1. Building 217		Battery charging		1	2000	BC-21 (battery room) building 217	1	0154	-	5	0.4	5.22	0.656	22.4	1858.67	882.74	-	-	-	-	-	-	0322	Sulphuric acid	0.0000625	0.103	0.000432	0.000432	-
		Steaming of tank-trucks		1	150	BC-22 (section for steaming of tank-trucks) bld.217	1	0157	-	12	0.4	1	0.1257	22.4	1871.5	852.5	-	-	-	-	-	-	1052	Methanol	0.7333333	6314.506	0.264	0.264	-
																				-	-	1325	Formaldehyde	0.0666667	574.046	0.012	0.012		
2. Building 138		Welding station		1	350	Welding station bld.138	1	6140	-	2	-	-	-	1665.57	908.88	1665.94	907.96	1	-	-	-	0123	Diiron trioxide	0.0009228	-	0.000831	0.000831	-	
																				-	-	0143	Manganese and its compounds	0.0001634	-	0.000148	0.000148		
																				-	-	0342	Gaseous fluorine compounds	0.0000945	-	0.000085	0.000085		
3. Railways bld. 138		Diesel locomotives engines		1	8760	Locomotives work	2	6158	-	5	-	-	-	1676.4	887.3	1676.78	886.37	1	-	-	-	0301	Nitrogen dioxide	0.6573332	-	41.282519	41.282519	-	
																				-	-	0304	Nitrogen oxide	0.1068166	-	6.70841	6.70841		
																				-	-	0328	Soot	0.0238888	-	0.652445	0.652445		
																				-	-	0330	Sulphur dioxide	0.1408	-	5.396149	5.396149		
																				-	-	0337	Carbon oxide	0.2355554	-	13.963528	13.963528		
																				-	-	2732	Kerosene	0.6336	-	26.980742	26.980742		
2. Building 138		Refueling of diesel locomotives and fuel storage		1	8760	Diesel locomotive Refueling Station	1	6222	-	2	-	-	-	1615.69	906.85	1615.69	906.85	0	-	-	-	0333	Hydrogen sulphide	0.0001109	-	0.000054	0.000054	-	
																				-	-	2754	Alkanes C12-19	0.0394850	-	0.019041	0.019041		
Shop: 13. Wastewater treatment and neutralization shop																													
1. Biological treatment plant		Receiving tanks 176, 167, 147, 148		1	8760	Receiving tanks 176, 167, 147, 148	1	6141	-	2	-	-	-	-	1034.77	283.04	1012.41	282.7	11.629	-	-	-	0303	Ammonia	0.0017924	-	0.026152	0.026152	-
		Sludge densifier pos. 190 / 1.2.		1	8760	Sludge densifier pos. 190 / 1.2.	1	6142	-	2	-	-	-	-	964.69	349.15	938.4	349.3	10.447	-	-	-	0303	Ammonia	0.0004306	-	0.007804	0.007804	-
																					-	-	0333	Hydrogen sulphide	0.0000229	-	0.000641	0.000641	
		Vertical primary settling tanks pos. 170 / 1-12.		1	8760	Vertical primary settling tanks pos. 170 / 1-12.	1	6143	-	2	-	-	-	-	1027.57	331.16	938.14	331.1	23.702	-	-	-	0303	Ammonia	0.001381	-	0.043236	0.043236	-
																					-	-	0333	Hydrogen sulphide	0.0014241	-	0.004622	0.004622	
		Sand trap pos. 164 / 1.2 and 165 / 3.4.		1	8760	Sand trap pos. 164 / 1.2 and 165 / 3.4.	1	6144	-	2	-	-	-	-	993.21	331.95	978.62	332.06	13.66	-	-	-	0303	Ammonia	0.0001337	-	0.003901	0.003901	-
																					-	-	0333	Hydrogen sulphide	0.0000147	-	0.000326	0.000326	
		Chambers of raw sludge p.181		1	8760	Chambers of raw sludge p.181	1	6145	-	2	-	-	-	-	1021.33	295.9	1012.24	295.91	10.134	-	-	-	0410	Methane	0.001	-	0.01	0.01	-
		Mixed sewage balance tank, pos.237		1	8760	Mixed sewage balance tank, pos.237	1	6146	-	2	-	-	-	-	1241.52	335.77	1186.82	336.11	22.691	-	-	-	0410	Methane	0.001	-	0.01	0.01	-
																					-	-	0303	Ammonia	0.0063215	-	0.095721	0.095721	
Aerotanks pos. 151 / 1-4, 172 / 5-8, 172 / 13-16, 152 / 9-10, 152/12.		1	8760	Aerotanks pos. 151 / 1-4, 172 / 5-8, 172 / 13-16, 152 / 9-10, 152/12.	1	6147	-	2	-	-	-	-	1238.54	252.6	1052.98	251.08	106.978	-	-	-	0410	Methane	0.001	-	0.01	0.01	-		
Vertical secondary settling tanks pos. 153, 153a.		1	8760	Vertical secondary settling tanks pos. 153, 153a.	1	6148	-	2	-	-	-	-	1174.04	252.26	1125.02	251.69	104.066	-	-	-	0410	Methane	0.001	-	0.01	0.01	-		
Denitrifying reactor pos.191		1	8760	Denitrifying reactor pos.191	1	6149	-	2	-	-	-	-	1030.68	350.69	993.92	350.92	5.619	-	-	-	0410	Methane	0.001	-	0.01	0.01	-		
																			-	-	0303	Ammonia	0.0005744	-	0.018509	0.018509			

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X₁	Y₁	X₂	Y₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
																				-	-	0333	Hydrogen sulphide	0.000071	-	0.002275	0.002275	
		Sludge pools	1	8760	Sludge pools	1	6150	-	2	-	-	-	-	1105.38	-80.8	643.49	-104.52	293.514	-	-	-	0410	Methane	0.001	-	0.01	0.01	-
		Radial-flow settlement tank p. 235	1	8760	Radial-flow settlement tank p. 235	1	6189	-	2	-	-	-	-	1271.67	216.37	1277.9	200.97	17.412	-	-	-	0410	Methane	0.001	-	0.01	0.01	-
		Radial-flow settlement tank p. 233	1	8760	Radial-flow settlement tank p. 233	1	6190	-	2	-	-	-	-	1013.33	214.82	1019.92	198.52	18.884	-	-	-	0410	Methane	0.001	-	0.01	0.01	-
		Balance tanks pos.175/1,2.	1	8760	Balance tanks pos.175/1,2.	1	6191	-	2	-	-	-	-	901.75	301.57	916.5	269.06	10	-	-	-	0410	Methane	0.001	-	0.01	0.01	-
		Contact tank pos.4/1,2	1	8760	Contact tank pos.4/1,2	1	6192	-	2	-	-	-	-	879.91	54.29	895.34	51.24	17.426	-	-	-	0349	Chlorine	0.329865	-	10.8361	10.8361	-
																				-	-	0316	Hydrochloride	0.329865	-	10.8361	10.8361	
		Methane-tanks pos.9/1,2	1	8760	Methane-tanks pos.9/1,2	1	6188	-	2	-	-	-	-	953.45	288.34	954.45	289.34	1	-	-	-	0410	Methane	0.001	-	0.01	0.01	-
	Fermented sludge tank, position 182	1	8760	Fermented sludge tank, position 182	1	6187	-	2	-	-	-	-	1004.56	301.3	1004.64	291.3	10	-	-	-	0333	Hydrogen sulphide	0.0000251	-	0.000843	0.000843	-	
Shop: 14. Unit M-450																												
2. Installation M-450 (Installation of Methanol M-450)	Reforming furnace	1	8760	Riser (reforming furnace)	1	0804	-	40	2.2	7.974	30.31	169	1105.7	708	-	-	-	-		-	-	0301	Nitrogen dioxide	1.26048	67.33	39.750498	39.750498	-
																				-	-	0304	Nitrogen oxide	0.204626	10.93	6.453086	6.453086	
																				-	-	0330	Sulphur dioxide	0.03333	1.78	1.05109	1.05109	
																				-	-	0337	Carbon oxide	0.303	16.185	9.55541	9.55541	
	Pouring methanol	1	3650	K-6 scrubber	1	0805	-	19.5	0.2	2.642	0.083	44.8	1065.1	1028.7	-	-	-	Scrubber K-6, reg. No. 2070	100	99.9	1052	Methanol	0.0037931	53.2	0.11936	0.11936	-	
	Flare (pilot burners)	1	8750	Flare unit	1	0806	-	60	1.1	0.164	0.156	1298	1077.2	1012.2	-	-	-	-	-	-	0301	Nitrogen dioxide	3.727954	137520.7	1.948607	1.948607	Stoppage and start-up	
	Flare (burning of waste gases)	1	10																-	-	0304	Nitrogen oxide	0.60634	22367.3	0.316669	0.316669		
																			-	-	0337	Carbon oxide	0.181902	6710.191	0.075836	0.075836		
	Exhaust ventilation from the compressor department	1	8760	BC-1 (from compressors)	1	0807	-	20.5	0.56	13.873	3.417	19.8	920.1	979.5	-	-	-	-	-	-	0337	Carbon oxide	0.013668	4.29	0.43103	0.43103	-	
																			-	-	0410	Methane	0.028	8.789	0.806	0.806		
	Exhaust ventilation from the compressor department	1	8760	BC-2 (from compressors)	1	0808	-	20.5	0.56	13.804	3.4	19.8	946.8	965.5	-	-	-	-	-	-	0337	Carbon oxide	0.01292	4.076	0.39672	0.39672	-	
																			-	-	0410	Methane	0.028	8.833	0.806	0.806		
	Exhaust ventilation from the compressor department	1	8760	BC-3 (from compressors)	1	0809	-	20.5	0.56	13.479	3.32	19.8	946.4	976.1	-	-	-	-	-	-	0337	Carbon oxide	0.01328	4.29	0.40833	0.40833	-	
																			-	-	0410	Methane	0.028	9.045	0.806	0.806		
	Exhaust ventilation from the compressor department	1	8760	BC-4 (from compressors)	1	0810	-	20.5	0.56	13.804	3.4	19.8	946.5	973.4	-	-	-	-	-	-	0337	Carbon oxide	0.01224	3.861	0.37528	0.37528	-	
																			-	-	0410	Methane	0.028	8.833	0.806	0.806		
	Exhaust ventilation from the compressor department	1	8760	BC-5 (from compressors)	1	0811	-	20.5	0.56	13.682	3.37	19.8	946.5	969.5	-	-	-	-	-	-	0337	Carbon oxide	0.01011	3.218	0.31883	0.31883	-	
																			-	-	0410	Methane	0.028	8.911	0.806	0.806		
	Exhaust ventilation from the compressor department	1	8760	BC-6 (from compressors)	1	0812	-	20.5	0.56	13.764	3.39	19.8	895.6	966.9	-	-	-	-	-	-	0337	Carbon oxide	0.013899	4.397	0.43832	0.43832	-	
																			-	-	0410	Methane	0.028	8.859	0.806	0.806		
	Collection of raw methanol T-2201	1	8760		Riser (raw methanol collection)	1	0813	-	18	0.2	3.724	0.117	50	1200.8	1016.6	-	-	-	Wash column, reg. No. 2071	100	100	1052	Methanol	0.0117702	119.025	0.37082	0.37082	-
	Riser of alkali	1	8760		Pipe (alkali)	1	0814	-	12.4	0.2	0.00637	0.0002	75	1224.8	1029.1	-	-	-	-	-	-	0150	Sodium hydroxide	0.0001	636.982	0.0028	0.0028	-

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
num-ber	descript-ion	description	q-ty, pcs	num-ber of wor-king hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
		solution preparation tank			solution capacity)																								
		Alkali dosing unit	1	8760	BC-1 (from alkali dosing unit)	1	0815	-	12.5	0.45	10.501	1.67	12	1243.69	1027.6	-	-	-	-	-	-	0150	Sodium hydroxide	0.00062	0.388	0.018	0.018	-	
		Alkali dosing unit	1	8760	BC-2 (from alkali dosing unit)	1	0816	-	11.5	0.25	8.556	0.42	21.9	1243.8	1013.4	-	-	-	-	-	-	0150	Sodium hydroxide	0.00011	0.283	0.0032	0.0032	-	
1. Loading area (Installation Methanol M-450)		Ammonia loading	1	1820	Ammonia loading area	1	0444	-	5.2	0.5	2.04	0.4006	20	1575	354.2	-	-	-	-	-	-	1052	Methanol	0.54012	1447.222	3.53913	3.53913	-	
3. Installation of hydrogen production (dep. of hydrogen production)		Steam reforming furnace	1	8760	Stack (steam reforming furnace)	1	0831	-	25	1	11.29	8.867	273	1100.4	715.6	-	-	-	-	-	-	0301	Nitrogen dioxide	2.75808	622.09	87.051294	87.051294	-	
																				-	-	0304	Nitrogen oxide	0.4481593	101.083	14.141312	14.141312		
																				-	-	0330	Sulphur dioxide	0.2873	64.801	9.060293	9.060293		
																				-	-	0337	Carbon oxide	1.4365	324.005	45.301464	45.301464		
		Pilot burner operation	1	8660	Flare unit	1	0832	1	46.5	0.4	0.452	0.0568	1200	1105.7	708	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0012616	119.843	0.039332	9.123374	-	
																				-	-	0304	Nitrogen oxide	0.000205	19.474	0.006391	1.482391		
																				-	-	0330	Sulphur dioxide	0.0008193	77.828	0.025542	0.028033		
																				-	-	0337	Carbon oxide	0.1051384	9987.416	3.277795	79.011575		
							Start, stop and pilot burners mode	1	100		2	46.5	0.4	67.533	8.486	1200	-	-	0410	Methane	0.002628	249.642	0.081931	1.975289	-				
																	-	-	0301	Nitrogen dioxide	25.23345	16043.19	9.084042	-					
																	-	-	0304	Nitrogen oxide	4.1	2606.742	1.476	-					
																	-	-	0330	Sulphur dioxide	0.0069189	4.399	0.002491	-					
		-	-	0337		Carbon oxide											210.37161	133752.3	75.73378	-									
		-	-	0410		Methane											5.259328	3343.832	1.893358	-									
		-	-																										
		-	-																										
-	-																												
Pumps	1	8760	Vent pipe (from pumps of MDEA solution)	1	0833	-	10	2.2	23.873	90.749	22	1052.33	746.9	-	-	-	-	-	-	3401	Methyldiethanolamine	0.0138	0.164	0.4352	0.4352	-			
Shop: 15. Unit M-450 — A-135																													
4. Building 600/01 Gas conditioning		Reforming	1	8000	Stack X201	1	0844	-	50	3	16.21	114.582	156	684.32	737.03	-	-	-	-	-	-	0301	Nitrogen dioxide	5.906	80.998	170.09	170.09	-	
																				-	-	0330	Sulphur dioxide	0.036	0.494	1.05	1.05		
																				-	-	0337	Carbon oxide	0.729	9.998	21	21		
10. Building 600/13 Deaeration		Venting tube of condenserfrom deaerator	1	8000	Flare stack	1	0845	-	23	0.1	33.75	0.265	130	914.9	692.81	-	-	-	-	-	-	0303	Ammonia	0.02	111.38	0.403	0.403	-	
12. Building 600/15 Flare unit		Flare unit	4	8760	FDuty burners	1	0846	1	60	1.5	0.083	0.1467	990	663.6	752.6	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0186	586.683	0.586	1.992	-	
																				-	-	0330	Sulphur dioxide	0.00047	14.825	0.149	0.149		
																				-	-	0337	Carbon oxide	0.0019	59.93	0.059	0.199		
		Flare unit	4	24		2	60	1.5	73	128.9	990	-	-	0301	Nitrogen dioxide	16.27	583.95	1.406	-	-									
												-	-	0337	Carbon oxide	1.62	58.144	0.14	-										
		Flare unit		3	8760	FDuty burners	1	0847	1	60	0.6	0.35	0.099	990	663.3	757.8	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0124	579.698	0.391	1.156	-
																					-	-	0330	Sulphur dioxide	0.00031	14.492	0.01	0.01	
																					-	-	0337	Carbon oxide	0.00124	57.97	0.039	0.115	
		Flare unit	3	24			2	60	0.6	248.1	70.11	990	-	-	0301	Nitrogen dioxide	8.855	584.318	0.765	-	-								
-	-												0337	Carbon oxide	0.88	58.069	0.076	-											
9. Building 600/11 Methanol tanks		Column discharge	1	8000	Flare stack	1	0848	-	13	0.2	1.32	0.0415	53	911.51	757	-	-	-	-	-	-	1052	Methanol	0.267	7688.514	0.02307	0.02307	-	
11. Building 600/14 Auxiliary		Fuel and Gas Combustion - Auxiliary	1	8000	Auxiliary boiler stack	1	0850	-	49	1.5	16.76	29.617	115	875.32	727.35	-	-	-	-	-	-	0301	Nitrogen dioxide	2.4996	119.948	71.988	71.988	-	
																				-	-	0330	Sulphur dioxide	0.0104	0.499	0.2995	0.2995		

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-vent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note																							
num-ber	descript-tion	description	q-ty, pcs	num-ber of wor-king hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year																									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29																							
boiler		Boiler																		-	-	0337	Carbon oxide	0.625	29.992	17.994	17.994																								
3. Building 599/10 Flare unit		Flare unit	2	8760	FDuty burners	1	0851	1	25	0.3	16.8	1.188	990	991.2	488.69	-	-	-	-	-	-	0301	Nitrogen dioxide	3.0995795	12075.41	0.330349	0.575748	-																							
		Flare unit	2	240																	-	-	0304	Nitrogen oxide	0.5036817	1962.254	0.053682		0.093559																						
																					-	-	0337	Carbon oxide	25.829830	100628.4	2.7529		4.797892																						
																					-	-	0415	Mixture of saturated hydrocarbons C1-C5	0.1467162	571.58	0.028083		0.056165																						
		Flare unit	2	8760				2	25	0.3	56.6	4.001	990								-	-	0301	Nitrogen dioxide	2.1163739	2447.283	0.245400	-	-																						
		Flare unit	2	24																	-	-	0303	Ammonia	3.1684294	3663.835	0.273752	0.273752																							
																					-	-	0304	Nitrogen oxide	0.3439108	397.684	0.039878	-																							
																					-	-	0337	Carbon oxide	17.63645	20394.03	2.044992	-																							
																			-	-	0415	Mixture of saturated hydrocarbons C1-C5	0.1467162	169.656	0.028083	-																									
13. Building 600/23 Chemically contaminated effluent station		Chemically polluted waste reservoir	1	8000	Riser	1	0852	-	7	0.2	1.15	0.0361	20	840.9	782.4	-	-	-	-	-	-	0303	Ammonia	0.078	2317.138	8e-9	8e-9	-																							
		Chemically polluted waste reservoir	1	8000	Riser	1	0853	-	7	0.2	1.15	0.0361	20	841.9	775.4	-	-	-	-	-	-	1052	Methanol	0.0045	133.681	2,5e-9	2,5e-9																								
																				-	-	0303	Ammonia	0.078	2317.138	8e-9	8e-9																								
																				-	-	1052	Methanol	0.0045	133.681	2,5e-9	2,5e-9																								
																				-	-	0303	Ammonia	0.078	2317.138	8e-9	8e-9																								
		Chemically polluted waste reservoir	1	8000	Riser	1	0854	-	7	0.2	1.15	0.0361	20	846.01	765.6	-	-	-	-	-	-	1052	Methanol	0.0045	133.681	2,5e-9	2,5e-9	-																							
Chemically polluted waste reservoir	1	8000	Riser	1	0855	-	7	0.2	1.15	0.0361	20	841	759.8	-	-	-	-	-	-	0303	Ammonia	0.078	2317.138	8e-9	8e-9	-																									
																			-	-	1052	Methanol	0.0045	133.681	2,5e-9	2,5e-9	-																								
8. Building 600/10 Rectification		Evaporation from the drainage tank	1	24	Riser (from drainage tank of methanol V455)	1	0856	-	6	0.1	0.35	0.00275	35	772.2	774.5	-	-	-	-	-	-	1052	Methanol	0.997	409190.3	0.086	0.086	-																							
7. Building 600/06 Synthesis of ammonia		Combustion of gas in the starting heater	1	250	Stack	1	0857	-	25	1.2	1.36	1.538	530	739.12	764.99	-	-	-	-	-	-	0301	Nitrogen dioxide	0.124	237.128	3.584	3.584	-																							
																				-	-	0330	Sulphur dioxide	0.005	9.562	0.1416	0.1416																								
																				-	-	0337	Carbon oxide	0.015	28.685	0.442	0.442																								
6. Building 600 / 05A Methanol synthesis		Gas extraction from collector of periodic boiler collection V706	1	0.81	Flare stack	1	0858	-	18	0.2	208	6.535	100	699.59	746.4	-	-	-	-	-	-	0303	Ammonia	0.059	12.336	1.712	1.712	-																							
		Gas extraction from collector of periodic boiler collection V707	1	0.81	Flare stack	1	0859	-	20.5	0.2	1.27	0.0399	100	758.5	762.4	-	-	-	-	-	-	0303	Ammonia	0.036	1232.807	1.0449	1.0449	-																							
13. Building 600/23 Chemically contaminated effluent station		Equipment of the building for chemically contaminated effluents	1	8000	B-1 (from rooms of chemically contaminated effluent station)	1	0861	-	8.15	0.56	7.8	1.921	20	846.5	782.39	-	-	-	-	-	-	0303	Ammonia	0.027	15.084	0.000097	0.000097	-																							
																				-	-	1052	Methanol	0.0067	3.743	0.000024	0.000024																								
5. Building 600/03 Compression		Gas synthesis compressors	1	7920	B-1 (from rooms of gas synthesis compressors)	1	0862	-	22.6	0.71	5.5	2.178	35.7	761.2	739.7	-	-	-	-	-	-	0303	Ammonia	0.209	108.53	5.959	5.959	-																							
																				-	-	0337	Carbon oxide	0.00333	1.729	0.095	0.095																								
																				-	-	0410	Methane	0.0542	28.145	1.544	1.544																								
		Gas synthesis compressors	1	7920	B-2 (from rooms of gas synthesis compressors)	1	0863	-	22.6	0.71	5.5	2.178	35.7	770.6	735.5	-	-	-	-	-	-	0303	Ammonia	0.209	108.53	5.959	5.959	-																							
																				-	-	0337	Carbon oxide	0.00333	1.729	0.095	0.095																								
																				-	-	0410	Methane	0.0542	28.145	1.544	1.544																								
		Gas synthesis compressors	1	7920	B-3 (from rooms of gas synthesis compressors)	1	0864	-	22.6	0.71	5.5	2.178	35.7	793	739.4	-	-	-	-	-	-	0303	Ammonia	0.209	108.53	5.959	5.959	-																							
																				-	-	0337	Carbon oxide	0.00333	1.729	0.095	0.095																								
																				-	-	0410	Methane	0.0542	28.145	1.544	1.544																								
		Gas synthesis compressors	1	7920	B-4 (from rooms of gas synthesis	1	0865	-	22.6	0.71	5.5	2.178	35.7	800.4	736.7	-	-	-	-	-	-	0303	Ammonia	0.209	108.53	5.959	5.959	-																							
-	-																			0337	Carbon oxide	0.00333	1.729	0.095	0.095																										

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
num-ber	descript-ion	description	q-ty, pcs	num-ber of working hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		25	26	27	28	29
					compressors)															-	-	0410	Methane	0.0542	28.145	1.544	1.544		
		Gas synthesis compressors	1	7920	AB-1 (from rooms of gas synthesis compressors)	1	0866	-	22.6	1.12	8.4	8.276	35.7	750.1	742.59	-	-	-	-	-	-	0303	Ammonia	0.209	28.557	5.959	5.959	-	
																				-	-	0337	Carbon oxide	0.00333	0.455	0.095	0.095		
																				-	-	0410	Methane	0.0542	7.406	1.544	1.544		
		Gas synthesis compressors	1	7920	AB-4 (from rooms of gas synthesis compressors)	1	0867	-	22.6	1.12	8.4	8.276	35.7	776.1	731.7	-	-	-	-	-	-	0303	Ammonia	0.209	28.557	5.959	5.959	-	
																				-	-	0337	Carbon oxide	0.00333	0.455	0.095	0.095		
																				-	-	0410	Methane	0.0542	7.406	1.544	1.544		
		Gas synthesis compressors	1	7920	AB-5 (from rooms of gas synthesis compressors)	1	0868	-	22.6	1.12	8.4	8.276	35.7	823.1	741.9	-	-	-	-	-	-	0303	Ammonia	0.209	28.557	5.959	5.959	-	
																				-	-	0337	Carbon oxide	0.00333	0.455	0.095	0.095		
																				-	-	0410	Methane	0.0542	7.406	1.544	1.544		
1. Building 599/01 Liquid ammonia depot	Equipment of liquid ammonia depot	4	8000	B2/1,2 BE1-BE4 (from rooms of liquid ammonia depot)	1	0869	-	13.6	1.7	1.9	4.313	34	949.2	443.2	-	-	-	-	-	-	0303	Ammonia	0.02	5.215	0.576	0.576	-		
4. Building 600/01 Gas conditioning	Gas pressure stabilisation	74	8000	Natural gas pressure stabilisation station	1	6180	-	2	-	-	-	-	673.2	747.6	673.58	746.68	1	-	-	-	0410	Methane	0.0106	-	0.3106	0.3106	-		
	Desulphurisation	45	8000	Desulphurisation	1	6181	-	2	-	-	-	-	689.06	747.79	689.43	746.86	1	-	-	-	0410	Methane	0.0038	-	0.111	0.111	-		
	Pre-reforming	40	8000	Pre-reforming	1	6182	-	2	-	-	-	-	693.5	732.9	693.5	732.9	0	-	-	-	0337	Carbon oxide	0.0004	-	0.0125	0.0125	-		
																			-	-	0410	Methane	0.0014	-	0.0414	0.0414			
	Primary reforming	30	8000	Primary reforming в зоне БТА (heat-recovery unit)	1	6183	-	2	-	-	-	-	729.4	735.8	729.77	734.87	1	-	-	-	0337	Carbon oxide	0.0016	-	0.04725	0.04725	-		
																			-	-	0410	Methane	0.0066	-	0.1936	0.1936			
	Cooling of reformed gas	18	8000	Cooling of reformed gas	1	6184	-	2	-	-	-	-	693.36	748.78	693.68	747.99	1.089	-	-	-	0337	Carbon oxide	0.003	-	0.0884	0.0884	-		
	Shipping of technical condensate	42	8000	Shipping of process condensate	1	6185	-	2	-	-	-	-	680.2	748.01	680.58	747.08	1	-	-	-	0337	Carbon oxide	0.000054	-	0.0016	0.0016	-		
	Methanol synthesis	20	8000	Methanol synthesis	1	6186	-	2	-	-	-	-	755.9	766.9	756.27	765.97	1	-	-	-	0337	Carbon oxide	0.0014	-	0.0416	0.0416	-		
																			-	-	0410	Methane	0.000003	-	0.0001	0.0001			
																			-	-	1052	Methanol	0.0101	-	0.2956	0.2956			
	Methanation	17	8000	Methanation	1	6187	-	2	-	-	-	-	757.2	773.7	757.58	772.77	1	-	-	-	0410	Methane	0.0007	-	0.0204	0.0204	-		
	Ammonia synthesis	43	8000	Ammonia synthesis	1	6188	-	2	-	-	-	-	734.6	756.9	734.98	755.97	1	-	-	-	0410	Methane	0.0047	-	0.1377	0.1377	-		
	Ammonia refrigeration unit	215	8000	Ammonia refrigeration unit	1	6189	-	2	-	-	-	-	719.2	760.9	719.57	759.98	1	-	-	-	0303	Ammonia	0.016	-	0.4606	0.4606	-		
																			-	-	0410	Methane	0.000212	-	0.0074	0.0074			
	Unit for recovery of ammonia from purge gases	174	8000	Unit for recovery of ammonia from purge gases	1	6190	-	2	-	-	-	-	701.3	756.6	701.67	755.68	1	-	-	-	0303	Ammonia	0.0046	-	0.1363	0.1363	-		
-																			-	0410	Methane	0.0018	-	0.0537	0.0537				
Unit for recovery of hydrogen from purge gases	40	8000	Unit for recovery of hydrogen from purge gases	1	6191	-	2	-	-	-	-	697	760.8	697.38	759.87	1	-	-	-	0410	Methane	0.0017	-	0.0498	0.0498	-			
Rectification	224	8000	Rectification	1	6192	-	2	-	-	-	-	795.5	774.91	795.88	773.98	1	-	-	-	1052	Methanol	0.0083	-	0.2441	0.2441	-			
Methanol storage	102	8000	Methanol tank	1	6193	-	2	-	-	-	-	877.8	782.2	878.18	781.27	1	-	-	-	1052	Methanol	0.0058	-	0.1707	0.1707	-			
Auxiliary boiler	62	8000	Auxiliary boiler	1	6194	-	2	-	-	-	-	862.38	720.52	862.76	719.59	1	-	-	-	0410	Methane	0.0372	-	1.0936	1.0936	-			
Gas flaring	22	8000	Flare unit	1	6195	-	2	-	-	-	-	663.6	755.41	663.98	754.48	1	-	-	-	0410	Methane	0.0027	-	0.0782	0.0782	-			
5. Building	Synthesis gas	60	8000	Synthesis gas	1	6196	-	2	-	-	-	-	779	742.3	779.38	741.37	1	-	-	-	0337	Carbon oxide	0.0011	-	0.317	0.317	-		

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion source	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coodinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
num-ber	descript-ion	description	q-ty, pcs	num-ber of wor-king hours per year							speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂				maximum purifica-tion rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
600/03 Compression	compressor K-431				compressor K-431														-	-	-	0410	Methane	0.0001	-	0.003	0.003	
	Synthesis gas compressor K-442		28	8000	Synthesis gas compressor K-442	1	6197	-	2	-	-	-	-	769.7	742	770.07	741.08	1	-	-	-	0303	Ammonia	0.0017	-	0.0508	0.0508	-
																				-	-	0410	Methane	0.0007	-	0.0204	0.0204	
		Ammonia compressor		32	8000	Outdoor area for ammonia compression	1	6198	-	2	-	-	-	-	750.4	750.1	750.77	749.18	1	-	-	-	0303	Ammonia	0.012	-	0.3523	0.3523
1. Building 599/01 Liquid ammonia depot	Spherical tanks		177	8000	Spherical tanks	1	6199	-	2	-	-	-	-	1037.3	434.73	990.97	433.97	47.587	-	-	-	0303	Ammonia	0.206	-	1.036	1.036	-
	Liquid ammonia evaporator		144	8000	Liquid ammonia evaporators	1	6200	-	2	-	-	-	-	1050.28	421.84	1042.38	421.73	17.717	-	-	-	0303	Ammonia	0.0272	-	0.7979	0.7979	-
	Ammonia loading trestle		166	8000	Trestle for ammonia loading into railway tanks and tank trucks	1	6201	-	2	-	-	-	-	1120.34	385.7	1071.28	386.04	12.889	-	-	-	0303	Ammonia	0.0265	-	0.7781	0.7781	-
	Drainage collection system		16	8000	Liquid ammonia drainage collection system	1	6202	-	2	-	-	-	-	957.88	429.29	953.06	429.21	10	-	-	-	0303	Ammonia	0.00012	-	0.0026	0.0026	-
	Gas flaring		20	8000	Flare unit TX/A 8 (P06)	1	6203	-	2	-	-	-	-	994.85	489.55	995.94	486.86	2.701	-	-	-	0303	Ammonia	0.0027	-	0.0779	0.0779	-
	Refrigeration unit		79	8000	Storage cycle refrigeration unit	1	6204	-	2	-	-	-	-	941.49	426.95	936.71	426.97	5.819	-	-	-	0303	Ammonia	0.0083	-	0.2455	0.2455	-
2. Building 599/05 Trestles for loading into railway tanks and tank trucks	Liquid ammonia loading		4	8760	Liquid ammonia loading	1	0860	-	4	0.3	16.8	1.188	13	1090.1	387.5	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0000003	0.000247	0.0000088	0.0000088	-
																				-	-	0303	Ammonia	0.0006	0.529	0.02	0.02	
Shop: 16. Boiler and turbine shop (power generation production)																												
1. Building 90 (Boiler and turbine subdivisions)	Boiler No.2 (Moscow-area coal)		1	1000	Chimney stack (from boilers Nos. 1, 2, 3) bldg.90	1	0952	-	120	5	8.149	160.005	152	355	892.9	-	-	-	2-stage gas cleaning ash-collecting unit, Reg. No.002	-	-	0301	Nitrogen dioxide	27.091731	263.59	679.97716	679.97716	-
	Boiler No.2 (fuel oil)		1	200																-	-	0304	Nitrogen oxide	4.53657	44.139	110.49628	110.49628	
	Boiler No.2 (gas)		1	6560																-	-	0330	Sulphur dioxide	12.5	121.619	52.448	52.448	
	Boiler No.2 (Inta-area coal)		1	1000																-	-	0337	Carbon oxide	6.21297	60.449	52.94051	52.94051	
	Boiler No.3 (gas)		1	8760															2-stage gas cleaning ash-collecting unit, Reg. No.003	-	-	0703	Benzapyrene	0.0000001	0.000001	0.0000004	0.0000004	
	Boiler No.1 (gas)		1	8760																-	-	2904	Fuel oil ash	0.0002715	0.00264	0.000703	0.000703	
					-	-	0328	Soot	10.387891	101.069	49.321862	49.321862																
					-	-	2926	Coal ash	16.593643	161.448	78.777048	78.777048																
	Boiler No.4 (gas)		1	8760	Chimney stack (from boilers Nos. 4, 5, 6) bldg.90	1	0953	-	120	5	7.894	154.998	152	399.3	893.6	-	-	-	2-stage gas cleaning ash-collecting unit, Reg. No.004	-	-	0301	Nitrogen dioxide	26.186764	263.015	649.04059	649.04059	-
	Boiler No.5 (Moscow-area coal)		1	1000	2-stage gas cleaning	-	-	0304	Nitrogen oxide	4.34479	43.638	105.46909	105.46909															

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
number	description	description	q-ty, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X₁	Y₁	X₂	Y₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
		Boiler No.5 (Inta-area coal)	1	1000															ash-collecting unit, Reg. No.005	-	-	0330	Sulphur dioxide	12.5	125.548	45	45		
		Boiler No.5 (gas)	1	6760																-	-	0337	Carbon oxide	6.21297	62.402	52.02408	52.02408		
		Boiler No.6	1	8760																-	-	0703	Benzapyrene	0.0000001	0.000001	0.0000004	0.0000004		
																				-	-	0328	Soot	16.947007	170.213	82.55234	82.55234		
	2. Coal storage (Fuel and transport subdivision)		Coal transfer station No.1 AU-2	1	300	Coal transfer station No.1	1	0960	-	10	0.35	21.619	2.08	24.2	666.16	553.2	-	-	-	Gas cleaning unit AU-2	100	98.8	2909	Inorganic dust: SiO2<20%	0.0674454	35.3	0.072841	0.072841	-
		Coal transfer station No.2 AU-3A	1	300	Coal transfer station No.2	1	0961	-	9	0.35	18.709	1.8	24.2	478.55	556.3	-	-	-	Gas cleaning unit AU-3A	100	99.1	2909	Inorganic dust: SiO2<20%	0.1529425	92.5	0.165178	0.165178	-	
		Coal transfer station No.3 AU-A	1	300	Coal transfer station No.3	1	0962	-	8	0.35	21.619	2.08	24.2	477.8	488.9	-	-	-	Gas cleaning unit AU-A	100	98.2	2909	Inorganic dust: SiO2<20%	0.0004261	0.223	0.00046	0.00046	-	
		Coal transfer station No.4 AU-7	1	300	Coal transfer station No.4	1	0963	-	14	0.35	28.947	2.785	24.2	547.25	552.45	-	-	-	Gas cleaning unit AU-7	100	98.1	2909	Inorganic dust: SiO2<20%	0.2698930	105.5	0.291484	0.291484	-	
		Coal transfer tower AU-5A	1	300	Coal transfer tower	1	0964	-	15	0.5	13.456	2.642	24.2	467.5	819.69	-	-	-	Gas cleaning unit AU-5A	100	98.3	2909	Inorganic dust: SiO2<20%	0.1754628	72.3	0.1895	0.1895	-	
		Crushing building AU-4A	1	300	Crushing building AU-4A	1	0965	-	14	0.5	15.564	3.056	24.2	478.4	659.7	-	-	-	Gas cleaning unit AU-4A	100	98.9	2909	Inorganic dust: SiO2<20%	0.2548902	90.8	0.275281	0.275281	-	
		Coal transfer station No.2 AU-3B	1	300	Coal transfer station No.2 AU-3B	1	0966	-	14	0.35	26.213	2.522	24.2	471.5	548.4	-	-	-	Gas cleaning unit AU-3B	100	99.12	2909	Inorganic dust: SiO2<20%	0.2036329	87.9	0.219924	0.219924	-	
		Coal transfer station No.3 AU-B	1	300	Coal transfer station No.3 AU-B	1	0967	-	14	0.5	10.186	2	24.2	470.7	482.8	-	-	-	Gas cleaning unit AU-B	100	98.4	2909	Inorganic dust: SiO2<20%	0.0003895	0.212	0.000421	0.000421	-	
		Transfer tower AU-5B	1	300	Transfer tower AU-5B	1	0968	-	14	0.35	29.03	2.793	24.2	458.5	815.5	-	-	-	Gas cleaning unit AU-5B	100	98.87	2909	Inorganic dust: SiO2<20%	0.2221789	86.6	0.239953	0.239953	-	
		Crushing building AU-4B	1	300	Crushing building AU-4B	1	0969	-	14	0.5	13.466	2.644	24.2	470.6	651.8	-	-	-	Gas cleaning unit AU-4B	100	98.2	2909	Inorganic dust: SiO2<20%	0.2921736	120.3	0.315547	0.315547	-	
		Bin-loading gallery AU-K1	1	300	Bin-loading gallery AU-K1 bldg.90	1	0970	-	14	0.5	10.924	2.145	24.2	341.9	841.5	-	-	-	Gas cleaning unit AU-K1	100	98.7	2909	Inorganic dust: SiO2<20%	0.1783158	90.5	0.192581	0.192581	-	
		Bin-loading gallery AU-K2	1	300	Bin-loading gallery AU-K-2 bldg.90	1	0971	-	14	0.35	24.301	2.338	24.2	366.4	839.49	-	-	-	Gas cleaning unit AU-K2	100	98.7	2909	Inorganic dust: SiO2<20%	0.1361594	63.4	0.147052	0.147052	-	

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
number	description	description	quantity, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X ₁	Y ₁	X ₂	Y ₂					Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
		Bin-loading gallery AU-K3	1	300	Bin-loading gallery AU-K-3 bldg.90	1	0972	-	14	0.5	11.113	2.182	24.2	388.9	837.9	-	-	-	Gas cleaning unit AU-K3	100	98.8	2909	Inorganic dust: SiO2<20%	0.1882064	93.9	0.203263	0.203263	-	
		Bin-loading gallery AU-K4,5	1	300	Bin-loading gallery AU-K-4,5 bldg.90	1	0973	-	14	0.35	28.271	2.72	24.2	415.49	834.5	-	-	-	Gas cleaning unit AU-K4,5	100	99	2909	Inorganic dust: SiO2<20%	0.2181208	87.3	0.23557	0.23557	-	
3. Area near bldg.198 (Fuel and transport subdivision)	Fuel oil tanks	1	8760	Fuel oil tanks	1	6207	-	2	-	-	-	-	102.94	666.21	102.56	667.14	1	-	-	-	0333	Hydrogen sulphide	0.0003853	-	0.000015	0.000015	-		
																			-	-	2754	Alkanes C12-19	0.0798723	-	0.002909	0.002909			
2. Coal storage (Fuel and transport subdivision)	Station for coal unloading from railway cars	1	100	Station for coal unloading from railway cars	1	6208	-	2	-	-	-	-	659.58	500.8	659.81	490.8	10	-	-	-	2909	Inorganic dust: SiO2<20%	0.019125	-	0.00405	0.00405	-		
	Outdoor coal storage	1	8760	Outdoor coal storage	1	6209	-	2	-	-	-	-	569.43	541.9	569.27	491.9	150	-	-	-	2909	Inorganic dust: SiO2<20%	4.1270627	-	0.478834	0.478834	-		
4. Building 49 (Fuel and transport subdivision)	Sharpener	1	13	Sharpener bldg.49	1	6210	-	2	-	-	-	-	503.59	615.95	504.59	616.95	1	-	-	-	0123	Diiron trioxide	0.0048	-	0.00045	0.00045	-		
																			-	-	2930	Abrasive dust	0.0032	-	0.0003	0.0003			
Shop: 17. Dimethyl ether (DME) production																													
1. Area near bldg.345	Flare unit	1	8760	Flare unit	1	0834	1	30	0.2	0.32	0.01005	1200	1291.3	728.1	-	-	-	-	-	-	-	0301	Nitrogen dioxide	0.0006	322.026	0.0173	0.084648	Duty burner operation	
																				-	-	0304	Nitrogen oxide	0.094	50450.81	2.71	5.421183		
																				-	-	0337	Carbon oxide	0.000073	39.18	0.002	0.004		
	Flare unit	1	8760		2	30	0.2	1.86	0.0584	900	-	-								0301	Nitrogen dioxide	0.0176199	1295.615	0.067348	-	Start/Stop operating mode, loading to container tanks			
											Flare unit	1								790	-	-	0304	Nitrogen oxide	0.094		6911.947	2.711183	-
																					-	-	0337	Carbon oxide	0.000073		5.368	0.002	-
Shop: 18. Sulfuric acid production																													
1. Sulfuric acid production	Gas cleaning station	1	8760	Exhaust tower	1	0917	-	95	1.5	7.47	13.2	35	1512.89	582.4	-	-	-	Electrical filter and scrubber	-	-	0303	Ammonia	0.088	7.521	2.5344	2.5344	-		
																			100	86.41	0322	Sulphuric acid	0.0933905	7.982	2.689646	2.689646			
																			100	77.5	0330	Sulphur dioxide	1.998225	170.788	57.5505	57.5505			
	Circulating	1	8760		Absorber pipe T 405	1	0918	-	7	0.1	0.229	0.0018	60	1479.89	540.4	-	-	-	Absorber'	100	96	0322	Sulphuric acid	0.0034028	2305.927	0.098	0.098	-	
	Incinerator F 201	1	8760		Incinerator gas duct	1	0919	-	9	0.7	5	1.924	60	1529.89	540.4	-	-	-	-	-	-	0301	Nitrogen dioxide	0.1607663	101.911	0.043407	0.043407	-	
																				-	-	0304	Nitrogen oxide	0.0261245	16.561	0.007054	0.007054		
																				-	-	0337	Carbon oxide	0.6691897	424.204	0.180682	0.180682		
																				-	-	0703	Benzapyrene	0.000001	0.00063	0.0000003	0.0000003		
	Tank V102a	1	8760		Nozzle d1 of tank V102a	1	0920	-	15.1	0.2	0.1974	0.0062	30	1446.9	443.4	-	-	-	-	-	-	0331	Elementary sulphur	0.0011348	203.146	0.001251	0.001251	-	
	Tank V102a	1	8760	Nozzle d2-d4 of tank V102a	1	0921	-	13.3	0.15	0.592	0.01046	30	1446.9	428.4	-	-	-	-	-	-	0331	Elementary sulphur	0.001914	203.091	0.002109	0.002109	-		
	Tank V102b	1	8760	Nozzle d1 of tank V102b	1	0922	-	15.1	0.2	0.1974	0.0062	30	1446.9	413.4	-	-	-	-	-	-	0331	Elementary sulphur	0.0011348	203.146	0.001251	0.001251	-		
	Tank V102b	1	8760	Nozzle d2-d4 of tank V102b	1	0923	-	13.3	0.15	0.592	0.01046	30	1446.9	398.4	-	-	-	-	-	-	0331	Elementary sulphur	0.001914	203.091	0.002109	0.002109	-		
	Receiving tank	1	8760	Receiving tank nozzle	1	0924	-	2	0.1	2.801	0.022	30	1406.9	423.4	-	-	-	-	-	-	0331	Elementary sulphur	0.004067	205.178	0.00672	0.00672	-		
Tanks and equipment	1	8760	Nozzle of absorber T501	1	0925	-	16.1	0.1	0.3565	0.0028	50	1401.89	669.4	-	-	-	Absorber'	100	96	0322	Sulphuric acid	0.0014292	603.914	0.04116	0.04116	-			

Shop, section		Pollutant emission source			Name of pollutant emission source	Num-ber of sources under one num-ber, pcs	Num-ber of emis-sion mode (stage)	Emis-sion source height, m	Pipe diame-ter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treat-ment utiliza-tion factor, %	Mean-equa-lent purifica-tion rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note	
num-ber	descript-ion	description	q-ty, pcs	num-ber of wor-king hours per year						speed, m/s	volume per pipe, m³/s	tempe-rature, °C	X ₁	Y ₁	X ₂	Y ₂					Code	description	g/s	mg/m³	t/year			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	Diesel locomotive (intake)	Diesel locomotive (sulphur intake)	1	8760	Diesel locomotive (sulphur intake)	1	6802	-	2	-	-	-	-	1396.9	423.4	1376.89	423.4	7	-	-	-	0301	Nitrogen dioxide	0.04928	-	15.13721	15.13721	-
																				-	-	0304	Nitrogen oxide	0.008008	-	2.459795	2.459795	
																				-	-	0328	Soot	0.00179	-	0.115764	0.115764	
																				-	-	0330	Sulphur dioxide	0.01056	-	0.97849	0.97849	
																				-	-	0337	Carbon oxide	0.0177	-	2.446193	2.446193	
																				-	-	2754	Alkanes C12-19	0.04752	-	4.12884	4.12884	
	Diesel locomotive (loading)	Diesel locomotive (product loading)	1	8760	Diesel locomotive (product loading)	1	6803	-	2	-	-	-	-	1376.9	663.4	1396.89	663.4	7	-	-	-	0301	Nitrogen dioxide	0.04928	-	15.13721	15.13721	-
																				-	-	0304	Nitrogen oxide	0.008008	-	2.459795	2.459795	
																				-	-	0328	Soot	0.00179	-	0.115764	0.115764	
																				-	-	0330	Sulphur dioxide	0.01056	-	0.97849	0.97849	
																				-	-	0337	Carbon oxide	0.0177	-	2.446193	2.446193	
																				-	-	2754	Alkanes C12-19	0.04752	-	4.12884	4.12884	
	Motor road vehicles (loading)	Motor road vehicles (product loading)	1	8760	Motor road vehicles (product loading)	1	6804	-	2	-	-	-	-	1381.9	671.4	1391.89	671.4	5	-	-	-	0301	Nitrogen dioxide	0.0174917	-	0.057508	0.057508	-
																				-	-	0304	Nitrogen oxide	0.0028424	-	0.009345	0.009345	
																				-	-	0328	Soot	0.0017479	-	0.004989	0.004989	
																				-	-	0330	Sulphur dioxide	0.0016656	-	0.007135	0.007135	
																				-	-	0337	Carbon oxide	0.0865479	-	0.236983	0.236983	
																				-	-	2732	Kerosene	0.0116729	-	0.032578	0.032578	
	Welding operations	Welding operations	1	8760	Welding operations	1	6805	-	2	-	-	-	-	1511.89	507.4	1516.89	507.39	3	-	-	-	0123	Diiron trioxide	0.0009722	-	0.000339	0.000339	-
																				-	-	0143	Manganese and its compounds	0.0002315	-	0.000053	0.000053	
																				-	-	0203	Chromium	0.0000153	-	0.000003	0.000003	
-																				-	0342	Gaseous fluorine compounds	0.0001018	-	0.000028	0.000028		
Shop: 19. Ammonium sulphare volume reduction unit																												
1. Volume reduction unit	Loader operation		1	8760	CAT loader	1	6806	-	5	-	-	-	-	1643.3	715.3	1643.3	715.3	0	-	-	-	0337	Carbon oxide	0.0755	-	2.545	2.545	-
																				-	-	0415	Mixture of saturated hydrocarbons C1-C5	0.00772	-	0.2865	0.2865	
																				-	-	0304	Nitrogen oxide	0.0118	-	0.5535	0.5535	
																				-	-	0330	Sulphur dioxide	0.00098	-	0.00023	0.00023	
	Exhaust hood with fan C102	1	8760	Exhaust ventilation C102	1	0977	-	22.7	1	8.5	6.676	25	1658.3	699.4	-	-	-	Separator and hose filter	100	99	2902	Suspended matter	0.833	136.204	26.2	26.2	-	
	Exhaust hood with fan C103	1	8760	Exhaust ventilation C102	1	0978	-	22.7	1	8.5	6.676	25	1643.5	701.4	-	-	-	Separator and hose filter	100	99	2902	Suspended matter	0.111	18.15	3.5	3.5	-	
Shop: 20. Industrial effluent and storm water runoff (IE&SWR) treatment facilities																												
1. Waste water treatment facilities site	Contaminated water tanks		3	8760	Contaminated water tanks	3	6209	-	2	-	-	-	-	747.19	-105.2	832.14	-120.95	18	-	-	-	0301	Nitrogen dioxide	0.0000278	-	0.000877	0.000877	-
																				-	-	0303	Ammonia	0.0001697	-	0.00535	0.00535	
																				-	-	0304	Nitrogen oxide	0.0000475	-	0.001497	0.001497	
																				-	-	0333	Hydrogen sulphide	0.000333	-	0.010479	0.010479	
																				-	-	1728	Ethanethiol	0.0000012	-	0.000039	0.000039	
	Membrane cleaning unit		3	8760	MBR	3	6208	-	2	-	-	-	-	803.14	-62.78	868.89	-48.99	30	-	-	-	0301	Nitrogen dioxide	0.0000194	-	0.00061	0.00061	-
																				-	-	0303	Ammonia	0.0004597	-	0.01448	0.01448	
																				-	-	0304	Nitrogen oxide	0.0003387	-	0.01067	0.01067	
																				-	-	0333	Hydrogen sulphide	0.000155	-	0.004878	0.004878	
																				-	-	1728	Ethanethiol	0.0000063	-	0.000198	0.000198	
	Biological treatment	3	8760	Biological	3	6207	-	2	-	-	-	-	693.13	-55.05	732.04	-54.64	30	-	-	-	0301	Nitrogen dioxide	0.0002119	-	0.006676	0.006676	-	

Shop, section		Pollutant emission source			Name of pollutant emission source	Number of sources under one number, pcs	Number of emission source	Number of emission mode (stage)	Emission source height, m	Pipe diameter, m	Parameters of gas-air mixture at the emission source outlet			Schematic map coordinates, m				Source area width, m	Names of gas treatment units	Gas treatment utilization factor, %	Mean-equivalent purification rate	Pollutant		Pollutant emissions			Total emissions by source, t/year	Note
number	description	description	qty, pcs	number of working hours per year							speed, m/s	volume per pipe, m³/s	temperature, °C	X₁	Y₁	X₂	Y₂				maximum purification rate, %	Code	description	g/s	mg/m³	t/year		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	Motor road vehicle engines (bay)	Motor road vehicle engines (bay)	1	252	Motor road vehicle engines (bay)	1	6010	-	5	-	-	-	-	659.58	500.8	659.81	490.8	10	-	-	-	0301	Nitrogen dioxide	0.0009317	-	0.002489	0.002489	-
																				-	-	0328	Soot	0.0000361	-	0.000101	0.000101	
																				-	-	0330	Sulphur dioxide	0.0001201	-	0.000313	0.000313	
																				-	-	0337	Carbon oxide	0.0117444	-	0.028884	0.028884	
																				-	-	2704	Petrol	0.00105	-	0.00249	0.00249	
																				-	-	2732	Kerosene	0.0003194	-	0.000857	0.000857	
	Motor road vehicle engines (bay)	Motor road vehicle engines (bay)	1	252	Motor road vehicle engines (bay)	1	6011	-	5	-	-	-	-	146.85	684.31	146.86	670.01	32.843	-	-	-	0301	Nitrogen dioxide	0.001611	-	0.002217	0.002217	-
																				-	-	0328	Soot	0.0000722	-	0.000101	0.000101	
																				-	-	0330	Sulphur dioxide	0.0001797	-	0.000241	0.000241	
																				-	-	0337	Carbon oxide	0.00445	-	0.005806	0.005806	
																				-	-	2732	Kerosene	0.0006389	-	0.000857	0.000857	
	Motor road vehicle engines (road machinery parking lot)	Motor road vehicle engines (road machinery parking lot)	1	252	Motor road vehicle engines (road machinery parking lot)	1	6016	-	5	-	-	-	-	61.3	598.7	61.67	597.77	1	-	-	-	0301	Nitrogen dioxide	0.0106306	-	0.010421	0.010421	-
																				-	-	0328	Soot	0.0047078	-	0.002749	0.002749	
																				-	-	0330	Sulphur dioxide	0.0016769	-	0.001401	0.001401	
																				-	-	0337	Carbon oxide	0.060675	-	0.036895	0.036895	
																				-	-	2732	Kerosene	0.0099733	-	0.006089	0.006089	
	Welding station	Welding station	1	300	Welding station	1	6017	-	2	-	-	-	-	630.9	245.55	630.9	245.55	0	-	-	-	0123	Diiron trioxide	0.0009046	-	0.000977	0.000977	-
																				-	-	0143	Manganese and its compounds	0.0001602	-	0.000173	0.000173	
																				-	-	0342	Gaseous fluorine compounds	0.000037	-	0.00004	0.00004	
	Motor road vehicle engines (maintenance and repair station)	Motor road vehicle engines (maintenance and repair station)	1	252	Motor road vehicle engines (maintenance and repair station)	1	6018	-	5	-	-	-	-	645.3	241.6	645.68	240.67	1	-	-	-	0301	Nitrogen dioxide	0.0009222	-	0.000009	0.000009	-
																				-	-	0328	Soot	0.00004	-	1e-8	1e-8	
																				-	-	0330	Sulphur dioxide	0.0001062	-	0.000001	0.000001	
																				-	-	0337	Carbon oxide	0.01316	-	0.000086	0.000086	
																				-	-	2704	Petrol	0.0013722	-	0.000007	0.000007	
-																				-	2732	Kerosene	0.0003556	-	0.000003	0.000003		
Motor road vehicle engines (outdoor parking lot)	Motor road vehicle engines (outdoor parking lot)	1	252	Motor road vehicle engines (outdoor parking lot)	1	6020	-	5	-	-	-	-	649.2	265.3	649.57	264.38	1	-	-	-	0301	Nitrogen dioxide	0.023836	-	0.052337	0.052337	-	
																			-	-	0328	Soot	0.0037058	-	0.005307	0.005307		
																			-	-	0330	Sulphur dioxide	0.0030769	-	0.007116	0.007116		
																			-	-	0337	Carbon oxide	0.1765604	-	0.168215	0.168215		
																			-	-	2704	Petrol	0.0132539	-	0.005654	0.005654		
																			-	-	2732	Kerosene	0.0121604	-	0.019858	0.019858		
Shop: 4. Shop No.4 Storage facility																												
1. Shop No.4 Storage facility	Sand and crushed stone storage yard	1	3120	Sand and crushed stone storage yard	1	6012	-	2	-	-	-	-	625.9	265.2	626.28	264.27	1	-	-	-	2908	Inorganic dust: 20-70% SiO2	0.0576	-	0.020736	0.020736	-	
	Loading of sand and crushed stone	1	100																		2909	Inorganic dust: SiO2<20%	0.035568	-	0.073861	0.073861		
	Sand and crushed stone storage yard	1	3120	Sand and crushed stone storage yard	1	6013	-	2	-	-	-	-	840.34	386.56	839.42	372.1	105.84	-	-	-	2908	Inorganic dust: 20-70% SiO2	0.05768	-	0.020736	0.020736	-	
																					Loading of sand and crushed stone	1	100	2909	Inorganic dust: SiO2<20%	0.031824		-
Facility: 3. Hexion-Shchekinoazot LLC																												
Site: 1. Hexion-Shchekinoazot LLC																												
Shop: 1. Shop No.1																												
1. Shop No.1	Resin synthesis reactor	1	8400	Resin synthesis reactor	1	0001	-	30.2	0.2	9.74	0.306	20	1887.5	275.01	-	-	-	Scrubber	100	98.5	1052	Methanol	0.0387675	135.973	1.172328	1.172328	-	
																			100	98.6	1071	Phenol	0.0000767	0.269	0.00232	0.00232		
																			100	98.73	1325	Formaldehyde	0.0013888	4.871	0.041999	0.041999		

Table 17 - Lists of pollutants to be emitted into the atmosphere from the design facility sources

Pollutant		Hazard class	Maximum allowed concentration, mg/sq.m.				SP emissions		Emissions with the account of M-500	
Code	description		maximum one-off	mean daily	SRLI	To be used in calculations	g/s	t/year	g/s	t/year
1	2	3	4	5	6	7	8	9	10	11
301	Nitrogen dioxide	3	0.2	0.04	-	0.2	101.1448	1717.0508	140.81984	2068.9027
303	Ammonia	4	0.2	0.04	-	0.2	2.494888	77.028747	8.2334565	136.17109
304	Nitrogen oxide	3	0.4	0.06	-	0.4	16.618801	277.75095	69.051384	300.75174
330	Sulphur dioxide	3	0.5	0.05	-	0.5	26.188373	126.20402	28.286122	188.02674
337	Carbon oxide	4	5	3	-	5	337.09965	1735.0793	368.68379	1811.1642
6204	Nitrogen dioxide, sulphur dioxide					1.6	-	-	-	-

The enterprise category calculation has been made in accordance with the "Methodical guidelines for calculation, normalisation and control of the emissions of pollutants into the atmospheric air (as supplemented and revised). St. Petersburg, Atmosfera Research Institute, Federal service for ecological, technological and nuclear supervision. 2012."

Table 18 - Determination of the enterprise category by impact of its emissions on the atmospheric air

Pollutant		Overall emission		Design parameter	
Code	description	g/s	t/year	g _j	K _j
1	2	3	4	5	6
Facility: 1. JSC Shchekinoazot					
Site: 1. JSC Shchekinoazot					
0118	Titanium dioxide	0.0000029	0.0000013	< 0.05	0.0000026
0123	Diiron trioxide	0.6013848	0.572292	< 0.05	14.307
0143	Manganese and its compounds	0.0038872	0.002942	< 0.05	2.942
0150	Sodium hydroxide	0.00083	0.024	< 0.05	2.4
0155	Disodium carbonate	0.33781	10.627	< 0.05	212.54
0164	Nickel oxide	0.0000038	0.0000014	< 0.05	0.0014
0168	Tin oxide	0.0000908	0.0000196	< 0.05	0.00098
0184	Lead and its compounds	0.0001703	0.000042	< 0.05	0.14
0203	Chromium	0.0003462	0.000187	< 0.05	0.1247
0293	Zirconium and its compounds	0.019	0.00855	< 0.05	0.855
0301	Nitrogen dioxide	140.81984	2068.9027	0.674	51722.568
0303	Ammonia	8.2334565	136.17109	0.2944	3404.277
0304	Nitrogen oxide	69.051384	300.75174	0.054	5012.529
0316	Hydrochloride	0.3443999	10.856656	< 0.05	108.567
0322	Sulphuric acid	0.1240621	3.640978	< 0.05	36.41
0328	Soot	27.383757	132.77761	< 0.05	2655.552
0330	Sulphur dioxide	28.286122	188.02674	0.027	3760.535
0331	Elementary sulphur	0.0101646	0.01344	< 0.05	0.192
0333	Hydrogen sulphide	0.0163729	0.45762	< 0.05	57.203
0337	Carbon oxide	368.68379	1811.1642	0.142	603.721
0342	Gaseous fluorine compounds	0.0058847	0.003737	< 0.05	0.747
0344	Low soluble fluorides	0.0029421	0.00188	< 0.05	0.0627
0349	Chlorine	0.329865	10.8361	< 0.05	361.203
0351	Diammonium sulphate	1.008563	31.752811	< 0.05	317.528
0408	Cyclohexane	5.8846006	98.243657	< 0.05	70.174
0410	Methane	7.8368824	32.272796	< 0.05	0.645
0415	Mixture of saturated hydrocarbons C1-C5	5.3472922	0.541374	< 0.05	0.01083

Pollutant		Overall emission		Design parameter	
Code	description	g/s	t/year	g _j	K _j
1	2	3	4	5	6
0416	Mixture of saturated hydrocarbons C6-C10	1.9181262	0.056241	< 0.05	0.000937
0501	Pentilenes	0.191736	0.005622	< 0.05	0.00375
0602	Benzene	1.6183925	28.967435	< 0.05	289.674
0616	Dimethylbenzene	0.0316859	0.004053	< 0.05	0.02027
0621	Methylbenzene	0.413673	0.302552	< 0.05	0.504
0627	Ethyl benzene	0.0046017	0.000135	< 0.05	0.00675
0703	Benzapyrene	0.0000012	0.0000011	< 0.05	1.1
0902	Trichloroethylene	0.8135744	21.166949	< 0.05	21.167
1042	1-butanol	0.0523129	0.059432	< 0.05	0.594
1052	Methanol	2.6485012	6.576935	< 0.05	13.154
1061	Etanol	0.0511112	0.055913	< 0.05	0.01118
1077	Cyclohexanol	0.1243035	3.436248	< 0.05	57.271
1103	Dowtherm	0.0081202	0.25607	< 0.05	25.607
1119	2-Ethoxyethanol	0.0664063	0.086837	< 0.05	0.124
1210	Butylacetate	0.0895293	0.117576	< 0.05	1.176
1240	Ethylacetate	0.0018889	0.00068	< 0.05	0.0068
1325	Formaldehyde	0.0685137	0.06061	< 0.05	20.203
1401	2-propanone	0.023852	0.026093	< 0.05	0.0746
1411	Cyclohexanone	0.3380051	9.335959	< 0.05	233.399
1412	Cyclohexanone oxime	0.0383342	1.132593	< 0.05	11.326
1530	Epsilon-Caprolaktam	0.2044	6.301366	< 0.05	105.023
1532	Carbamide	0.0022048	0.0692	< 0.05	0.346
1591	Ethanedioic acid	0.0000059	0.00018	< 0.05	0.012
1611	Epoxyethane	0.0015265	0.04739	< 0.05	1.58
1728	Ethanethiol	0.0001208	0.003804	< 0.05	76.08
2701	Ammophos	0.0070418	0.0496	< 0.05	0.248
2704	Petrol	0.1433842	0.100866	< 0.05	0.0672
2732	Kerosene	1.4928038	27.090126	< 0.05	22.575
2735	Mineral oil	0.0000926	0.000032	< 0.05	0.00064
2754	Alkanes C12-19	0.3390278	8.294686	< 0.05	8.295
2902	Suspended matter	0.9448678	29.702264	< 0.05	198.015
2904	Fuel oil ash	0.0002715	0.000703	< 0.05	0.3515
2907	Inorganic dust: SiO ₂ >70%	0.0204828	0.056945	< 0.05	1.139
2908	Inorganic dust: 20-70% SiO ₂	0.0042349	0.001122	< 0.05	0.01122
2909	Inorganic dust: SiO ₂ <20%	6.507225	3.032299	< 0.05	20.215
2926	Coal ash	43.664836	210.64639	< 0.05	10532.32
2930	Abrasive dust	0.256912	0.278316	< 0.05	6.958
2936	Timber dust	0.195	0.4302	< 0.05	0.86
2978	Rubber vulcanizate dust	0.0226	0.00044	< 0.05	0.0044
3401	Methyldiethanolamine	0.0138	0.4352	< 0.05	8.704
3722	Asbestos-containing dust (from 20%)	0.014	0.0063	< 0.05	0.0788
6003	Ammonia, hydrogen sulphide	-	-	< 0.05	-
6004	Ammonia, hydrogen sulphide, formaldehyde	-	-	< 0.05	-
6005	Ammonia, formaldehyde	-	-	< 0.05	-
6006	Nitrogen dioxide and oxide, fuel oil ash, sulphur dioxide	-	-	< 0.05	-
6034	Lead oxide, sulphur dioxide	-	-	< 0.05	-
6035	Hydrogen sulphide, formaldehyde	-	-	< 0.05	-
6040	Sulphur dioxide and sulphur trioxide, ammonia and nitrogen oxides	-	-	< 0.05	-
6041	Sulphur dioxide, sulphuric acid	-	-	< 0.05	-
6043	Sulphur dioxide, hydrogen sulphide	-	-	< 0.05	-
6044	Hydrogen sulphide and dowtherm	-	-	< 0.05	-

Pollutant		Overall emission		Design parameter	
Code	description	g/s	t/year	g_j	K_j
1	2	3	4	5	6
6046	Carbon oxide and dust from cement production	-	-	< 0.05	-
6050	Cyclohexane and benzene	-	-	< 0.05	-
6053	Hydrogen fluoride and low-soluble fluorides	-	-	< 0.05	-
6204	Nitrogen dioxide, sulphur dioxide	-	-	< 0.05	-
6205	Sulphur dioxide, hydrogen fluoride	-	-	< 0.05	-
The enterprise belongs to Category 3, as $0.1 \leq g_{np} = 0.674 \leq 1$					

In the course of preparation of this report it has been determined that nitrogen dioxide, nitrogen oxide, carbon oxide, sulphur dioxide, ammonia will be emitted into the atmospheric air as pollutants from the planned methanol production unit Methanol M-500 with the capacity of 500,000 tons per year. All these pollutants are present in the composition of emissions from functioning APS (air pollution sources) at the enterprise. Therefore, in further evaluations of the degree of contamination of the atmospheric air (AA), the analysis will cover those APS, from which the above-mentioned pollutants are emitted into AA. In addition, from APS functioning at the enterprise, the pollutants comprising the following groups with summing harmful action are also emitted: No.6003, No.6004, No.6005, No.6006, No.6007, No.6010, No.6034, No.6038, No.6040, No.6041, No.6043, No.6046, No.6204, No.6205 [17].

The analysis of calculations of scattering performed according to the recommendations of [18, subsection 2.4, Item 1], during further consideration of the target facility as a source of impact on the environment, confirms that at SP the maximum surface concentrations for the pollutants being under consideration from Shchekinoazot OJSC's APS at the boundary of the nearest housing development, with the account of the background pollution and emissions for the design Methanol M-500 unit as for all the substances being considered herein, do not exceed the specified values of the maximum permissible concentrations for populated areas.

In doing so, at the boundary of the enterprise's SPZ (sanitary protection zone), the value of maximum surface concentrations to be generated by the emissions of pollutants similar to those expected from the Methanol M-500 complex of methanol production facilities with the capacity of 500,000 tons per year, which is planned for placement, are as follows (in fractions of MPC (maximum permissible concentration)):

- as to nitrogen dioxide – at the SPZ boundary – 0.8 of MPC, at the housing area boundary – 0.66 of MPC;

- as to ammonia – at the SPZ boundary – 0.39 of MPC, at the housing area boundary – 0.5 of MPC;

- at the housing area boundary- as to nitrogen oxide – at the SPZ boundary – 0.059 of MPC, at the housing area boundary – 0.052 of MPC;

- as to sulphur dioxide – at the SPZ boundary – 0.029 of MPC, at the housing area boundary – 0.027 of MPC;

- as to carbon oxide – at the SPZ boundary – 0.307 of MPC, at the housing area boundary – 0.46 of MPC;

As the composition of summation groups No.6010, No.6034, No.6038, No.6040, No.6041, No.6043, No.6204, No.6205 includes such pollutant as sulphur dioxide, which maximum surface concentration beyond the industrial site boundaries is less than 0.1 of MPC, the calculation of contamination for this summation group has not been made [18].

AS the composition of summation group No.6007 includes such pollutant as hexane, which maximum surface concentration beyond the industrial site boundaries is less than 0.1 of MPC, the calculation of contamination for this summation group has not been made [18].

- as to summation group No.6003 – ammonia, hydrogen sulphide - at the SPZ boundary – 0.41 of MPC, at the housing area boundary – 0.52 of MPC;
- as to summation group No.6004 – ammonia, hydrogen sulphide, formaldehyde - at the SPZ boundary – 0.452 of MPC, at the housing area boundary – 0.52 of MPC;
- as to summation group No.6005 – ammonia, formaldehyde - at the SPZ boundary – 0.4 of MPC, at the housing area boundary – 0.5 of MPC;
- as to summation group No.6046 – carbon oxide and cement production dust - at the SPZ boundary – 0.74 of MPC, at the housing area boundary – 0.49 of MPC;

All pollutants being emitted into the atmosphere from enterprise's APS have been taken as the maximum permissible emissions (MPE). The results of calculations conform the adequacy of the SPZ size established for the enterprise's industrial site (Ordinance of the Chief sanitary physician of the Russian Federation No.15 dated 02.02.2017 "On establishing the size of sanitary protection zone for the property complex of the group of industrial facilities and productions of Shchekinoazot OJSC, Pervomayskaya CHPP, a Shchekinoazot OJSC's branch, Khimvolokno OJSC located at one industrial site on the territory of Pervomayskiy workers settlement, Shchekinskiy district, Tula Region).

A plan-schedule has been elaborated for control over observance of established MPE rates on the grounds of the category classification of the sources with respect to each pollutant, providing control directly at the sources and at the SPZ boundary.

The control of enterprise emission sources and atmospheric air is exercised by the certified air service laboratory and the sanitary laboratory of Shchekinoazot OJSC (certificate No. AL-156 CLATI (Centre of Laboratory Analysis and Technical Metrology) 2017, valid until 02.05.2020 – Appendix K).

In addition, on the grounds of the agreement the CLATI branch for the Tula Region is carrying out sampling and analysis of samples at a number of enterprise's APS according to the established plan-schedule.

The calculations of surface concentrations of pollutants in AA have been made according to regulatory guidelines OND-86 [19] using the ECO-centre software package, a unified computer program for atmospheric pollution calculations and are given along with pollutants scattering maps in Appendix L.

Organisation of calculations

In order to check the fulfilment of hygienic rates for the quality of surface layer of the atmospheric air by the content of pollutants therein being under consideration, it is necessary to evaluate the values of their surface concentrations in the vicinity of the enterprise. Such evaluation is performed by calculations.

The following design parameters have been used for calculation of the surface concentration values:

- APS parameters of the design complex of methanol production with the capacity of 500,000 tons per year, which are given in Table 15.
- The parameters of functioning APS as of 2017 have been taken according to the Shchekinoazot OJSC's draft MPE rates [9].
- Meteorological characteristics of substance scattering and coefficients determining the conditions for pollutant scattering in the atmosphere in the Shchekinoazot OJSC location area have been taken in accordance with the data provided by hydrometeorology and environmental monitoring services.
- The calculation has been made at the following wind directions - automatic search from 0 to 360 degrees with an increment of 1 degree from the North in the clockwise direction.
- Dimensionless coefficient F taking into account the settling rate of harmful substances in the atmospheric air [19, Item 2.5]:
- The calculations of pollutant scattering in the atmosphere have been made for two operating mode the Methanol M-500 unit flare (duty and starting); the scattering calculations the worst operating mode of the flare, the starting mode, has been taken from the point of view of emissions.
- The calculation has been made in the main coordinate system. The surface concentrations have been determined within the design rectangular with the dimensions of 6500m x 7000m, with a step of 500 m along X (m) and Y (m) axes

with the account of location of the boundaries of sanitary protection zone and residential zone and APS affected area.

The surface concentration values have also been determined at the design points with the account of location of the boundaries of SPZ, residential zone and source affected zone.

Table 19 - Design points

Description	Coordinates			Point type
	X	Y	height, m	
1	2	3	4	5
Calculation site 1 (CS Local general enterprise coordinate system)				
1. At the boundary of calc. SPZ	128.91	-532.25	2	A point at the SPZ boundary
2. At the boundary of calc. SPZ	16.31	-92.33	2	A point at the SPZ boundary
3. At the boundary of calc. SPZ and garden plots	13.97	216.26	2	A point at the SPZ boundary
4. At the boundary of calc. SPZ and garden plots	-187.7	525.5	2	A point at the SPZ boundary
5. At the boundary of calc. SPZ and garden plots	-336.17	1010.98	2	A point at the SPZ boundary
6. At the boundary of calc. SPZ and garden plots	-302.49	1171.47	2	A point at the SPZ boundary
7. At the boundary of calc. SPZ and garden plots	-9.7	1186.5	2	A point at the SPZ boundary
8. At the boundary of calc. SPZ and garden plots	-109.14	1589.8	2	A point at the SPZ boundary
9. At the boundary of calc. SPZ and garden plots	69.92	1693.68	2	A point at the SPZ boundary
10. At the boundary of design SPZ	549.22	1778.21	2	A point at the SPZ boundary
11. At the boundary of design SPZ	1055.33	1854.85	2	A point at the SPZ boundary
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	1493.95	1863.25	2	A point at the SPZ boundary
13. At the boundary of design SPZ	2067.88	2004.67	2	A point at the SPZ boundary
14. At the boundary of design SPZ	2565.28	1975.93	2	A point at the SPZ boundary
15. At the boundary of design SPZ	2890.93	1732.73	2	A point at the SPZ boundary
16. At the boundary of design SPZ	3382.52	1752.4	2	A point at the SPZ boundary
17. At the boundary of design SPZ	3729.32	1400.13	2	A point at the SPZ boundary
18. At the boundary of design SPZ	3844.83	905.33	2	A point at the SPZ boundary
19. At the boundary of design SPZ	3937.25	401.98	2	A point at the SPZ boundary
20. At the boundary of design SPZ	3872.65	-99.74	2	A point at the SPZ boundary
21. At the boundary of design SPZ	3570.83	-505.93	2	A point at the SPZ boundary
22. At the boundary of design SPZ	3106.43	-698.53	2	A point at the SPZ boundary
23. At the boundary of design SPZ	2596.09	-738.12	2	A point at the SPZ boundary
24. At the boundary of design SPZ	2512.79	-1185.48	2	A point at the SPZ boundary
25. At the boundary of design SPZ	2141	-1530.93	2	A point at the SPZ boundary
26. At the boundary of design SPZ	1666.25	-1722.31	2	A point at the SPZ boundary
27. At the boundary of design SPZ	1181.83	-1765.76	2	A point at the SPZ boundary
28. At the boundary of design SPZ	935.23	-1331.96	2	A point at the SPZ boundary
29. At the boundary of design SPZ	449.01	-1337.58	2	A point at the SPZ boundary
30. At the boundary of design SPZ	233.62	-1045.12	2	A point at the SPZ boundary
31. At the boundary of Deminka populated locality	2584.9	-779	2	A point in residential zone
32. At the boundary of Myasotedovo populated locality	2326	-1762.6	2	A point in residential zone
33. At the boundary of Myasotedovo populated locality	1766.8	-2105.5	2	A point in residential zone
34. At the boundary of Kaznacheyevskiy populated locality	68.3	-635.6	2	A point in residential zone
35. At the boundary of workers camp of Mine No.20	-164.5	-73.3	2	A point in residential zone
36. At the boundary of Shechekino populated locality	-1565.2	358.29	2	A point in residential zone
37. At the boundary of Shechekino populated locality	-1835.9	994.4	2	A point in residential zone
38. At the boundary of Yasekni populated locality	-849.5	1835.8	2	A point in residential zone
39. At the boundary of Pervomayskiy populated locality	753.2	1825.6	2	A point in residential zone
40. At the boundary of Pervomayskiy populated locality	1777.8	1990.7	2	A point in residential zone
At the boundary of Kochaki populated locality	2843.1	1777.1	2	A point in residential zone
42. At the boundary of Ozerniy populated locality	5036.1	-1445.81	2	A point in residential zone

Preliminary assessment of the expediency of calculations

It is well-known that the impact of pollutant emissions on the state of air surface layer is different: along with substances, which concentration level in the air surface layer is sufficiently high; for a whole number of substances it is possible to expect very low concentration values - significantly lower than the maximum permissible ones.

According to [19, Item 8.5.15] for pollutants, for which $\Sigma C_{mpi} \leq 0.01$ of MPC, the calculation of scattering is not expedient.

In this project, the calculation is expedient for all pollutants to be emitted in the course of project implementation.

Analysis of scattering calculations

The analysis of scattering calculations performed has shown that the emissions of pollutants being under consideration dissipate in the atmosphere with no exceedance of MPC at the SPZ boundary and in the residential zone. The maximum surface concentrations at the SPZ boundary and in the residential zone for all pollutants being under consideration with the account of APS of the Methanol M-500 unit planned for installation remain virtually at the SP level.

The maximum surface concentrations of pollutants with the account of enterprise's APS and background concentrations will not virtually change as compared to SP and will be as follows (in fractions of MPC):

at the boundary of SPZ:

- as to nitrogen dioxide – at the SPZ boundary – 0.8 of MPC, at the housing area boundary – 0.66 of MPC;

- as to ammonia – at the SPZ boundary – 0.39 of MPC, at the housing area boundary – 0.5 of MPC;

- at the housing area boundary- as to nitrogen oxide – at the SPZ boundary – 0.059 of MPC, at the housing area boundary – 0.052 of MPC;

- as to sulphur dioxide – at the SPZ boundary – 0.029 of MPC, at the housing area boundary – 0.027 of MPC;

- as to carbon oxide – at the SPZ boundary – 0.307 of MPC, at the housing area boundary – 0.46 of MPC;

- as to nitrogen dioxide – at the SPZ boundary – 0.8 of MPC, at the housing area boundary – 0.66 of MPC;

- as to ammonia – at the SPZ boundary – 0.39 of MPC, at the housing area boundary – 0.5 of MPC;

- at the housing area boundary- as to nitrogen oxide – at the SPZ boundary – 0.059 of MPC, at the housing area boundary – 0.052 of MPC;

- as to sulphur dioxide – at the SPZ boundary – 0.029 of MPC, at the housing area boundary – 0.027 of MPC;

- as to carbon oxide – at the SPZ boundary – 0.307 of MPC, at the housing area boundary – 0.46 of MPC;

The pollutant scattering maps (as a result of project implementation) are given in Appendix L to this project.

Noise impact analysis

The noise impact analysis has been made for the normative territories being closest to the design plot: residential development area in Kaznacheyskiy populated locality and garden plots located on the southern and south-western side of the Shchekinoazot OJSC's industrial site.

In order to reduce the scope of calculations and taking into account that the noise characteristics of equipment are approximate; in addition, there is no information regarding the noise characteristics of ventilation equipment as well as this stage of project assessment it is impossible to determine the noise characteristics of equipment in 8 octave strips, their precise locations, determine the sound attenuation due to enclosing structures, etc., an aggregated calculation has been performed for the equivalent level of noise from equipment of the design Methanol M-500 unit.

A source of noise has been determined for calculation, which is located in the geometrical centre of the design production site, with the level of equivalent noise of 122 dBA being generated. The calculated noise level values obtained at the design points, P.1 – garden plots on the south-western side of the industrial site, P.2 – garden plots on the southern side of the industrial site, P.3 – residential development area in Kaznacheyskiy populated locality (Appendix O) are summed up with the results of noise level measurements at these points performed as a part of activities for confirmation of the adequacy of SPZ boundaries in 2015-2016. The results of measurements will be taken as the background noise level.

According to the results of measurements the maximum noise level at Point 1 was equal to 53 dBA in daytime and 43 dBA in night time [31].

According to the results of measurements, the maximum noise level at Point 2 was equal to 53 dBA in daytime and 40 dBA in night time [31].

According to the results of measurements, the maximum noise level at Point 3 was equal to 54 dBA in daytime and 42 dBA in night time [31].

The calculated values according to Appendix O were as follows: P.1 – 27.2 dBA, P.2 – 42.8 dBA, P.3 – 24.5 dBA.

The overall noise level at the points will be calculated according to the following formula

$$L = 10 \lg \left(10^{\frac{L_1}{10}} + 10^{\frac{L_2}{10}} + \dots + 10^{\frac{L_n}{10}} \right)$$

where L is the overall noise level;

L_1 and L_2 are the background and design noise levels respectively.

According to the calculations performed the equivalent noise level is as follows:

At Point 1 – 53 dBA at daytime and 43.1 dBA at night time.

At Point 2 – 53.4 dBA at daytime and 44.6 dBA at night time.

At Point 3 – 54 dBA at daytime and 42.1 dBA at night time.

As can be seen from the results of calculations, the acoustic impact on AA will not exceed the established rates of 55 dBA for daytime and 45 dBA for night time.

Sanitary protection zone (SPZ)

In accordance with the requirements set forth in SanPiN 2.2.1/2.1.1.1200-03 [15] enterprises: At Shchekinoazot OJSC and Khimvolokno OJSC located on the same industrial site in Pervomayskiy populated locality, Tula Region, a single SPZ of variable size has been established [12].

The results of calculations of pollutant scattering and the map of surface concentration distribution according to the results of calculations of scattering of main pollutants in AA (nitrogen dioxide, nitrogen oxide, ammonia, sulphur dioxide, carbon dioxide) confirm the adequacy of the sanitary protection zone dimensions established with the account of commissioning of the design Methanol M-500 unit.

The design level of physical actions on the atmospheric air will not exceed the established hygienic regulatory rates.

The enterprise layout diagram with indication of the single SPZ established for the industrial site is given in Appendix M.

At this stage of work it can be seen that the design facility will not exert any significant influence on the size of existing boundaries of the enterprise's SPZ. No review of the SPZ boundaries for this project is required.

7.3 Impact of the design facility on surface water

The assessment of the state of surface water has the following two aspects: quantitative and qualitative. Both aspects compose one of the most important conditions for the existence of living creatures including human being.

For the design Methanol M-500 unit water is required for the following needs:

- domestic potable water for the operating personnel;
- water for process needs;
- water for fire-fighting.

The source of domestic potable water supply is the existing networks of Artesian water.

The source of hot water supply is the existing networks of centralised hot water supply of the enterprise.

Water for process needs of the Methanol M-500 unit for process equipment cooling is provided by means of the circulating water system. The source of circulating water supply for the design Methanol M-500 unit is the design circulating water supply unit (CWU).

The source of fire-fighting water supply is the design pump station of fire-fighting water supply with tanks for reserve water storage.

The following effluents take place from the design Methanol M-500 unit:

- domestic sewage effluents from sanitary arrangements;
- industrial (chemically contaminated) effluents – periodic blowdown of boilers, pos. E-220 and pos. R 401 1/2;
- surface runoff - storm, thawed and wash waters from road pavements, spills and atmospheric precipitations from outdoor unit trays.

The discharge of domestic effluents from sanitary arrangements bldg.500/15, 500/16 in the amount of 8.62 m³/h is provided by gravity over design outer underground network of domestic sewerage system to the existing Shchekinoazot OJSC's waste water treatment facilities.

Contaminated effluents from Methanol M-500 unit, partially by gravity in the ground and over pressure pipelines on the process trestle, are supplied to the receiving tank of the chemically contaminated effluents station, pos. 500/14.

Chemically contaminated waters from the design chemically contaminated effluents station, pos.500/14, are sent, under the pressure over the trestle, to the existing Shchekinoazot OJSC's waste water treatment facilities.

Rainwater from roofs, asphalt and concrete pavements and lawns goes to the industrial and storm water sewerage system in the amount of 570.96 l/s.

No permanent contaminated effluents are present in the methanol production. There are periodic effluents containing hazardous substances from blowdown of boilers and washing of equipment.

Circulating water from own WCC (water cooling cycle) is used in the design Methanol M-500 unit in the heat-exchanger equipment as a coolant.

Water consumption for domestic potable needs will be considered in more detail at the design documentation development stage (after specification of the composition of personnel to be accommodated in the Administrative building).

As water consumption and water discharge of the design facility will be carried out by connection to Shchekinoazot OJSC's existing networks, no impact of the facility on surface and underground waters is considered as a part of this EIA (environment impact assessment).

7.4 Impact of the facility on the territory, land management conditions and geological environment

The goal of analysis of the soil conditions at the territory being under consideration is to select sections with soils with different properties, which can be considered as the area geochemical factor.

The main property distinguishing soil is its fertility. Soil (pedosphere) protection and its protection from contamination, depletion, mechanical destruction or direct demolition and withdrawal from production are the main target of the assessment of impact of the planned economic activity on the soil covering of the territory.

The impacts on soil can be divided into two types - mechanical and chemical.

Mechanical impacts include destruction of the fertile (humic) horizon under the effect of direct or indirect man-made action (construction activities, movement of heavy machinery, etc.) as well as direct withdrawal of lands to permanent and temporary use. Thereafter temporary allocation lands shall be subject to reclamation. The objective of ecological assessment and forecast is to form a decision being optimal for this project on selection of a land plot, ratio of permanent and temporary allocation lands, methods of construction and effective measures of post-construction reclamation by means of comprehensive analysis of the planned activity.

The resource criteria for the assessment of pedosphere condition include the parameters of variations (mechanical and others) and are one of the main for assessment of the state of ecosystem on the whole, as deterioration of soil properties is one the strongest factors for forming the ecological risk, crisis or disaster zones. These processes are also well spread in the natural conditions but man-made disturbance of the stability of vegetative and soil covering (forest felling, soil plowing up, overexploitation of pastures, etc.) causes their considerable acceleration and expansion of their area.

One of the integral indicators of soil contamination is its phytotoxicity (a property of soil to suppress the growth and development of higher plants) and genotoxicity (ability to affect the structural and functional state of the soil biota).

The indicative criteria are normally based on genotoxicity (impact on biota), having been implemented via the active microbial biomass level (reduction by a number of times), biomass of the soil mesofauna and the number of soil microarthropods (collembolans, Oribatid ticks, etc.) unlike the normal natural level. They are ranking by classes and simultaneously can be used for assessment of the ecosystem condition. All they provide guidance for the progress of microbiological processes and carry out the so called "nutrition circuits" in soils, which allows to count record-keeping of their number and mass by means of an integral indicator.

Chemical impacts on soil can be of direct and indirect nature. Direct contamination occurs by means of direct ingress of pollutants on its surface (landfills of solid domestic waste, oil spills, drilling mud fluids and other contaminating fluids, introduction of fertilisers, treatment by various poisonous chemicals, etc.).

Indirect contamination is related to aerogenic precipitation of contaminating substances, with make-up by contaminated waters. Any one of these types of pollutants or several ones of them are related to the planned type of man-made activity.

Taking into account the engineering and geological conditions of the site, the project implies to implement the following territory protection measures:

- use of water-tight pavement of motor roads and sites;
- thorough vertical planning of the plot and organisation of surface runoff with water discharge from buildings and facilities to the industrial and storm water sewerage system.

The collection of surface waters from the design sites and motor roads is provided to surface runoff inlets installed at low spots of relief and connected to the network of the design industrial and storm water sewerage system, which is connected with the existing factory waste water drain. The discharge of surface runoff is carried out over grading gutters of motor roads.

As the main element of the territory improvement it is provided to install concrete and crushed stone pavement, which shall be laid at all production territory areas being free of development, pavements of roads and sites.

As the facility construction will be carried out on a graded industrial territory, the direct mechanical and chemical impact on soils at the area of planned placement of Methanol M-500 unit is not considered.

7.5 The impact of waste from the design facility on the environmental conditions

The types and amounts of waste from carrying out the manufacturing process in the Methanol M-500 unit being planned for installation have been determined in the process solutions for investment substantiation.

In operating the methanol production, the following types of waste will be generated:

- waste of catalysts and charging materials. The amounts of such waste have been determined on the grounds of needs for the manufacturing process, their regulatory service life (according to data provided by Haldor Topsoe, the technology developer;
- waste of compressor mineral oils. The waste amounts have been determined on the grounds of their amount in equipment and the regulatory rates for replacement periodicity;

- wiping cloth contaminated with petroleum and oil products (the content of petroleum and oil products less than 15%). Its amount has been determined approximately on the grounds of the consumption of material to be used during maintenance and repair of process equipment;

- unsorted garbage from office and domestic premises of organisations. The amount has been determined on the grounds of the expected number of personnel and rates for generation of solid domestic waste (SDW).

The operation of production will require solving a matter of primary storekeeping and then disposal and burying of waste being generated.

Properly fitted out areas for temporary (until transfer to specialised organisations) storekeeping of waste will exclude their negative impact on the environment.

The waste hazard class by the degree of environmental impact has been determined in accordance with the Federal classification catalogue of waste (FCCW) [21].

The characteristics of waste and ways of its use are given in Table 19. Before transfer for disposal or burying the waste will be placed at specially dedicated areas in accordance with SanPiN 2.1.7.1322-03 "Public health requirements with respect to disposal and decontamination of industrial and consumption waste", which should ensure its safety for the environment.

Table 19 - Waste characteristics and ways of its removal

Description of waste	Waste generation place (production, shop, manufacturing process, unit)	Waste code, hazard class	Physical and chemical characteristics of waste (composition, content of elements, state, moisture content, weight, etc.)	Waste generation periodicity	Waste amount (total)		Use of waste (tons per year)		Waste removal (storekeeping) technique	Note
					m ³ /year	t/year	Transferred to other enterprises	Stored in accumulating containers, slurry storages, at disposal sites		
1	2	3	4	5	6	7	8	9	10	11
1. Waste catalyst TK-261	Desulphurisation reactor pos. R 201	4 41 003 03 49 3	Nickel- molybdenum catalyst	once in every 5 years	12.1	9.68	9.68		Temporary storage in specially allocated areas with subsequent transfer under an agreement to a specialised enterprise	
2. Waste catalyst HTZ-51	Desulphurisation reactor pos. R 201	4 42 601 01 20 3	Zinc-oxide absorbing agent	once in every 2 years	31.8	38.16	38.16		Temporary storage in specially allocated areas with subsequent transfer under an agreement to a specialised enterprise	
3. Waste catalyst AR-401	Pre-reforming reactor pos. R- 203	4 41 002 09 49 3	Waste catalyst based on magnesium and calcium aluminates containing nickel oxide	Once in every 3 years	12.9	13.545	13.545		Temporary storage in specially allocated areas with subsequent transfer under an agreement to a specialised enterprise	
4. Waste of catalyst R-67-7H of steam reforming	Primary reforming furnace pos. H 201	4 41 002 09 49 3	Waste catalyst based on magnesium and calcium aluminates containing nickel oxide	Once in every 10 years	43.6	95.92	95.92		Temporary storage in specially allocated areas with subsequent transfer under an agreement to a specialised enterprise	
5. Waste catalyst MK-151 FENCE™	Methanol synthesis reactor pos. R- 401/2	4 41 005 03 49 3	Catalyst based on copper, zinc and aluminium oxide	Once in every 3 years	62.4	93.6	93.6		Temporary storage in specially allocated areas with subsequent transfer under an agreement to a specialised enterprise	
6. Waste catalyst DeNO _x DNX-LD3	Reactor pos. R- 251	4 41 011 02 49 3	Waste catalyst based on titanium oxide	Once in every 4 years	21.11	31.665	31.665		Temporary storage in specially allocated areas with subsequent transfer under an agreement to a specialised enterprise	

Aluminium oxide balls	Pre-reforming pos. R-203, R-401 1/2	4 41 012 99 49 4	Al ₂ O ₃ – 99% (wt.) SiO ₂ <0.2 % (wt.)	Once in every 3 years	-	74.16	74.1		Temporary storage in specially allocated areas with subsequent transfer under an agreement for placement at a disposal site	
Ceramic balls	Reactor pos. R-201	459 11021 51 4	Ceramics	once in every 2 years	-	8.88	8.88		Temporary storage in specially allocated areas with subsequent transfer under an agreement for placement at a disposal site	
Waste of compressor mineral oils	Replacement of oil in oil system of compressors K 431, K 501/1,2, K 502, K 503½/3, K 292, K 201, K 202	4 06 166 01 31 3	Mineral oil, water, mechanical impurities	once a year	-	0.841	0.841		Temporary storage in specially allocated areas with subsequent transfer under an agreement to a specialised enterprise	
Wiping cloth contaminated with petroleum and oil products (content of petroleum or; oil products less than 15% wt.)	Maintenance of equipment	9 19 204 02 60 4	Textile, oil products <15 % (wt.)	Periodically . .	-	0.446	0.446		Temporary storage in specially allocated areas with subsequent transfer under an agreement for placement at a disposal / specialised enterprise	
Unsorted garbage from office and domestic organisations (excluding big-sized)	Collection of waste from organisations	7 33 100 01 72 4	It can contain food waste, paper/cardboard, polymer materials, textile, glass, wood, etc.	Periodically . .	-	7.0		7.0	Temporary storage in specially allocated areas with subsequent transfer under an agreement for placement at a disposal site	

7.6 Impact of the design facility in emergency situations

The problem of ensuring safety of the Methanol M-500 unit planned for placement will include the following:

- bringing to minimum the probability of occurrence of emergency situations and in case of their occurrence - maximally limit their dimensions, localise and quickly liquidate a centre of hazard as well as exclude the possibility of affection of the operating personnel.

No data on accidents having significant ecological consequences have been found in accessible information sources regarding similar domestic and foreign facilities.

The level of impact of the design production in emergency situations with regard to atmospheric air pollution will be similar to the level of impact during start-ups and shutdowns of production or less than the level of start-up and shutdown more than tenfold, which is reflected in Table 13. Thereby the facility impact on the state of atmospheric pollution in emergency situations was not considered separately as it has been reviewed for the production start-up and shutdown conditions.

7.7 General characteristics of the environmental impact of invested facility

In accordance with applicable regulatory documents, the assessment has been performed for possible negative impact of the Methanol M-500 unit being planned for placement-. As a result, it has been determined that the unit commissioning will result in an increase of emissions.

It has been determined that the emissions of all pollutants from the design Methanol M-500 unit with the account of applicable and prospective APS at the enterprise and background concentrations will get fully dissipated in the atmosphere with no excess of the MPC rates for atmospheric air determined at the boundary of enterprise's SPZ and in the residential area.

It has been shown that with commissioning of the Methanol M-500 unit being planned for placement the atmospheric air pollution level will virtually remain at the level of existing situation.

The data are given on the amount and composition of waste from the methanol production complex with the capacity of 500,000 tons per year, Methanol M-500, being planned for placement.

In accordance with applicable nature-protecting documents it has been determined that waste from production and consumption of the design facility refers to waste of hazard classes III and IV.

The ways for waste removal have been proposed, which will allow to ensure its safety for the environment.

The characteristics waste water (WW) for Methanol M-500 unit being planned for placement are given. Methods for waste water discharge or treatment are proposed.

The methanol production unit with the capacity of 500,000 tons per year being planned for placement will not lead to a considerable change in the existing water consumption and water discharge conditions taking into account insignificant volumes and a small amount of contaminated waste water, which will be treated at applicable waste water treatment facilities.

After implementation of the construction project of Methanol M-500 unit the emissions of pollutants at the industrial site will increase by 115.8173 tons per year, with the emissions level of 4842.9175 tons per year permitted for the enterprise as of the moment of project development (According to the Permission No.254 for emissions of harmful (contaminating) substances into the atmospheric air with the period of validity until 15.11.2021). Actual emissions of JSC Shchekinoazot in 2016 amounted to 1,870.368 t/year which is less than the authorized amount by 2,972.5495 t/year.

The amount of waste being generated during implementation of the construction project of the Methanol M-500 unit will get increased by 373.897 tons per year. According to the regulatory documents for waste generation and limits on their placement and [20] the list of waste to be generated at the enterprises includes 114 names of waste of hazard classes I-V for natural environment. The total amount of waste being generated is equal to 186552.784 tons per year. According to data of state statistical reporting as per Form No.2-TP (waste) 88137.754 tons of waste has been actually generated in 2016 at Shchekinoazot OJSC.

The volume and amount of waste water to be generated as a result of implementation of the construction project of the Methanol M-500 unit is insignificant and will not exert any essential effect on the existing water balance at the industrial site.

7.8 Ecological-and-economic effectiveness of the investment in construction of the facility

According to the state of completeness and reliability of the input data used at this project stage the consolidated indicators of the ecological-and-economic assessment can be provided by the following values:

Table 20 - Consolidated indicators of the ecological-and-economic assessment of the design production

No.	Description of indicator	Value of indicator
1	2	3
1	Annual production volume (methanol): - in kind: - cost of unit product:	500,000 tons per year 8,780 RUB/ton
2	Consumption of raw materials and semi-finished products Main raw materials: - natural gas - demineralised water	432,016 normal m ³ /year 970,114,32 m ³
3	Total number of personnel, including - workers	132 persons 96 persons
4	Area of the territory within the battery limits including the following: - area of development - area of on-site roads	- 7.51 hectares - 2.38 hectares - 1.03 hectares
5	Size of Sanitary protection zone (SPZ)	Variable size [12]
6	Estimated cost of the construction facility	18,030,810 thousand RUB inclusive of VAT
7	Total area of exactable lands	Not required
8	Area of reclaimed lands	None
9	Total amount of pollutants to be emitted into the atmosphere including - nitrogen dioxide - ammonia - nitrogen oxide	115.8173 tons per year 71.8764 tons per year 6.5549 tons per year 14.262 tons per year

	- sulphur dioxide	0.6555 tons per year
	- carbon oxide	22.4685 tons per year
10	Amount of production waste, total including	373.897
	hazard class III for the environment	283.411
	Hazard class IV for the environment	90.486

8 Measure for prevention and/or mitigation of possible negative impact of planned economic or any other activity

In order to reduce the negative impact of the design production complex on the atmospheric air the following measures are provided:

- implementation of the manufacturing process in closed equipment of high leak-tightness class;
- use of leak-tight shutoff valves and flanged connections of pipelines with the corresponding type of sealing surface;
- use of high quality gasket materials for hermetic sealing of fixed detachable connections and rotary assemblies and parts;
- installation of systems for gas cleaning from nitrogen oxides with the efficiency up to 99%;
- use of circulating water supply system

Waste to be generated during the plant operation shall be subject to accumulation and temporary storage on the enterprise territory for the purpose of their subsequent removal to disposal sites, transfer to specialised enterprises for disposal or recycling.

At the facility construction site, there are no mineral resources deposits, lands to be used for historical, cultural, nature-protecting and recreation purposes. In this connection, no measures for their protection and subsoil protection have been developed in the design documentation.

For minimisation of the impact on land resources and soil the following measures are proposed:

- Execution of construction works strictly within the land use plot boundaries.
- Use of existing access driveways with hard pavement for access of construction machinery and motor road vehicles.
- Installation of pavements for motor roads and footpaths.

9 Uncertainties in determination of the impacts of planned economic activity on the environment identified during conduction of the assessment

In conducting the assessment of impact of the planned economic activity on the environment, no uncertainties in identification of the sources of contamination, ingredients being pollutants for biosphere components and possible consequences of such disturbances have been found.

At the moment of development of the ESA materials there is no detailed information on the order, stages and organisation of construction of the facility and there are no data on particular models of the design equipment, places of their installation, etc. Hence it is impossible at the given stage to evaluate the following indicators:

- environmental impact during the period of construction of the facility.

The data will be presented in full volume and for all directions of project solutions in the design documentation materials (EN (Explanatory Note), LEPM (List of environmental protection measures, etc.).

10 Brief content of monitoring programs and post-project analysis

General provisions on the problems of production ecological control (PEC) have been established by the Federal Law "On environmental protection" (Art.67).

Order of organisation and conduction of production control over the observance of sanitary regulations in order to evaluate the impact of any production on human environment and human health, in particular, at the S{Z boundary and in the enterprise affected zone, handling of production and consumption waste, discharge of all kinds of waste water, have been determined in the sanitary regulation SP 1.1.1058-01 [24].

The main goal of PEC at the planned facility is as follows:

- assessment of the effectiveness of nature-protecting and sanitary-hygienic measures;
- timely identification of the sources of over-normative impacts on the quality of atmospheric air, surface water and on the sanitary-hygienic conditions in residential zones;
- control over observance of coordinated conditions of nature management, emissions (MPE), water intake and waste water discharge (ADR - Allowable discharge rate), collection, neutralisation, use, placement of waste;
- control over observance of standardised sanitary-hygienic parameters in residential zones.

The system for data acquisition and assessment of environmental conditions is based on analytical control. It should provide acquisition of reliable information on the sources of contamination and state of various environmental components.

Production control of atmospheric air pollution. During construction of the planned facility the regular control will be performed over emissions of pollutants from motor road vehicles and construction machinery. The controlled pollutants in the emissions of sources are nitrogen oxides, carbon oxide and hydrocarbons.

At the stage of start-up and operation of the facility the reference measurements will be performed for the content of ammonia, nitrogen oxides, carbon oxide in the emissions of APS.

As the basis of production ecological control over the state of aerial basin, the existing network of fixed points located at the boundary of enterprise's SPZ. Observations will be carried out by the air service laboratory and by the enterprise sanitary laboratory or by a third party institution having the right to carry out such kind of activity.

Production ecological control over water consumption in the planned facility is performed in systems of service water supply, domestic potable water supply and fire-fighting

supply. Water intake is carried out from the enterprise networks. The volumes of water consumption are determined on the grounds of calculations.

Control of the quality of waste water. The goal of waste water monitoring is the control over the level of contamination of waste water from the planned facility. The main tasks of monitoring are as follows: acquisition of reliable data on the level of content of pollutants in waste water and assuring the requirements for their cleaning. The goal of PEC for underground water is to evaluate the impact of planned construction and operation of the facility on hydrodynamic conditions and quality of groundwater at the planned production site. The existing network of the enterprise observation wells will be used for observations as well as it is possible to involve wells drilled in the course of conduction of necessary engineering geological, hydrogeological and ecological surveys.

The goal of PEC for surface water is permanent tracking of hydromorphological state of water object and assessment of the quality of water therein during the period of construction and operation of the facility.

Observations over the quality of surface water during the period of construction consist of determination of the amount of suspension and pollutants in river water. In the samples taken, the following indicators are determined: BOD, suspended matter, pH, oil products. During the period of development and operation the control of contamination of surface water is performed according to the enterprise's plan-schedule with determination of the indicators characterising the content of pollutants, which are present in the planned production.

PEC of the process of handling of production and consumption waste is performed permanently according to the following chain: collection - neutralisation - transportation - placement. The task of control consists of obtaining reliable data on the volume of waste and its composition.

For the performance of PEC it is necessary to provide additional fitting-out of the enterprise's sanitary industrial test laboratory with instruments and apparatuses, auxiliary equipment, materials and reagents.

According to the results of monitoring during the period of development and operation of the planned production the information reports shall be prepared containing the assessment of variations being observed, assessment of the environmental protection measures being implemented, recommendations for rationalisation of the observation system.

Monitoring of the condition of lands, soils and groundwater shall be performed visually. All cases of the occurrence of emergency situations related to leaks of fuel and lubricants as well as oil products from construction machinery and motor road vehicles are under permanent control. In case of occurrence of such situations, the urgent measures for their localisation are used.

No monitoring of fauna and flora is planned as the activities will be carried out on the urbanised territory where local fauna has a typically synanthropic character.

In accordance with the established requirements and developed procedures the production ecological control is exercised at the enterprise over negative environmental impact of the activity.

On the grounds of coordinated and approved schedules, the emissions into the atmospheric air are controlled including those at the boundary of sanitary protection zone, under the "flare" at the distance of 1 km, 2 km and 3 km, at production waste burying places as well as the discharge of pollutants with waste water and groundwater of observation wells are under control. The control is carried out by certified and accredited laboratories of Shchekinoazot OJSC, CLATI and Centre of hygiene and epidemiology in the Tula Region, a federal budgetary healthcare institution.

Once a year in accordance with the approved schedule, the control of operating effectiveness of dust and gas cleaning units is carried out.

The results of control being exercised show that the enterprise at the given time does not exert any significant effect on the natural environment because of the following:

1. There are no excesses of the established MPC of pollutants in the atmospheric air at the boundary of enterprise's SPZm in the "flare", in groundwater of observation wells and soil around solid waste burying objects.
2. There are no excesses of the permissible levels of gamma background, noise, radiation of electromagnetic field and industrial frequency at the Shchekinoazot OJSC's SPZ boundary.

The post-project analysis of the environmental impact during carrying out the planned activity consists of a complex of ecological investigations to be performed after making a decision on implementation of the planned activity for the purpose of assessment of real impacts and consequences of the activity being carried out on the environment and their conformity to the final statements of the state expert examination and corresponding ecological requirements.

In the course of construction and during the first years of operation, as a result of designer's supervision and monitoring data, clarifying information can be obtained relating to the environmental impact. For effective solution of problems, which can be found in the course and after completion of the construction, it is necessary to design a system with feedback providing the possibility to evaluate the conformity or non-conformity of the assessment of the impact to the actual environmental impact and, if necessary, implement measures for correction of the activity. This goal will be achieved by development of the ecological management plans and post-project analysis programs on the grounds of the environmental impact assessment.

The conduction of post-project analysis shall be regulated by the requirements of the following regulatory documents:

- Federal Law "On environmental protection" dated 10.01.2002 No. 7-FZ;
- Regulation on the assessment of environmental impact of planned economic activity in RF, approved by the Order of the State Ecology Committee of Russian dated 16.05.2000 No.372;
- Building Codes as well as requirements of the sanitary legislation of RF.

The conduction of post-project analysis includes systematic acquisition and processing of data on the current environmental conditions and trends of variation of its condition under the action of the planned activity, namely:

- observation over carrying out the activity, which shall be implemented in accordance with the design solutions;
- determination of the actual impact level;
- control over observance of the conditions set forth in the permission or stipulated under permission for this kind of activity and the effectiveness of impact mitigation measures;
- analysis of individual kinds of impact in order to ensure the corresponding level of control and availability for actions in the conditions of uncertainty;
- verification of previous predictions for future use of the experience obtained in the course of carrying out similar kinds of activity.

An integral part of the post-project analysis is the results of the integrated environmental monitoring program and the production ecological control program. The programs cover various aspects of construction and operation of the Nizhniy Novgorod low-pressure waterpower development and will allow to swiftly track both positive and negative transient processes passing in the man-made-natural environment during carrying out the planned activity.

As a result of conduction of the post-project analysis, the non-conformances of predictive impacts determined in the course of EIA investigations, real impacts and their consequences. A harm (non-conformance of predictive impacts) identified in the course of post-project analysis required timely response and the necessity of introducing corrections into the project for implementation of recovery measures.

11 Substantiation of the selection of a variant of the planned economic and other activity out of all alternative variants considered

The variant of construction of the Methanol M-500 unit being implemented has been selected due to the following circumstances:

- the best available technology is used;
- the construction is carried out on the territory of functioning industrial site, with connected to existing engineering communications, with no withdrawal of non-industrial use lands from the turnover;
- the variant selected meets the goals and needs of the construction implementation;
- level of environmental impact of the project implementation variant selected is insignificant.

12 Materials of public discussions to be conducted in the course of investigations and preparation of materials for evaluating the environmental impact of the planned economic and other activity

In accordance with Art. 18 and 43 of the Townplanning Code of the Russian Federation (1998), Art.14 of the law of the Russian Federation "On ecological expert examination" dated 23rd November 1995 No.48-FZ and Item 2.5 of the Regulation "On assessment of environmental impact of the planned and other activity in the Russian Federation". Approved by the Order of the State Ecology Committee dated 16.05.2000 No.372 (reg.No. 2302 dated 4.06.2000 in the Ministry of Justice of Russia)", Art. 8. of the Law of the Russian Federation "On sanitary epidemiological welfare of the population" dated 20th March 1999 No.52-FZ, a permission will be obtained for placement of the production and the public hearings of the decisions for the construction facility will be conducted.

Preliminarily Shchekinoazot OJSC executed a declaration of intent, which was officially placed on the company's web site and distributed among all stakeholders. Mass media have repeatedly notified on the planned construction of the facility. No negative reviews have been received in mass media editorial boards.

The public hearings will be conducted in the established order for residents of Pervomayskiy workers' camp and Shchekino town in the Tula Region.

13 Summary of non-technical nature

This assessment of environmental impact has been developed for Shchekinoazot OJSC, Pervomayskiy workers' camp in Shchekino district, Tula Region, as a part of substantiation of investment in the construction of Methanol M-500 unit, a complex of methanol production with the capacity of 500,000 tons per year.

The construction of this production complex will facilitate the solution of problems both the proper development of Shchekinoazot OJSC's enterprise and the enhancement of provision of the country's market with products, which at present is of high demand, both on the internal market and on the external market.

By their technical and economic indicators the planned construction of the methanol production complex with the capacity of 500,000 tons per year corresponds to the modern scientific and technical level in the sphere of industrial production.

The material presented contains information regarding the existing condition of the environment (atmospheric air, surface water, territory) in the area of placement of the planned facility.

The assessment of expected environmental impact has been given, the measures aimed at mitigation of negative environmental impact to the permissible level. The materials of pre-project stage substantiate the ecological permissibility of implementation of the planned facility.

The proposed main process and structural solutions in the documentation being presented comply with the requirements of applicable regulatory documents.

Taking into account the foregoing, insignificant volumes of gas emissions, generation of waste water and waste, the planned economic activity will not lead to a violation of the ecological equilibrium in the affected zone of planned construction of the Methanol M-500 unit - a complex of methanol productions with the capacity of 500,000 tons per year.

List of legislative, regulatory methodical sources and other informational materials

1. On environmental protection. Federal Law dated 10.01.02 No.7-FZ.Federal Law dated 10.01.02 No.7-FZ.
2. On ecological expert examination. Federal Law of the Russian Federation dated 23.11.95 No.174-FZ.
3. Regulation on the assessment of environmental impact of the planned and other activity in the Russian Federation. Order of the State Ecology Committee dated 16.05.2000 No.372.
4. SP 11-101-95. Order of development, coordination, approval and composition of substantiations of investment in the construction of enterprises, buildings and facilities. - M: Gosstroy of Russia, 2000.
5. Practical handbook to SP 11-101-95 for development of the section "Environmental impact assessment" in the course of substantiation of investment in the construction of enterprises, buildings and facilities. Gosstroy of Russia. M. 1998.
6. Technical and economic substantiation of investment in the construction of Methanol M-500 unit at the Shchekinoazot OJSC's industrial site. Book 1. Textual part. 17024- TEOI.PZ.1 - Moscow: NIIK OJSC, 2017.
7. Technical and economic substantiation of investment in the construction of Methanol M-500 unit at the Shchekinoazot OJSC's industrial site. Book 2. Graphical part. 17024- TEOI.PZ.2 - Moscow: NIIK OJSC, 2017.
8. Technical assignment for development of materials "Environmental impact assessment" of the Methanol M-500 unit of Shchekinoazot OJSC, Tula Region, dated 15.05.2017.
9. Draft rates of maximum permissible emissions (MPE) of pollutants into the atmosphere. Shchekinoazot JSC. Tula – 2016.
10. Standard allowable discharge rates (ADR) of substances and microorganisms ingressing into water objects for Shchekinoazot OJSC. NTP Ecological Centre LLC. Tula – 2016.
11. Draft rates of waste generation and limits on their placement. Shchekinoazot OJSC. Tula – 2017.
12. Ordinance of the Chief state sanitary physician of the Russian Federation No.15 dated 02.02.2017 "On establishing the size of sanitary protection zone for the property complex of a group of industrial facilities and productions of Shchekinoazot OJSC, Pervomayskaya CHPP - a Shchekinoazot OJSC's branch, Khimvolokno OJSC located at a single industrial site on the territory of Pervomayskiy workers' camp in the Shchekino district, Tula Region".

13. State Report "On 2016 ecological situation in the Tula Region". Ministry of natural resources and ecology of the Tula Region, Tula, 2017.
14. On atmospheric air protection. Federal Law dated 04.05.99 No.96-FZ.
14. SanPiN 2.2.1/2.1.1.1200-03. Sanitary epidemiological regulations and standards rates. "Sanitary protection zones and sanitary classification of enterprises, facilities and other objects". - M.: Minzrdav RF, 2003 (new edition).
16. Order of the Ministry of agriculture of RF dated 13th December 2016. No.552 "On approval of the water quality standard rates for water objects of fishery significance including standard rates for maximum permissible concentrations of harmful substances in waters of water objects of fishery significance".
17. List and codes of substances contaminating the atmospheric air. - SPb: NII Atmosfera, Integral firm, 2010.
18. Methodical handbook for calculation, rate setting and control of the emissions of pollutants into the atmospheric air (as supplemented and revised). SPb: NII Atmosfera, MPR, 2012.
19. OND-86. A procedure for calculation of the amount of harmful substances in the atmospheric air being contained in enterprise emissions. - L.: Gidrometeoizdat, 1987.
20. A document on approval of the standard rates for waste generation and limits on their placement. Reg. No. 245. Period of validity of the limits - until 05.07.2022.
21. Federal classification catalogue of waste (approved by the Order of Rospirodnadzor No.242 dated 22.05.17.)
22. Criteria for attributing hazardous waste to the hazard class of the natural environment (approved by the Order of MPR RF No.536 dated 04.12.14).
23. SP 1.1.1058-01. "Organisation and conduction of control over observance of sanitary regulations and fulfilment of sanitary anti-epidemiological (preventive) measures.
24. Technical report. Engineering ecological surveys. Waste water treatment facilities for industrial effluents and storm water runoff at Shchekinoazot OJSC with the capacity of 24,120 m³/day. Tula TICIS CJSC. Tula, 2015.
25. Technical report according to the results of engineering ecological and engineering hydrometeorological surveys at the plot of the design construction for the facility: "A complex for production of methanol with the capacity of 450,000 tons per year and ammonia with the capacity of 135,000 tons per year". Setsgeologorazvedka LLC. Tula.2014.
26. Design documentation. Section 8. List of environmental protection measures. Production of dimethyl ether with the capacity of 20,000 tons per year. 33455-000-OOS. Part 1, 2. NIAP OJSC. Novomoskovsk. 2015.
27. Design documentation. Section 8. List of environmental protection measures. Ammonium sulphate compaction (granulation) unit, located at the address: Shchekinoazot OJSC's industrial

site, Tula Region, Shchekino district, Pervomayskiy workers' camp, 19 Simferopolskaya ul., 01-09/15-OOS. 2016.

28. Design documentation. Section 8. List of environmental protection measures. Waste water treatment facilities for industrial effluents and storm water runoff at Shchekinoazot OJSC with the capacity of 24,120 m³/day. 36/09-02/14-OOS. Book 1. MAY PROEKT JSC. 2016.

29. Design documentation. Section 8. List of environmental protection measures. Construction of sulphur acid production unit with the capacity of 200,000 tons per year, Shchekinoazot OJSC. PSI15031-OOS.1 Book 1. Ekosfera LLC, 2017.

30. Design documentation. Section 8. List of environmental protection measures. Service life of the complex. A complex for production of methanol with the capacity of 450,000 tons per year and ammonia with the capacity of 135,000 tons per year. 1687/14-OOS 1. TekhInnovatsii LLC. 2014.

31. A design for the established (final) sanitary protection zone for the property complex of a group of industrial facilities and productions of Shchekinoazot OJSC, Pervomayskaya CHPP - a Shchekinoazot OJSC's branch, Khimvolokno OJSC located at a single industrial site on the territory of Pervomayskiy workers' camp in the Shchekino district, Tula Region.

CENTRAL OFFICE FOR HYDROMETEOROLOGY AND
ENVIRONMENTAL MONITORING, A FEDERAL STATE
BUDGETARY INSTITUTION
(Central UGMS FGBU)

**Tula Centre for Hydrometeorology and Environmental Monitoring, a
branch of Central Office for Hydrometeorology and Environmental
Monitoring, a federal state budgetary institution
(Tula TsGMS - a Central UGMS FGBU's branch)**

**To: General Director,
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A.K. Surbe**

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22.05.2013 No. _____

In reply to your No. _____ dated _____

This is to inform you about the climatic data on the Tula meteo station:

1. Coefficient taking into account the effect of relief of the terrain on the dissipation of pollutants
2. Stratification coefficient $A = 140$.
3. Mean year ambient temperature 6.2°C . Coldest month — February (-9.7°C). Warmest month — July (20.6°C). Absolute temperature maximum: $+39.2^{\circ}\text{C}$, absolute minimum: -34.8° .
4. Mean amount of precipitations per year — 620.6 mm of precipitations. On average, 22 days with thunderstorm are observed, the largest number of days with thunderstorm equals to 29. Mean duration of thunderstorm: 1.7 hours.
5. Mean duration of sunshine per year: 1978.3 hours.
6. During a year the winds of south-western, western directions prevail. Yearly mean wind velocity: 2.3 m/s. Mean wind velocity in winter is by 1.2-1.4 m/s higher than in summer. During a day (24h), daytime velocities are by 1.5-3 times as much as the night time ones. Wind velocity of 5% occurrence is 5.3 m/s.
7. Relative humidity characterising the degree of air saturation with vapour is equal to 87-85% in December and January. The relative humidity maximum is observed at 4-5 am and minimum — at 2-4 pm.
8. During a year, on average, 22 days with fogs are observed. The maximum number of days with fogs (7) falls on the cold period (September — January). The least number of days with fogs are observed within the period from February until August (0-2 days). Mean duration of fogs reaches 81 hours, maximum — 110 hours, minimum — 33 hours. Yearly mean duration of fog on the day with fog equals to 3.8 hours.

The climatic characteristics are given according to the results of observation during 7 years (from 2006 until 2012).

This reference statement shall be valid for 10 years.

Head of Tula TsGMS — a Central UGMS FGBU's branch

/signed/

Yu.S. Parshin

/Seal: Federal state budgetary institution

Central Office for Hydrometeorology and Environmental Monitoring

Tula Centre for Hydrometeorology and Environmental Monitoring,

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Rosgidromet
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06 June 2017.

No. 08/03/01-56

REFERENCE STATEMENT ON BACKGROUND CONCENTRATIONS OF POLLUTANTS

Organisation requesting the background: **of JSC Shchekinoazot**

Facility, for which the background is established: **"M-500 Methanol production unit" (development of design documentation)**

Address: **19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region**

The background concentrations are established in accordance with RD 52.04.186-89.

List of harmful substances, by which the background in Yasnaya Polyana is established: suspended matter, sulphur dioxide, carbon oxide, nitrogen dioxide, nitrogen oxide, hydrogen sulphide, ammonia, formaldehyde, benzopyrene, heavy metals.

The background concentrations have been determined for the requested substances with the account of the contribution of emissions from the facility being under consideration.

from the facility being under consideration.

Pollutant	Background concentrations (mg/m ³) at wind velocity (m/s)					Station	Period of observation
	0-2	3-4					
		N	E	S	W		
Suspended matter	0.200					On the whole for the town	2012-2016
Sulphur dioxide	0.004						
Carbon oxide	2.1						
Nitrogen dioxide	0.077	0.066	0.077	0.066	0.047		
Ammonia	0.088						
Methanol	0.493						

The background concentration shall be valid from 06 June 2017 until 05 June 2022.

The information provided herein shall be used only for the customer's purposes as applied to the above-mentioned facility and shall not be subject to transfer to any other organisations.

Head of Tula TsGMS - a Central UGMS FGBU's branch

/signed/

S.A. Astapov

/Seal: Federal state budgetary institution

Central Office for Hydrometeorology and Environmental Monitoring

Tula Centre for Hydrometeorology and Environmental Monitoring,

a branch of Federal state budgetary institution

OGRN 1127747295170

INN 7703782266

Tula TsGMS/

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8 (4872) 701-206

Email: yalms.tcgms@gmail.com

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FEDERAL SERVICE FOR HYDROMETEOROLOGY AND ENVIRONMENTAL MONITORING

Tula Centre for Hydrometeorology and Environmental Monitoring, a state institution

Shchekinoazot

Open Joint-Stock Company

Climatic data at Tula meteo station

Head of Tula TsGMS state institution

/signed/

Yu.S. Parshin

*/Seal: Federal service for hydrometeorology and environmental monitoring (ROSGIDROMET)
Tula centre for hydrometeorology and environmental monitoring, a state institution Tula TsGMS GU) OGRN (illegible)*

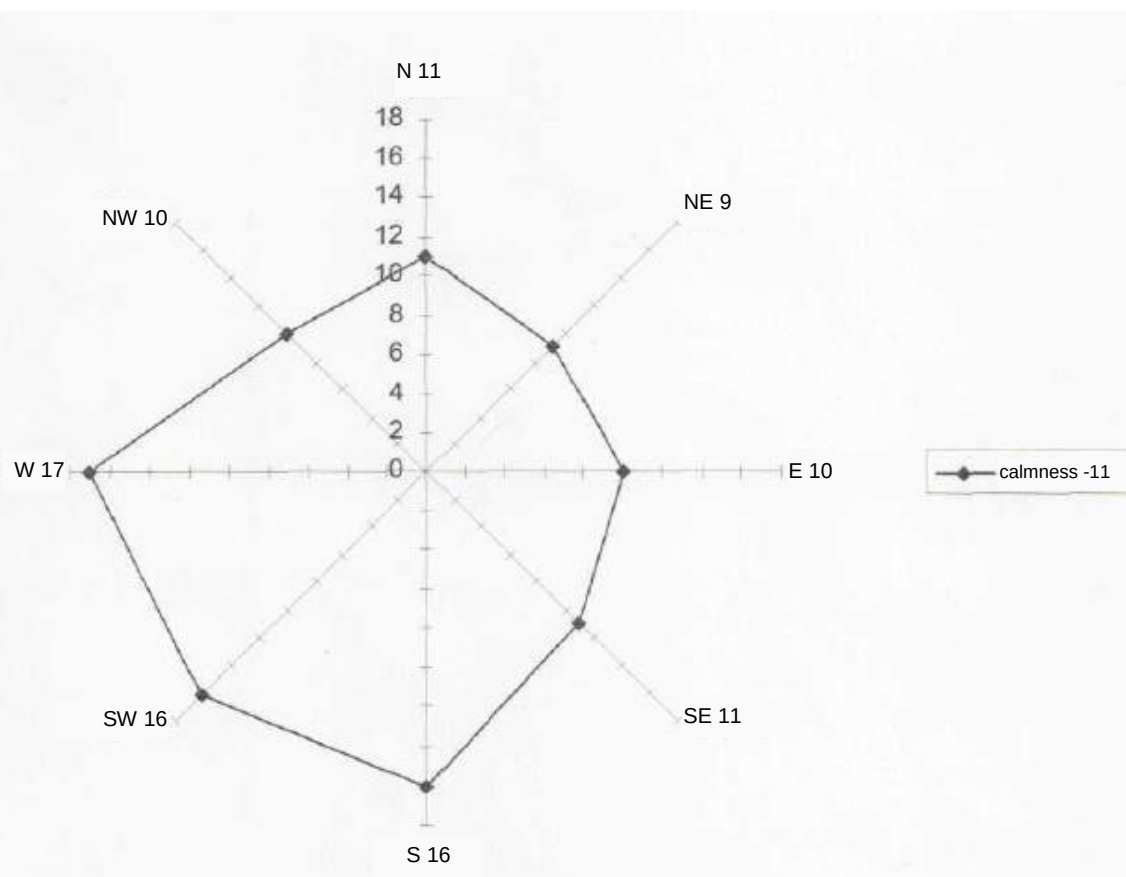
Tula, 2011.

Table 1

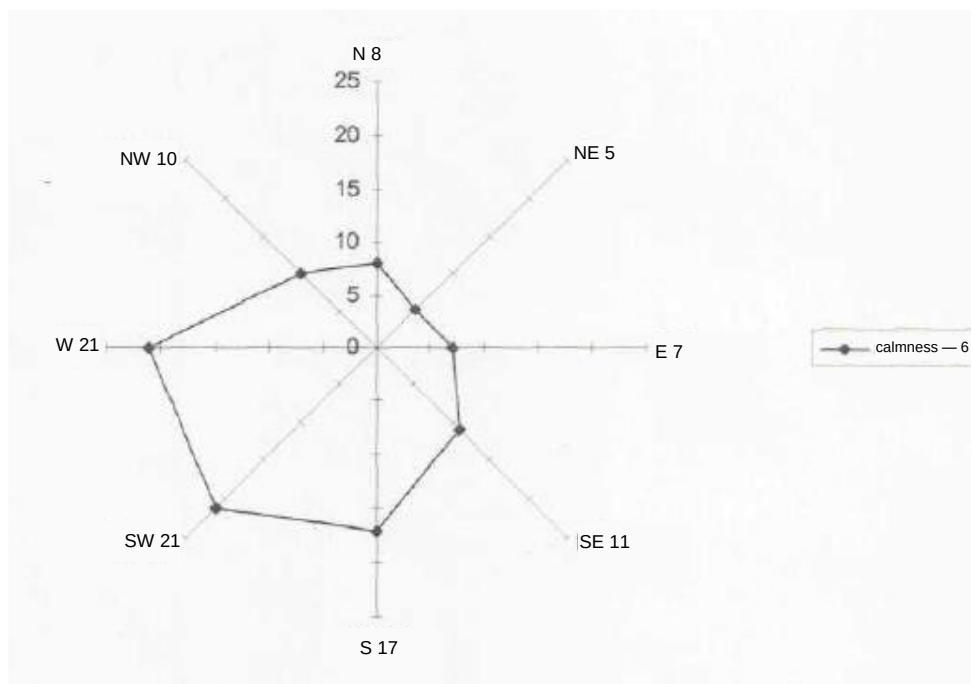
**Frequency (%) of wind directions and calmness (wind rose)
Tula meteo station**

	N	NE	E	SE	S	SW	W	NW	CALMNESS
I	8	5	7	11	17	21	21	10	6
II	10	7	10	13	17	17	16	10	9
III	8	7	12	15	21	16	14	7	5
IV	10	10	13	15	18	15	12	7	8
V	14	11	12	10	15	13	15	10	14
VI	15	10	10	7	12	14	18	14	16
VII	15	12	10	8	12	12	18	13	18
VIII	15	13	9	7	11	15	19	11	17
IX	14	10	9	9	14	14	18	12	16
X	12	6	7	9	18	18	18	12	9
XI	8	6	7	10	21	20	19	9	5
XII	8	5	7	10	21	20	20	9	6
YEAR	11	9	10	11	16	16	17	10	11

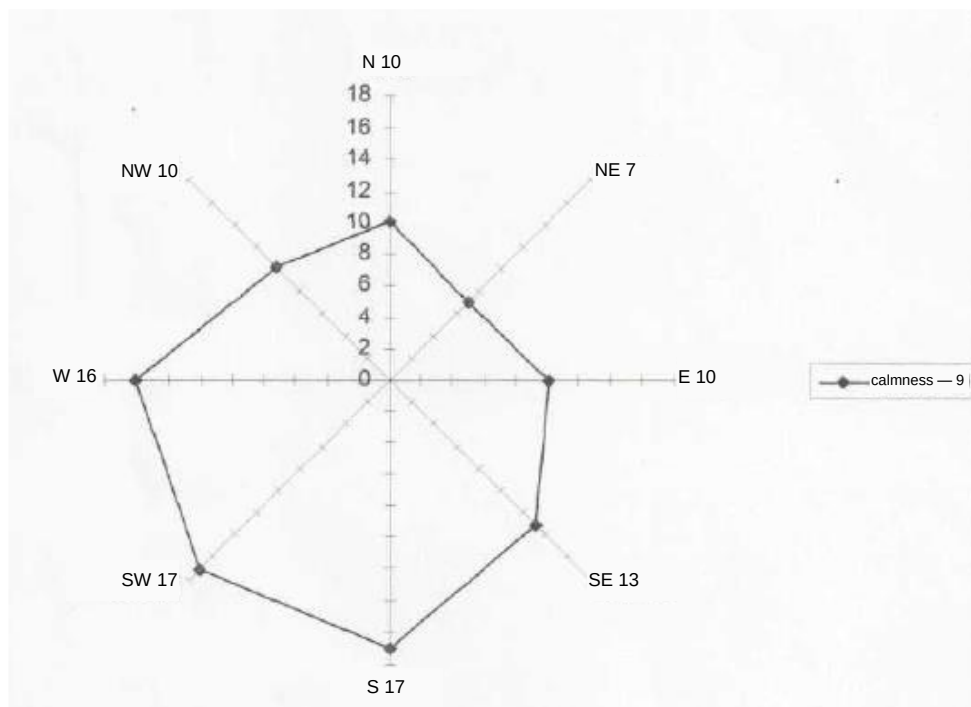
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (year)



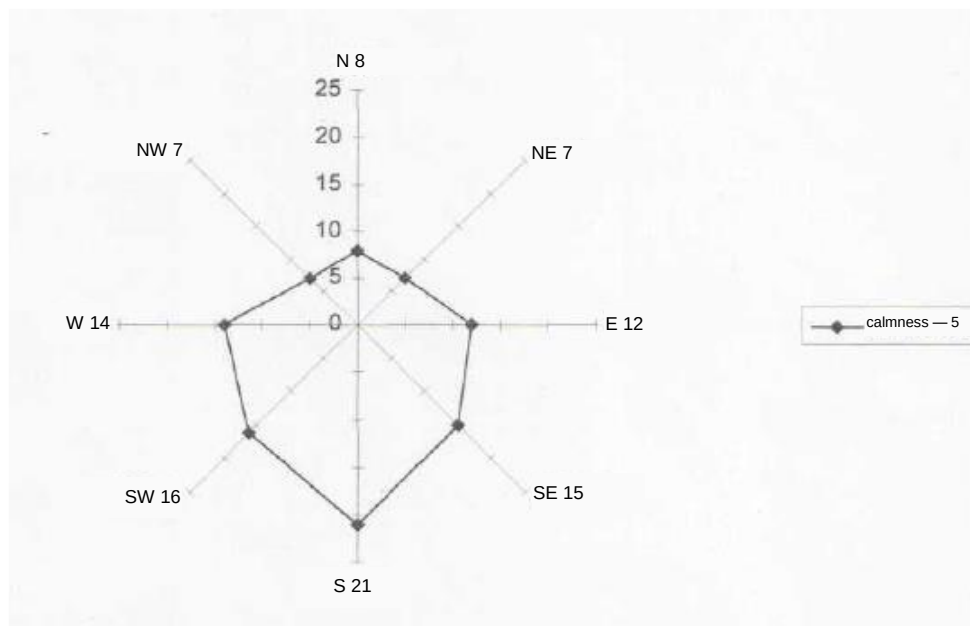
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (January)



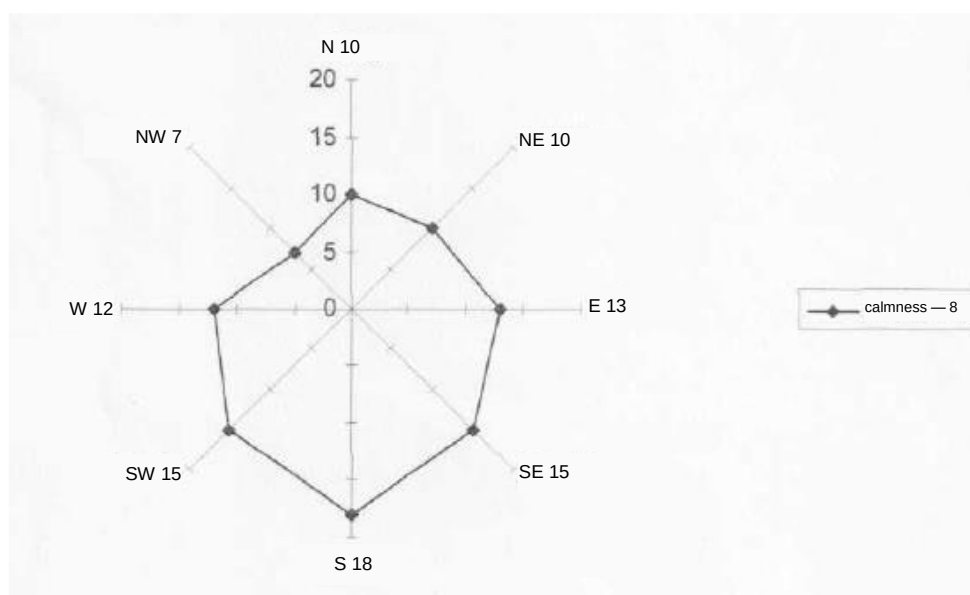
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (February)



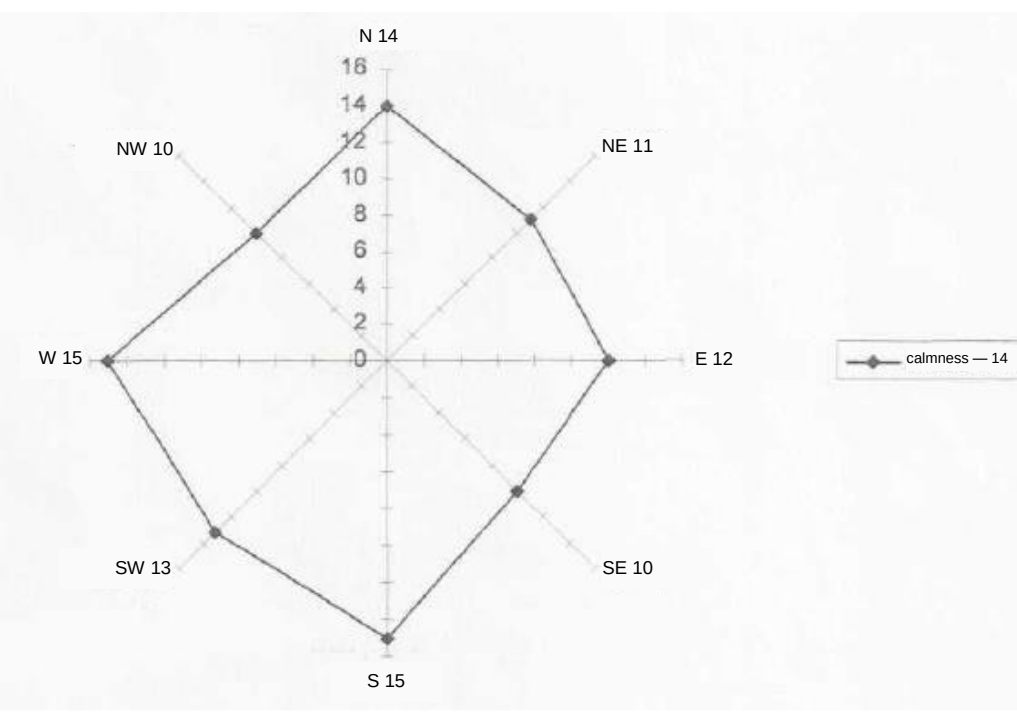
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (March)



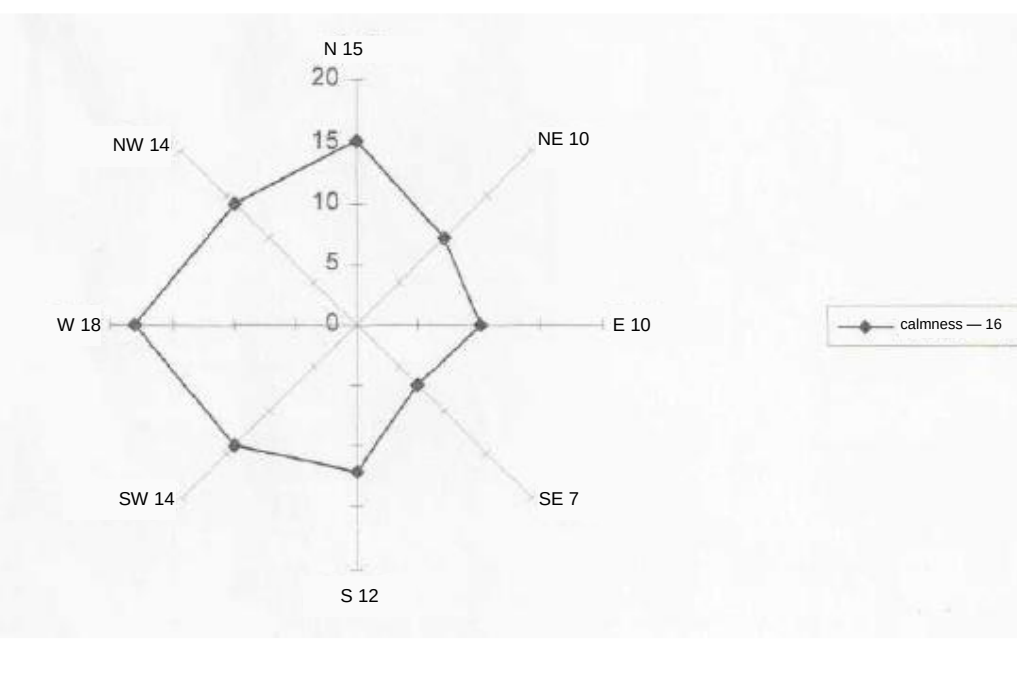
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (April)



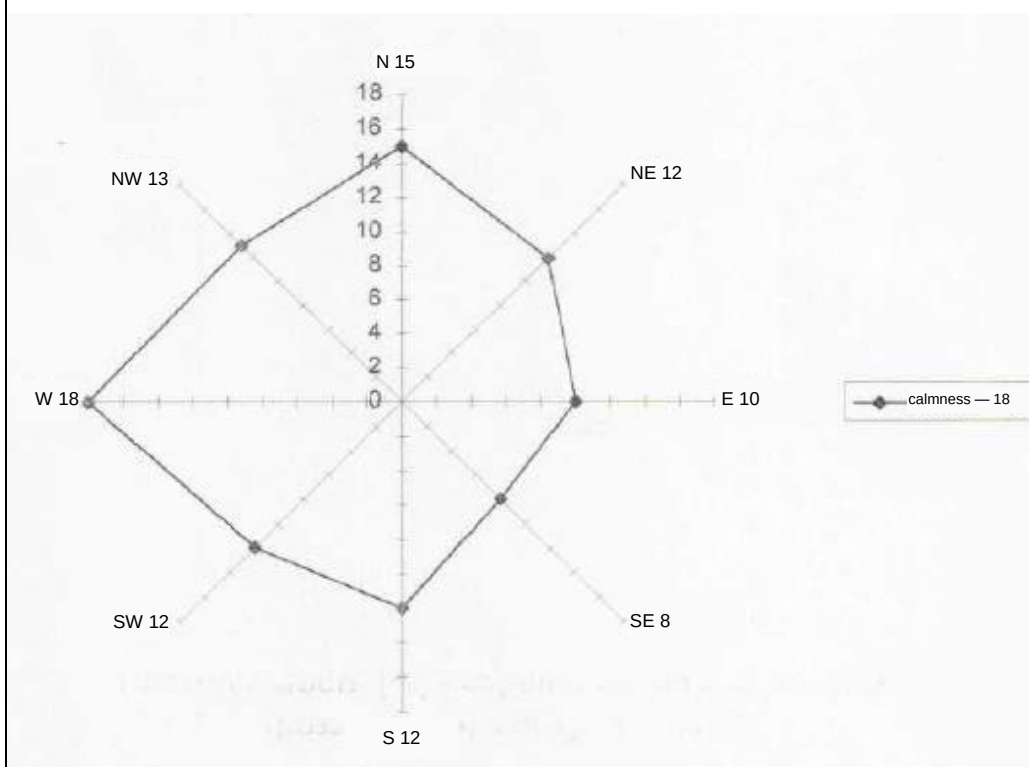
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (May)



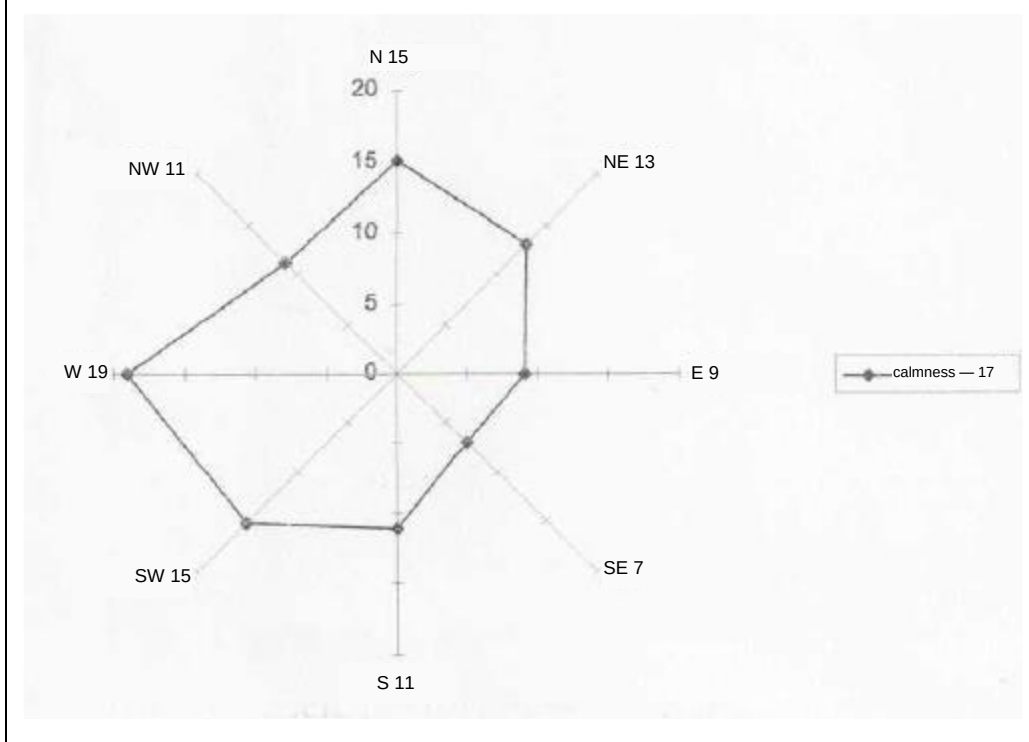
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (June)



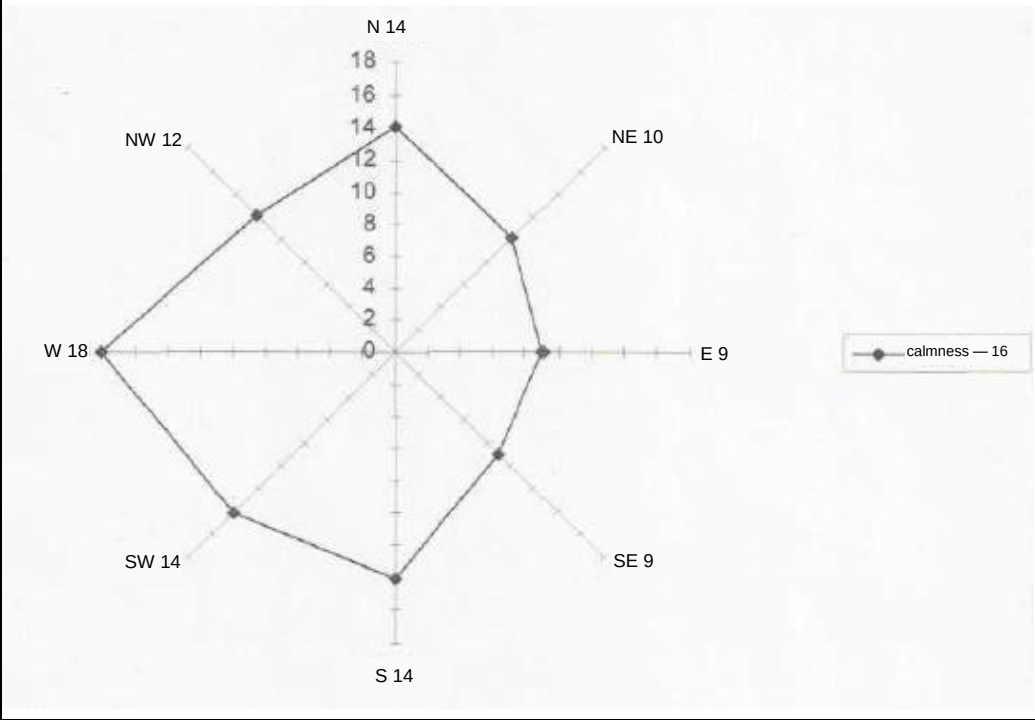
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (July)



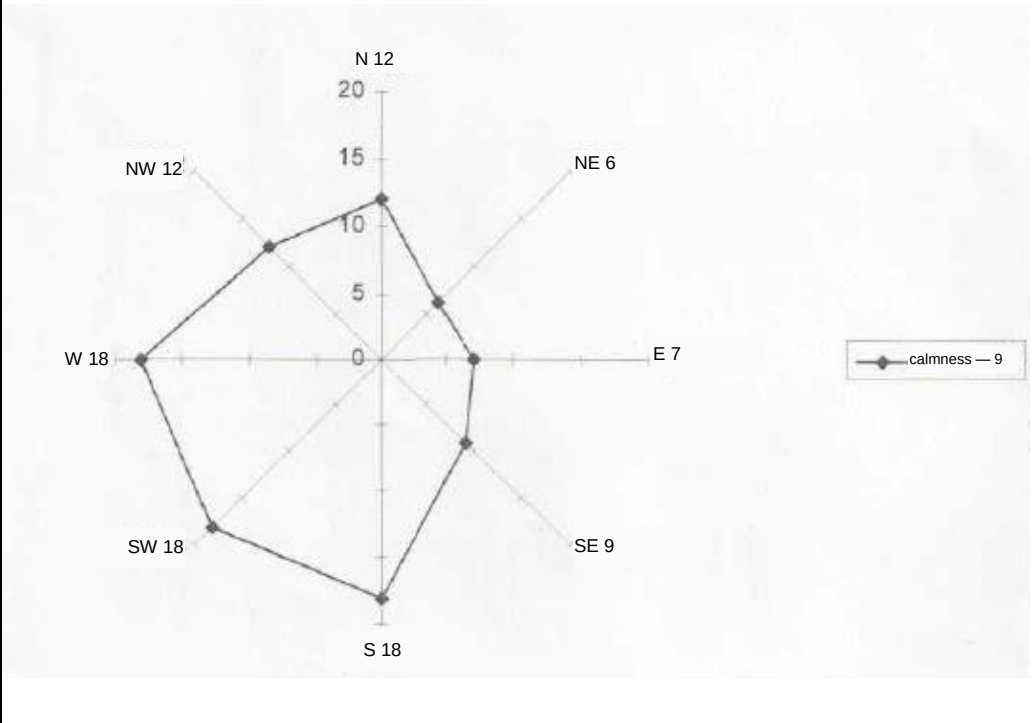
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (August)



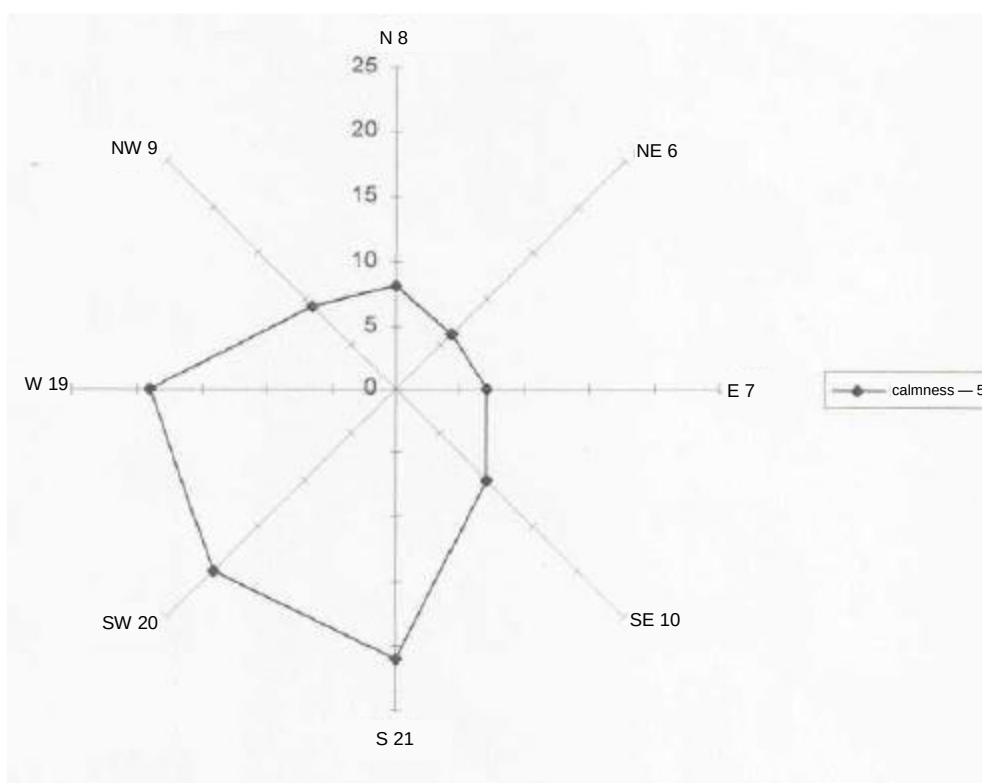
Frequency (%) of wind directions and calmness (wind rose) m/s Tula (September)



Frequency (%) of wind directions and calmness (wind rose) m/s Tula (October)



Frequency (%) of wind directions and calmness (wind rose) m/s Tula (November)



Frequency (%) of wind directions and calmness (wind rose) m/s Tula (December)

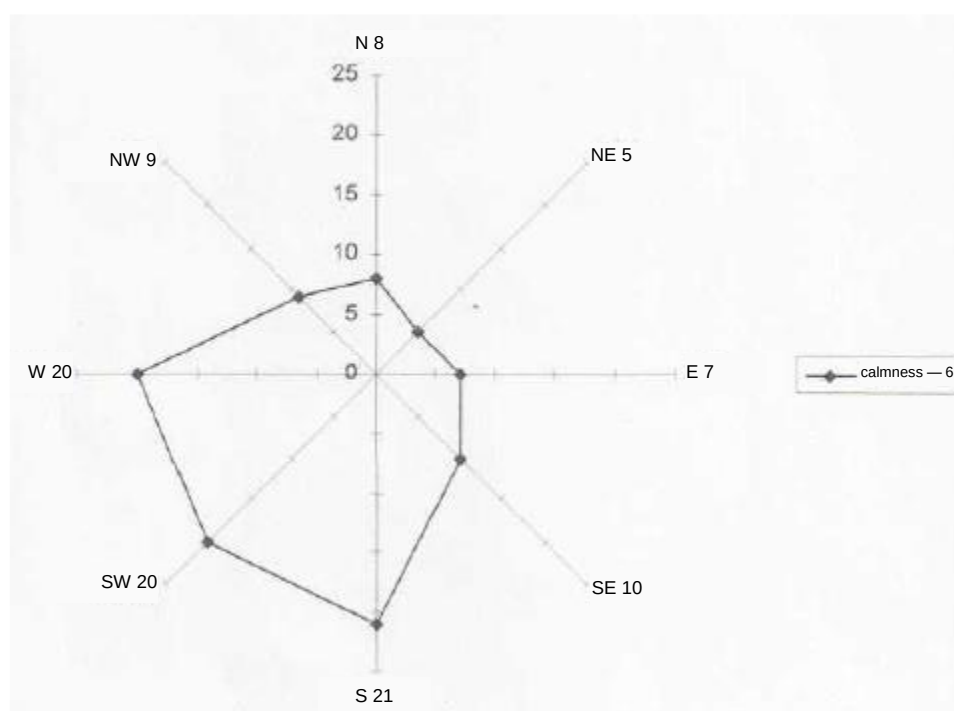


Table 2

*Mean monthly , mean yearly, maximum and minimum values of main elements of climate
Tula meteo station*

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	YEAR
mean monthly ambient temperature (° C)	-7.1	-8.0	-2.1	6.4	13.3	16.9	18.6	16.9	11.3	5.2	-1.5	-5.9	5.3
maximum ambient temperature (°C)	6.6	9.3	19.0	25.4	33.0	33.8	38.2	33.6	29.7	23.6	12.4	8.7	38.2
minimum ambient temperature (°C)	-34.2	-34.8	-27.3	-10.5	-4.3	1.1	5.2	1.7	-6.8	-14.6	-26.3	-37.4	-37.4
mean wind velocity (m/s)	3.1	2.9	2.9	2.8	2.4	2.2	2.0	2.0	2.2	2.8	3.0	3.1	2.6
maximum wind velocity (m/s)	24	30	25	25	25	23	32	23	21	21	20	21	32
mean monthly amount of precipitations (mm)	42.9	33.8	29.9	40.9	43.0	78.8	79.8	67.3	58.2	54.3	42.5	44.4	615.8
depth of frost (cm)	39	45	46	9						2	12	24	
mean monthly height of snow covering (cm)	19	29	22	5						2	4	11	8
maximum height of snow covering (cm)	55	68	66	50						16	21	40	68
mean relative humidity (%)	84	81	78	69	64	71	74	75	79	81	83	85	77
minimum relative humidity (%)	33	29	23	15	13	20	19	21	24	18	31	28	13

Brief climatic characteristics according to data from Tula meteo station

Mean ambient temperature of the coldest month (January): minus 25.3°C

Mean maximum ambient temperature of the warmest month (July): plus 30.5°C

The highest wind velocity according to multi-year data, which exceedance for the given region equals to 5% of occurrence, is 5.3 m/s.

Stratification coefficient: 140.

Coefficient taking into account the effect of relief of the terrain on the dissipation of pollutants: 1.

APPENDIX D

MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT OF THE RUSSIAN FEDERATION
FEDERAL SERVICE FOR HYDROMETEOROLOGY AND ENVIRONMENTAL MONITORING

**FEDERAL STATE BUDGETARY INSTITUTION
ALL-RUSSIAN RESEARCH INSTITUTE
OF HYDROMETEOROLOGICAL INFORMATION — WORLD DATA
CENTRE (RIHMI-WDC)**

Approved by
Director, RIHMI-WDC GU
/signed/ V.N. Kopylov
/Seal: /illegible/

REPORT

On research under agreement No.

"Analysis of climatic conditions in Tula Region with the account of observation data for the recent years".

Head of climatology department
Candidate of physical and mathematical sciences

/signed/

V. N. Razuvayev

2012

Introduction.

The economic activity in climate-dependent economic sectors such as fuel and energy complex, transport, construction, agriculture, forestry, water management, is, to a considerable extent, dependent upon the climatic characteristics of the region. Special climatic indicators have become a mandatory condition for implementation of numerous types of design and planning, engineering developments, manufacturing process, construction, etc.

The goal of this research is to investigate the climatic conditions in the Tula and Oryol Region with the account of observation data for the recent years.

1. Brief description of the research region.

1. Overview of climatic conditions in the Tula Region

The Tula Region territory lies in the moderate climatic zone. The climate in the region is moderately continental. The climate generation depends both on radiation factors and circulation factors. Continental and maritime air masses act on the climate in the Tula Region. The frequency of continental air masses per year is about 60%, maritime air masses account for about 40%. Atlantic air comes into the region as a result of the western transfer of air masses prevailing in the northern hemisphere; most often it moves in cyclones. With activation of western transfer the general warming-up is approaching, abundant snowfalls are observed — in winter and cloudy and rainy weather — in summer. The ingress of Arctic masses onto the territory of the region causes a sharp drop in temperature in winter, freezings in spring, at the beginning of summer and in autumn. As a result of transformation of Atlantic and Arctic air masses, the continental moderate air occurs in moderate latitudes. Stormwater precipitations fall under its action. In winter low stratus clouds and fogs occur. Cloudy weather with small frosts becomes settled. Tropical air masses can also penetrate into the territory of the Tula Region. The Tula Region experiences the influence of continental tropical air from Mediterranean Sea region and even from North Africa. With the ingress of this air, clear hot weather becomes settled in summer. In winter it brings thaws and precipitations.

The Tula Region location at the boundary of natural zones (forest/wooded steppe) affects the unequal distribution of main climatic indicators on its territory. This phenomenon is called the climatic asymmetry. The general tendency of climatic condition variation on the region territory when in motion from the north-west to the south-east consists of warming-up during summer months and drop in temperature in the winter period as well as decrease of the amount of precipitations.

2. Physical and geographical description of the meteorological station and its surroundings

The town of **Tula** where the meteorological station is located is situated in the northern part of the Central Russian Upland, on a gently rolling terrain. The river Upa being a tributary of the Oka river is flowing across the central part of the town. The Tulitsa river flowing into the Upa river is flowing in the western part of the town. The Voronka river flows into the Upa river at the western borderland of the town. The area where the station is situated is a part of the forest zone but forests have been felled out in a considerable degree.

The areas being free of forests are occupied by fields. The soils in the region are as follows: over the left bank of the Upa river — mainly degraded black earth; over the right bank — grey forest loams. The groundwater level reaches 12 m, in low lands — 0.5 m.

2. Meteorological parameters and methods of their measurement

2.1. Air temperature

At meteorological stations the air temperature is measured by a thermometer installed at the height of 2 metres above the soil surface in a thermometer shelter, away from residential premises, and protected from the action of direct solar radiation and being well vented.

The air temperature permanently varies detecting both diurnal and yearly variation and more significant non-periodic variations.

Statistical characteristics for air temperature are provided in Tables 1-8. Table 9 contains the period, by which the statistics for air temperature have been calculated.

Table 1 — Mean monthly and yearly air temperature

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	-8.9	-8.9	-3.5	5.5	13.0	16.8	18.7	17.1	11.5	5.1	-1.3	-6.3	5.0

The mean multi-year monthly and yearly air temperatures are provided, which have been calculated for the period of observations at the station and which are available on technical media.

Table 2 Mean minimum air temperature

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	-11.8	-12.0	-6.7	1.5	7.2	11.2	13.3	11.3	7.0	2.0	-3.8	-8.8	-14.7

The mean multi-year minimum air temperatures are provided, which have been obtained on the grounds of observations by minimum thermometer for the whole period of observations at the station. The mean minimum temperatures provide an idea on the mean air temperature in the coldest time of the day (24h).

Table 3 — Absolute minimum of air temperature

BMO index	Name of station	Month											
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27719	Tula	-42.1	-37.8	-31.6	-18.9	-4.3	-3.7	4.4	0.0	-6.8	-14.8	-26.3	-37.4
		1940	1956	1964	1952	1999	1930	1957	1966	1996	1960	1998	1978
		.	.	.	.	1995	.	.	.	.	.	.	.

The lowest values of air temperature are provided, which were observed by minimum thermometer for the whole period of observations at the station.

Table 4 Mean value out of the absolute minima of air temperature

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	-26.3	-25.1	-18.0	-5.7	-0.1	4.7	7.7	5.4	-0.5	-6.3	-14.0	-21.9	-29.2

The mean value out of the absolute minima of air temperature has been calculated as the mean multi-year value out of the absolute minima in separate years according to a number of observations being available at the station.

Table 5 — Mean maximum air temperature

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	-5.5	-4.8	0.6	10.5	18.8	22.7	24.3	22.9	16.8	9.0	1.2	-3.3	24.9

The mean maximum air temperatures are provided, which have been obtained on the grounds of observations by maximum thermometer. The mean maximum temperature characterises the daytime (the warmest) part of day (24h).

Table 5 — Absolute maximum of air temperature

BMO index	Name of station	Month											
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27719	Tula	6.6	9.3	19.0		33.0	35.0	39.0	39.2	31.3		14.2	9.3
		2007	1990	2007	1950	2007	2010	2010	2010	1938	1999	1967	2008
		.	.	.	.	.	.	.	.	.	.	.	.

The highest air temperatures are provided, which were observed by maximum thermometer for the whole period of observations at the station.

Table 7 — Mean value out of the absolute maxima of air temperature

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	1.9	2.1	8.0	20.6	27.0	29.3	30.9	30.1	25.2	17.3	8.5	3.6	

The mean multi-year values out of yearly absolute maxima are provided by months and for the year, selected from a number of observations being available at the station

Table 8 Date of occurrence of mean daily air temperatures below or above the limits determined and the duration of such periods

-10°C

BMO index	Name of station	Beginning			End			Duration (days)		
		Mean	The earliest	The latest	Mean	The earliest	The latest	Mean	Minimum	Maximum
27719	Tula	17 XII	30 XI	31 XII	28 I	3 I	5 III	39	5	76
			(2002)			(2000)	(1969)		(1974)	(1969)
			(2002)	(1992)		(1974)	(1996)		(1990)	(1968)

-5°C

BMO index	Name of station	Beginning			End			Duration (days)		
		Mean	The earliest	The latest	Mean	The earliest	The latest	Mean	Minimum	Maximum
27719	Tula	5 XII	9 XI	31 XII	25 II	13 I	23 III	82	18	126
			(1993)	(2007)		(1975)	(1996)		(2008)	(1996)
			(1993)	(1972)		(1975)	(1987)		(2008)	(1985)

0°C

BMO index	Name of station	Beginning			End			Duration (days)		
		Mean	The earliest	The latest	Mean	The earliest	The latest	Mean	Minimum	Maximum
27719	Tula	21 III	23 II	3 IV	13 XI	21 X	19 XII	237	204	292
			(1990)	(1996)		(1987)	(2006)		(1987)	(2008)
			(2002)	(1969)		(1987)	(2006)		(1987)	(2008)

5°C

BMO index	Name of station	Beginning			End			Duration (days)		
		Mean	The earliest	The latest	Mean	The earliest	The latest	Mean	Minimum	Maximum
27719	Tula	12 IV	22 II	29 IV	3 X	13 IX	24 X	174	151	222
			(1967)	(1981)		(1973)	(1991)		(1971)	(1967)
			(1966)	(1992)		(1966)	(1991)		(1997)	(1991)

10°C

BMO index	Name of station	Beginning			End			Duration (days)		
		Mean	The earliest	The latest	Mean	The earliest	The latest	Mean	Minimum	Maximum
27719	Tula	28 IV	8 III	28 V	15 X	5 IX	4 XI	170	116	212
			(1967)	(1980)		(1972)	(2008)		(1972)	(2008)

BMO index	Name of station	Beginning			End			Duration (days)		
		Mean	The earliest	The latest	Mean	The earliest	The latest	Mean	Minimum	Maximum
			(1966)	(1999)			(1969)		(1976)	(1969)

15°C

BMO index	Name of station	Beginning			End			Duration (days)		
		Mean	The earliest	The latest	Mean	The earliest	The latest	Mean	Minimum	Maximum
27719	Tula	28 V	17 III	28 VI	14 IX	12 VII	17 X	110	44	160
			(1967)	(1982)		(1985)	(1993)		(1985)	(1993)
			(1966)	(1982)		(1976)	(1997)		(1976)	(1967)

The dates of transition of the mean daily temperature across the specified values have been determined by the daily data for each year. According to "Methodical guidelines for preparation of the Applied scientific reference book on USSR agroclimatic resources", the first day of the period, for which the sum of positive deviations from the standard rate exceeds the sum of negative deviations of any of subsequent periods with negative deviations has been taken as the date of steady air temperature transition across 0.5, 10, 15°C in spring.

The first day of the period, for which the sum of negative deviations exceed the sum of positive deviations of any of subsequent periods with positive deviations has been taken as the date of steady air temperature transition across 15, 10.5, 0°C in autumn.

The duration of periods with temperature higher than the above-mentioned limits in spring and in autumn has been calculated by counting the number of days respectively from 0°C in spring to 0°C in autumn, from 5°C in spring to 5°C in autumn, from 10°C in spring to 10°C in autumn and from 15°C at the end of spring to 15°C at the end of summer. During counting the date of temperature transition in spring is taken into account and the date of transition in autumn is not included into the count.

Table 9 Observation period to be used

BMO index	Name of station	Beginning of period	End of period
27719	Tula	1927	2010

2.2. Soil temperature

Observations over the soil temperature include the measurements of temperature of the soil surface being barren from plants or the snow covering surface as well as measurements of soil temperature at depths under natural covering.

Under natural covering the soil temperature is measured at depths of 0.02; 0.5; 0.10; 0.15; 0.20; 0.40; 0.80; 1.20; 1.60 and 3.20 m by means of remote electrical thermometers and when such thermometers are missing — by means of exhaust deep-soil mercury thermometers at depths of 0.20; 0.40; 0.80; 1.20; 1.60; 2.40 and 3.20 m. But most often the measurements at stations are not performed at all standard depths.

Table 10 — Mean monthly and yearly soil surface temperature

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	-7.7	-8.8	-3.3	6.6	15.4	20.3	22.1	19.6	12.3	5.2	-1.8	-6.4	6.1

The mean multi-year temperatures are provided, which have been obtained by means of thermometers to be installed on the surface of soil freed o plants (barren surface) in summer and on the snow surface in winter.

Table 11 — Mean maximum soil surface temperature (°C)

BMO index	Name of station	Month											
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27719	Tula	-4.9	-4.5	1.1	14.1	21.7	24.5	25.3	24.0	19.3	10.5	0.4	-3.9

The table contains the mean values of maximum soil surface temperature by months during the period of 1977-2010.

Table 12 — Mean minimum soil surface temperature (°C)

BMO index	Name of station	Month											
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27719	Tula	-11.1	-13.2	-7.5	0.8	6.4	11.3	13.5	11.5	6.3	1.5	-4.2	-9.5

The table contain the mean values of minimum soil surface by months for the period of 1977-2010.

Table 13 — Absolute maximum of soil surface temperature

BMO index	Name of station	Month											
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27719	Tula	5.1	2.0	21.0	38.0	50.0	52.5	55.6	49.2	40.0	27.0	13.5	9.0
		2007	1977	2007	1980	1979	2006	1999	1986	1977	1981	2008	2006
		2007	1990	2007	2002	2007	1998	1999	2001	1992	1999	1980	1985

Table 14 — Absolute minimum of soil surface temperature

BMO index	Name of station	Month											
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27719	Tula	-38.5	-38.3	-32.5	-20.0	-3.5	1.0	5.6	1.3	-5.6	-17.6	-28.5	-41.0
		2003	1996	1994	2003	1999	1978	1992	1984	1986	2003	1989	1978
		1987	1985	1987	1987	1986	1978	1992	1977	1996	1979	1980	1996

Table 15 — Mean monthly and yearly soil temperature at depths by exhaust thermometers

depth	Month											
	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
80cm	1.9	1.4	1.2	3.1	8.4	12.2	14.7	15.2	13.1	9.3	5.5	3.1
160 cm	3.7	2.9	2.5	3.0	6.3	9.7	12.2	13.5	12.8	10.4	7.5	5.1
320 cm	6.2	5.3	4.5	4.2	5.1	7.0	9.0	10.6	11.2	10.7	9.3	7.5

The data on multi-year mean monthly soil temperature according to exhaust thermometers installed under natural covering (grass — in summer and snow — in winter).

2.3. Atmospheric precipitations.

The amount of precipitations is determined by thickness (in millimetres) of the fallen water layer. In measuring the precipitations, several types of systematic errors occur. It is a loss of collected precipitations on wetting the precipitation measuring bucket, evaporation of precipitations from the bucket during the time between the end of rainfall and the moment of measurement as well as an instrument error related to the action of wind. The wind effect is most strongly influences on the accuracy of measurement of sold precipitations.

Tables 16, 17 contain statistical characteristics for atmospheric precipitations, which are calculated for the period of 1966-2010; therefore, no reduction to the precipitation metre was required. Corrections for wetting have been made in accordance with the Instruction for hydrometeorological stations and posts [1].

Table 16 — Monthly amount of precipitations (mm) with corrections for wetting

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	40	33	31	40	45	73	83	65	57	55	45	44	611

Table 17 — Maximum daily amount of precipitations of various occurrence

BMO index	Name of station	Occurrence (%)						Maximum value observed			
		63	20	10	5	2	1	mm	Number	Month	Year
27719	Tula	35	41	52	63	77	98	90	11	8	1999

Daily maximum of precipitations is given by values of certain occurrence. The occurrence shall be the probability of values above a certain limit (63%, 20%, 10%, **5%**, 2%, 1%). The calculations have been performed by extrapolation of the curves of distribution of daily maximum precipitation values.

The distribution of maximum daily sums of precipitations depends upon the climate wetting type. For insufficient wetting conditions the distribution is close to the normal one, from moderate and excessive wetting conditions — to log-normal one. The maximum value being observed is normally close to the value of quantile of 1% occurrence. Differences between them are not of systematic nature: maximum value of 1% occurrence can be both higher and lower than the observed value.

2.4. Air humidity

The air humidity is characterised by water vapour tension, relative air humidity as well as by deficit of wetness (shortage of air saturation). The content of water vapour in the atmosphere strongly varies depending upon physical and geographical conditions of the terrain, time of the year and circulating conditions, state of the soil surface, etc.

Relative air humidity — is the ratio of actual water vapour tension to the tension of saturated air at the same temperature expressed in percentage terms. It characterises the degree of air saturation.

Mean monthly relative air humidity, which has been obtained for the period of 1966-2010, is provided in Table 18.

Table 18 — Mean relative air humidity (%)

BMO index	Name of station	Month											
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
27719	Tula	83	81	78	70	63	70	73	74	78	80	86	85

2.4. Wind.

Wind is a motion of air with respect to the ground surface and is characterised by the velocity and direction of movement. The wind direction shall be taken as the direction from where the air is moving.

The designation of direction is indicated either by a rhumb (according to 16-rhumb system), or by an angle, which the horizontal vector of wind velocity forms with the meridian (at that the North direction is taken as 360° or 0°). The wind velocity and direction measurements at meteo stations are performed at the height of 10-12 metres above the ground surface by anemorhumb metres or by means of weathercock with light and heavy boards. Due to the turbulent state of atmosphere, the wind velocity and direction at each time moment considerably fluctuate near the mean value; therefore, the mean velocity of wind for a period of time of 2 minutes or 10 minutes (depending upon technical capabilities of the instrument, which is used at measurements), the maximum value of instant wind velocity for the same period of time (wind velocity at gusts) are measures and the mean wind direction for 2 minutes is determined.

Wind is a vector magnitude, which is characterised by a modulus (velocity) and a direction. Therefore, the climatological processing has been performed separately for series as to wind velocity and direction.

Tables 19-23 contain statistical characteristics of wind velocity.

Table 19 — Frequency of wind directions and calmness

BMO index	Name of station	Month	Wind direction									Calmness
			N	NE	E	SE	S	SW	3	NW		
27719	Tula	1	8	4	10	12	17	18	21	10		8
		2	9	6	13	14	18	15	16	9		9
		3	8	6	13	15	21	14	16	7		9
		4	12	10	15	14	18	11	13	7		9
		5	15	10	14	10	15	12	14	10		15
		6	16	10	12	8	13	11	18	12		16
		7	17	11	11	7	12	10	19	13		18
		8	16	12	10	7	10	14	20	11		18
		9	14	9	8	9	15	14	20	11		16
		10	10	5	6	10	19	18	20	12		9
		11	8	6	9	11	22	17	19	8		6
		12	7	5	10	11	20	16	21	10		6
		13	12	8	11	11	17	13	18	10		12

The wind direction frequency is provided, expressed in percentage terms of the total number of observations during each month and on the whole for the year without account of calmnesses. The frequency of calmnesses is provided in percentage terms of the total number of observations. The frequency of wind directions and calmnesses has been calculated according to the current data for the period of observations indicated.

Table 20 — Mean monthly and yearly wind velocity (m/s)

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	3.2	3.2	3.1	3.1	2.6	2.4	2.2	2.1	2.3	3.1			2.8

Table 21 — Probability of various gradations of wind velocity

BMO index	Name of station	Month	Velocity (m/s)											
			0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-20	21-24	
27719	Tula	1	20.1	41.9	25.1	8.9	2.8	0.9	0.3	0.0	0.0	0.0	0.0	
		2	22.2	38.8	25.5	9.3	2.7	1.0	0.3	0.1	0.0	0.0	0.0	
		3	23.3	39.5	24.1	8.9	2.8	0.9	0.3	0.1	0.0	0.0	0.0	
		4	25.0	40.2	22.2	8.7	2.5	1.0	0.3	0.1	0.0	0.0	0.0	
		5	32.6	39.1	19.5	6.5	1.8	0.5	0.1	0.0	0.0	0.0	0.0	
		6	36.7	40.3	17.3	4.5	1.0	0.2	0.0	0.0	0.0	0.0	0.0	
		7	39.8	40.6	15.1	3.4	0.9	0.2	0.0	0.0	0.0	0.0	0.0	
		8	41.5	41.1	13.7	3.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	
		9	37.4	39.9	16.9	4.6	1.1	0.2	0.0	0.0	0.0	0.0	0.0	
		10	22.7	42.6	23.8	8.0	2.2	0.6	0.1	0.0	0.0	0.0	0.0	
		11	19.0	43.4	25.3	8.6	2.9	0.8	0.2	0.1	0.0	0.0	0.0	
		12	18.1	42.5	25.9	9.0	3.0	1.2	0.3	0.1	0.0	0.0	0.0	
		13	28.3	40.8	21.1	6.9	2.0	0.6	0.2	0.0	0.0	0.0	0.0	

The data on frequency of various wind velocities calculated in percentage terms of the total number of observations during each month and year including calmnesses. The table has been calculated according to the current data.

Table 22 Mean number of days with strong wind (over 15 m/s)

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	1.6	0.9	1.1	1.5	1.4	1.0	0.7	0.6		1.2	0.9	1.3	12.7

The table contains the mean multi-year number of days when the wind velocity reached or exceeded 15 m/s, both within the dates of observations and in between such dates.

Table 23 — The largest number of days with strong winds (over 15 m/s)

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	6	5	5	5	7	4	3	3	4	5	5	6	34

The table contains the largest number of days when the wind velocity reached or exceeded 15 m/s, both within the dates of observations and in between such dates.

The mean yearly wind velocity, which exceedance frequency is 5%, equals to 16 m/s for Tula.

2.5. Snow covering.

Snow covering is a layer of snow lying on the surface of soil or ice, which has been formed as a result of snowfalls in winter time. Systematic observations over snow covering were started as long ago as at the end of the 19th century using one permanent snow stake; after 1930s the snow covering height is determined using three permanent snow stakes installed at open and protected areas. Once a decade snow-gauging surveys are performed over various routes (forest, field), which more accurately reflect the character of snow covering bedding in the given terrain. However the data of measurement of the snow covering height using permanent snow stakes at the station are widely used in practice as the performance of observations is notable for its simplicity and allows to track the daily dynamics of snow covering measurements.

In climatology, a day with snow covering shall be the day when a degree of snow covering of the visible meteorological station surroundings of less than 6 points (60% of covering) is noted. As 10 points, the full snow covering of the visible meteorological station surroundings is taken. In calculation of the number of days with snow covering, all days meeting the above-mentioned criterion have been taken into account within the period from May until September inclusive. The first such day at the beginning of the above-mentioned period was the data of the first appearance of snow cover and the last such day determined the date of snow cover melting.

The snow covering is considered stable in those cases when it is lying continuously during the whole winter or with interruptions for not more than 3 days within each 30 days of snow lying. If in spring, not more than 3 days after the snow cover melting the cover appears again and is lying for at least 10 days, then it is considered that the occurrence is continuous. If there have been 2 or 3 such interruptions, then all of them shall be included into the stable cover.

The data on the dates of appearance, melting and height of snow cover are provided in Tables 24-27.

Table 24. Mean decade height of snow cover according to permanent snow stake (cm)

Name of station	Month																								The largest								
	September			October			November			December			January			February			March			April			May			June			Mean	Max	Min
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3						
Tula						1	2	2	4	6	8		14	17	18	20	22	24	23	19	10	6	2							29	52	8	

The mean snow cover heights are provided by decades and the largest decade heights for a winter. The mean value out of the largest decade snow cover heights are obtained by means of averaging the yearly maximum decade heights irrespective of on what month and decade such maximum falls. The largest and least values have been selected from the maximum decade values for the whole period of observations.

Table 25 — Date of establishment and melting of snow cover, number of days with snow cover.

Name of station	Number of days with snow cover	Dates				The largest for winter	
		Snow cover appearance	Generation of stable snow cover	Destruction of stable snow cover	Snow cover melting	mean	max
Tula	113	2 XI	30 XI	22 III	4 IV	16.9	68.0

In solving many practical problems, not only the mean mutiyear decade height of snow cover but also, due to a high variability from one year to another, the most probable value are of the highest interest. Table 27 contains the height of snow cover being equal or higher than that indicated.

Table 27 — The greatest decade height of snow cover of various occurrence

BMO index	Name of station	Occurrence of decade heights of snow cover (%)						
		95	90	75	50	25	10	05
27719	Tula	12	14	19	28	39	46	49

The table contains the aggregate probability (occurrence) of the largest decade heights of snow cover per winter, equal or higher that the values indicated, which have been calculated according to the data of observations using a permanent snow stake.

2.6. Atmospheric phenomena.

In practice of meteorological observations, the atmospheric phenomena are defined as those phenomena, which are visually observed at the meteorological station and in its surroundings. These precipitations and fogs of various types, electrical phenomena (thunderstorm, distant lightning, polar lighting), squall, dust storm, whirlwind, windspout, darkness, glaze frost, etc.

Thunderstorm is an integrated atmospheric phenomenon, at which multiple electrical charges between clouds or between a cloud and the ground (lightnings) are accompanied by a sound phenomenon — thunder. Frontal and intramass thunderstorms are distinguished.

Table 28 — Mean multi-year number of days with thunderstorm (days)

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	-	-	0.07	1	4	7	8	4	1	0.1	-	0.03	26

The mean number of days with close and distant thunderstorms is provided by months and for a year. In case when there are no thunderstorms in a month, the corresponding column will be left blank. If the mean number of thunderstorms is less than 1, then it means that thunderstorms in the given month are not observed every year.

Table 29_The largest number of days with thunderstorm (days)

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719	Tula	-	-	1	7	9	17	15	12	6	2	-	1	43
		-	-	1981	2000	1984	1989	1996	1981	1984	1981	-	1981	1984
		-	-	1997	-	-	-	2000	-	-	-	-	-	-

The largest number of days with thunderstorm has been selected from the materials of observations for the period of 1977-2010. Line 1 — the proper value of the largest number of days with thunderstorm, Lines 2 and 3 — years when such largest number was observed. If the largest number has been observed only in one year, then "-" is indicated in Line 3.

Table 30 — Mean duration of thunderstorms (hours)

BMO index	Name of station	Month												Year
		Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
27719						4.75	14.04	17.58	6.42	2.04	0.04			46.25

The mean number of hours with thunderstorm for a month has been obtained by dividing the total sum of hours with thunderstorm by the number of years of observations. Apart from this characteristic, the mean duration of thunderstorm on a day with thunderstorm is also provided. This characteristic has been calculated by dividing the total duration of thunderstorms for a year by the number of thunderstorms for the same period of time. The case with thunderstorm, which continuous duration has turned out to be maximum for the period of observations being under consideration shall be recorded in the last column.

3. Specialised climatic characteristics

3.1. Characteristics of the stable frost period.

As the winter with stable frosts, such winter has been taken when at least in one month the air temperature was below 0°C, both according to minimum thermometer and during separate periods of observations. Inside the frost period, several days with a thaw (2-3 days) not earlier than 10 days after the beginning of the period and not later than 10 days before its end were permitted.

If thaws have been observed after the frosty period exceeding 10 days and then again a long period with stable frosts followed, then the largest number of days with thaw was permitted of such thaws were weak and did not disturb the winter conditions. If two periods with frosts lasting at least for a month have been observed during a winter, then the date of beginning of the first period was taken as the beginning of stable frosts, and the date of the end of the second period — as the end of stable frosts. The duration of the mean multi-year period with stable frosts has been determined as the number of days between the mean multi-year dates of their occurrence and cessation.

Steady frosts are one of the essential characteristics of winter and the dates of their beginning and end serve as good reference points for determination of the winter season boundaries.

Table 31 — Characteristics of the steady frost period

BMO index	Name of station	Characteristics of steady frosts		
		Oncoming	Cessation	Duration(days)
27719	Tula	20.11	14.03	115

3.2. Design temperatures and characteristics of heating period.

The number of days with mean daily air temperature below +8°C shall be taken as the duration of heating period.

The design winter ventilation temperature is the mean air temperature of the coldest part of the heating period, being equal to 15% of the whole heating period.

Table 32 — Design temperatures and heating period

BMO index	Name of station	Design temperature (°C)		Heating period	
		Coldest five-day period	Ventilation	Mean temperature (°C)	Duration (days)
27719	Tula	-21.9	-8.6	-3.2	206

3.3. Highest wind velocities of various probability

The highest wind velocities of various probability have been determined by the statistical extrapolation method developed in MHO (main hydrometeorological observatory) by L.S. Gandin and L.E. Anapolskaya, with the use of a special nomogram.

Table 33 Highest wind velocities of various probability

BMO index	Name of station	Wind velocity being possible once per			
		Year	5 years	10 years	20 years
27719	Tula	23	26	27	28

The tabular data are the values of wind velocity being possible once in a year, in every five, ten and twenty years.

3.4. Soil depth of frost

The soil depth of frost is of a great practical interest. However, at meteorological stations the direct measurements of the soil depth of frost by means of Danilin's frost-depth metre are not included into the standard observation program. Therefore, the soil depth of frost can be evaluated only indirectly by the depth of penetration of the temperature of 0°C into soil. It is determined by means of interpolation using daily data of exhaust thermometers between neighbouring depths, when at one of them the temperature is positive and at the other — it is negative. However, it should be noted that the depth of penetration of the temperature of 0°C into soil does not coincide with the depth of actual frost of soil as soil freezing, depending upon the content of salts, moisture, etc., therein becomes at the temperature below 0°C.

Table 34 — Depth of soil frost

BMO index	Name of station	Depth of soil frost (cm)									
		Month							Out of maximum values per winter		
		Oct	Nov	Dec	Jan	Feb	March	Apr	Mean	The largest	The least
27719	Tula	0	0	27	36	39	32	0	64	151	27



FEDERAL SERVICE FOR SUPERVISION OF NATURAL RESOURCES

**DIRECTORATE
OF FEDERAL SERVICE FOR SUPERVISION OF
NATURAL RESOURCES (ROSPRIRODNADZOR)
FOR THE TULA REGION**

ORDER

TULA TOWN

02 December 2016

No. 547-16

On issuance of a permit for the emissions of harmful substances (pollutants) into the atmospheric air

Being guided by the Regulation on the Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region approved by the Order of the Federal Service for Supervision of Natural Resources dated 24 August 2016 No. 511, I do hereby order that:

1. A permission should be issued for the emissions of harmful substances (pollutants) into the atmospheric air within the limits of approved standard rates of maximum permissible emissions (MPE) for JSC Shchekinoazot. Legal address: 19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, 301212. Actual address of carrying out the activity: 19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, 301212. OGRN 1027100507015 INN 7118004789

2. I shall personally supervise the performance of this order.

Head of Directorate

/signed/

I.M. Zabolina

*/Seal: Federal Service for Supervision of Natural Resources
Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region
FOR DOCUMENTS/*

PERMISSION No.254
for the emissions of harmful substances (pollutants) into the atmospheric air (except radioactive substances)

On the grounds of the order of the Directorate of Rosprirodnadzor for the Tula Region
 (name of the territorial authority of Rosprirodnadzor)

dated December 02, 2016 No. 547-n

Joint-Stock Company Shchekinoazot

(for legal entity — full name, organisational legal form, location, state registration number of the record on establishing the legal entity, taxpayer identification number,

19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, 301212.

for individual entrepreneur — surname, first name and patronymic (if any) of the individual entrepreneur, his/her residence address, data of the identity document.

OGRN 1027100507015, INN 7118004789

main state registration number of the record on the state registration of the individual entrepreneur, taxpayer identification number)

is permitted, during the period from 02 December 2016 until 15 November, to carry out the emissions of harmful substances (pollutants) into the atmospheric air.

List and amount of harmful substances (pollutants) permitted for the emissions into the atmospheric air by fixed sources located at the JSC Shchekinoazot's industrial site at the address: 19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, 301212.

*names of individual production territories; actual address of carrying out the activity)

the terms and conditions of the permission for the emissions of harmful substances (pollutants) into the atmospheric air are specified in Appendixes No. 1, 2 (on 4 pages) to this permission being its integral part.

The standard rates for the emissions of harmful substances (pollutants) into the atmospheric air with respect to particular sources are specified in Appendix No.1 (on 31 pages) to Order of the Directorate of Rosprirodnadzor for the Tula Region dated 16 November 2016 No.520-n and is an integral part of this permission.

Date of issue of the permission: 02 December 2016.

Head of Directorate of Rosprirodnadzor for the Tula Region

/signed/
(signed)

I.M. Zabotina
(Full Name)

Stamp here

/Seal: Federal Service for Supervision of Natural Resources

Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region

OGRN 1047101134475

INN 7107094990/

*It is an integral part of the permission for the emissions of harmful substances (pollutants) into the atmospheric air to be issued by a territorial authority of Rosprirodnadzor

List and amount of harmful substances (pollutants) permitted for the emissions into the atmospheric air ²

JSC Shchekinoazot

name of legal entity or surname, first name, patronymic of individual entrepreneur, name of separate production territory,

JSC Shchekinoazot industrial site at the address: 19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, 301212.

actual address of carrying out the activity

² Harmful substances (pollutants) and indicators of their emissions, which are not included into the Appendix to the permission for the emissions of harmful substances (pollutants) into the atmospheric air "List and amount of harmful substances (pollutants) permitted for the emissions into the atmospheric air", are not permitted for the emissions into the atmospheric air.

No.	Name of harmful substance (pollutant)	Class of hazard of harmful substance (pollutant) (I — IV)	Permitted emissions of harmful substance (pollutant) within the limits of approved standard rates of MPE								Permitted emissions of harmful substance (pollutant) within the limits of established temporary MPC						
			g/s	t/year	with breakdown by years, t						g/s	t/year	with breakdown by years, t				
					2016	2017	2018	2019	2020	2021			2016	2017	2018	2019	2020
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	123 diiron trioxide	3	0.6004126	0.571953	0.571953	0.571953	0.571953	0.571953	0.571953	0.571953	-	-	-	-	-	-	-
2	143 Manganese and its compounds	2	0.0036557	0.002889	0.002889	0.002889	0.002889	0.002889	0.002889	0.002889	-	-	-	-	-	-	-
3	150. Sodium hydroxide		0.00083	0.024	0.024	0.024	0.024	0.024	0.024	0.024	-	-	-	-	-	-	-
4	155. diSodium carbonate	3	0.33781	10.627	10.627	10.627	10.627	10.627	10.627	10.627	-	-	-	-	-	-	-
5	164. Nickel oxide	2	0.0000038	0.0000014	0.0000014	0.0000014	0.0000014	0.0000014	0.0000014	0.0000014	-	-	-	-	-	-	-
6	184. Lead and its compounds	1	0.0001703	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042	0.000042	-	-	-	-	-	-	-
7	203. Chromium	1	0.0003309	0.000184	0.000184	0.000184	0.000184	0.000184	0.000184	0.000184	-	-	-	-	-	-	-
8	293. Zirconium and its compounds	3	0.019	0.00855	0.00855	0.00855	0.00855	0.00855	0.00855	0.00855	-	-	-	-	-	-	-
9	301. Nitrogen dioxide	3	109.78865	1955.6742	1717.0508	1955.6742	1955.6742	1955.6742	1955.6742	1955.6742	-	-	-	-	-	-	-
10	303. Ammonia	4	4.746265	126.4365	77.028747	126.4365	126.4365	126.4365	126.4365	126.4365	-	-	-	-	-	-	-
11	Nitrogen oxide	3	16.726232	282.95557	277.75095	282.95557	282.95557	282.95557	282.95557	282.95557	-	-	-	-	-	-	-
12	316. Hydrochloride	2	0.3443999	10.856656	10.856655	10.856656	10.856656	10.856656	10.856656	10.856656	-	-	-	-	-	-	-
13	322. Sulphuric acid	2	0.0258396	0.812171	0.812171	0.812171	0.812171	0.812171	0.812171	0.812171	-	-	-	-	-	-	-
14	328. Soot	3	27.378429	132.5411	132.5411	132.5411	132.5411	132.5411	132.5411	132.5411	-	-	-	-	-	-	-
15	Sulphur dioxide	3	26.240553	127.85412	126.20402	127.85412	127.85412	127.85412	127.85412	127.85412	-	-	-	-	-	-	-

No.	Name of harmful substance (pollutant)	Class of hazard of harmful substance (pollutant) (I — IV)	Permitted emissions of harmful substance (pollutant) within the limits set forth in approved standard rates of MPE								Permitted emissions of harmful substance (pollutant) within the limits of established temporary MPC						
			g/s	t/year	with breakdown by years, t						g/s	t/year	with breakdown by years, t				
					2016	2017	2018	2019	2020	2021			2016	2017	2018	2019	2020
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
16	333. Hydrogen sulphide	2	0.0021007	0.008816	0.008816	0.008816	0.008816	0.008816	0.008816	0.008816	-	-	-	-	-	-	-
17	337. Carbon oxide	4	339.19152	1701.3253	1735.0793	1701.3253	1701.3253	1701.3253	1701.3253	1701.3253	-	-	-	-	-	-	-
18	342. Gaseous fluorine compounds	2	0.0057829	0.003709	0.003709	0.003709	0.003709	0.003709	0.003709	0.003709	-	-	-	-	-	-	-
19	344. Low soluble fluorides	2	0.0029421	0.00188	0.00188	0.00188	0.00188	0.00188	0.00188	0.00188	-	-	-	-	-	-	-
20	349. Chlorine	2	0.329865	10.8361	10.8361	10.8361	10.8361	10.8361	10.8361	10.8361	-	-	-	-	-	-	-
21	351. diAmmonium sulphate	3	1.008563	31.752811	31.752811	31.752811	31.752811	31.752811	31.752811	31.752811	-	-	-	-	-	-	-
22	408. Cyclohexane	4	5.8846006	98.243657	98.243657	98.243657	98.243657	98.243657	98.243657	98.243657	-	-	-	-	-	-	-
23	410. Methane		7.8342544	32.271849	19.34295	32.271849	32.271849	32.271849	32.271849	32.271849	-	-	-	-	-	-	-
24	415. Mixture of saturated hydrocarbons C1-C5		5.1967685	0.229442	0.198708	0.229442	0.229442	0.229442	0.229442	0.229442	-	-	-	-	-	-	-
25	416. Mixture of saturated hydrocarbons C6-C10		1.9181262	0.056241	0.056241	0.056241	0.056241	0.056241	0.056241	0.056241	-	-	-	-	-	-	-
26	501. Pentylenes	4	0.191736	0.005622	0.005622	0.005622	0.005622	0.005622	0.005622	0.005622	-	-	-	-	-	-	-
27	602. Benzene	2	1.6183925	28.967435	28.967435	28.967435	28.967435	28.967435	28.967435	28.967435	-	-	-	-	-	-	-
28	616. Dimethylbenzene	3	0.0316859	0.004053	0.004053	0.004053	0.004053	0.004053	0.004053	0.004053	-	-	-	-	-	-	-
29	621. Mmethylbenzene	3	0.413673	0.302552	0.302552	0.302552	0.302552	0.302552	0.302552	0.302552	-	-	-	-	-	-	-
30	627. Ethylbenzene	3	0.0046017	0.000135	0.000135	0.000135	0.000135	0.000135	0.000135	0.000135	-	-	-	-	-	-	-
31	703. Benzapyrene	1	0.0000002	0.0000008	0.0000008	0.0000008	0.0000008	0.0000008	0.0000008	0.0000008	-	-	-	-	-	-	-
32	902. Trichlorethylene	3	0.8135744	21.166949	21.166949	21.166949	21.166949	21.166949	21.166949	21.166949	-	-	-	-	-	-	-
33	1042. 1-butanol	3	0.0523129	0.059432	0.059432	0.059432	0.059432	0.059432	0.059432	0.059432	-	-	-	-	-	-	-
34	1052. Methanol	3	2.6402012	6.332835	5.757441	6.332835	6.332835	6.332835	6.332835	6.332835	-	-	-	-	-	-	-
35	1061. Ethanol	4	0.0511112	0.055913	0.055913	0.055913	0.055913	0.055913	0.055913	0.055913	-	-	-	-	-	-	-
36	1077. Cyclohexanol	3	0.1243035	3.436248	3.436248	3.436248	3.436248	3.436248	3.436248	3.436248	-	-	-	-	-	-	-
37	1103. Dowtherm	3	0.0081202	0.25607	0.25607	0.25607	0.25607	0.25607	0.25607	0.25607	-	-	-	-	-	-	-
38	1119. 2-ethoxyethanol		0.0664063	0.086837	0.086837	0.086837	0.086837	0.086837	0.086837	0.086837	-	-	-	-	-	-	-
39	1210. Butylacetate	4	0.0895293	0.117576	0.117576	0.117576	0.117576	0.117576	0.117576	0.117576	-	-	-	-	-	-	-
40	1240. Ethylacetate	4	0.0018889	0.00068	0.00068	0.00068	0.00068	0.00068	0.00068	0.00068	-	-	-	-	-	-	-
41	1325. Formaldehyde	2	0.0685137	0.06061	0.06061	0.06061	0.06061	0.06061	0.06061	0.06061	-	-	-	-	-	-	-
42	1401. 2- propanone	4	0.023852	0.026093	0.026093	0.026093	0.026093	0.026093	0.026093	0.026093	-	-	-	-	-	-	-
43	1411. Cyclohexanone	3	0.3380051	9.335959	9.335958	9.335959	9.335959	9.335959	9.335959	9.335959	-	-	-	-	-	-	-
44	1412. Cyclohexanone-oxime	3	0.0383342	1.132593	1.132593	1.132593	1.132593	1.132593	1.132593	1.132593	-	-	-	-	-	-	-
45	1530. Epsilon-Caprolaktam	3	0.2044	6.301366	6.301366	6.301366	6.301366	6.301366	6.301366	6.301366	-	-	-	-	-	-	-
46	1611. Epoxyethane	3	0.0015265	0.04739	0.04739	0.04739	0.04739	0.04739	0.04739	0.04739	-	-	-	-	-	-	-
47	2701. Ammophos	4	0.0070418	0.0496	0.0496	0.0496	0.04%	0.0496	0.0496	0.04%	-	-	-	-	-	-	-
48	2704. Petrol	4	0.1433842	0.100866	0.100866	0.100866	0.100866	0.100866	0.100866	0.100866	-	-	-	-	-	-	-
49	2732. Kerosene		1.3497975	27.049431	27.049431	27.049431	27.049431	27.049431	27.049431	27.049431	-	-	-	-	-	-	-
50	2735. Mineral oil		0.0000926	0.000032	0.000032	0.000032	0.000032	0.000032	0.000032	0.000032	-	-	-	-	-	-	-
51	2754. Alkanes C12-19	4	0.2439878	0.037005	0.037005	0.037005	0.037005	0.037005	0.037005	0.037005	-	-	-	-	-	-	-
52	2902. Suspended matter	3	0.0008678	0.002263	0.002263	0.002263	0.002263	0.002263	0.002263	0.002263	-	-	-	-	-	-	-
53	2907. Inorganic dust: SiO2>70%	3	0.0204828	0.056945	0.056945	0.056945	0.056945	0.056945	0.056945	0.056945	-	-	-	-	-	-	-
54	2908. Inorganic dust: 20-70% SiO2	3	0.0042349	0.001122	0.001122	0.001122	0.001122	0.001122	0.001122	0.001122	-	-	-	-	-	-	-
55	2909. Inorganic dust: SiO2<20%	3	6.507225	3.032299	3.032299	3.032299	3.032299	3.032299	3.032299	3.032299	-	-	-	-	-	-	-

No. .	Name of harmful substance (pollutant)	Class of hazard of harmful substance (pollutant) (I — IV)	Permitted emissions of harmful substance (pollutant) within the limits set forth in approved standard rates of MPE								Permitted emissions of harmful substance (pollutant) within the limits of established temporary MPC						
			g/s	t/year	with breakdown by years, t						g/s	t/year	with breakdown by years, t				
					2016	2017	2018	2019	2020	2021			2016	2017	2018	2019	2020
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
56	2426. Coal ash	2	43.664836	210.64639	210.64639	210.64639	210.64639	210.64639	210.64639	210.64639	-	-	-	-	-	-	-
57	2930. Abrasive dust		0.256912	0.278316	0.278316	0.278316	0.278316	0.278316	0.278316	0.278316	-	-	-	-	-	-	-
58	2936. Timber dust		0.195	0.4302	0.4302	0.4302	0.4302	0.4302	0.4302	0.4302	-	-	-	-	-	-	-
59	2978. Rubber vulcanizate dust		0.0226	0.00044	0.00044	0.00044	0.00044	0.00044	0.00044	0.00044	-	-	-	-	-	-	-
60	3401. Methyl-diethanolamine		0.0138	0.4352	0.4352	0.4352	0.4352	0.4352	0.4352	0.4352	-	-	-	-	-	-	-
61	3722. Asbestos-containing dust (from 20%)		0.014	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063	-	-	-	-	-	-	-
TOTAL *			606.8135	4842.9175	4568.2506	4842.9175	4842.9175	4842.9175	4842.9175	4842.9175	-	-	-	-	-	-	-

*In the "TOTAL" line, the gross emissions (tons per year) are indicated on the whole for a separate industrial territory.

Acting Head of department

/signed/
(signed)

A.P. Voronin
(surname, initials)

Responsible officer

/signed/
(signed)

A.P. Voronin
(surname, initials)



Rosgidromet

Central UGMS FGBU

Tula Centre for Hydrometeorology and Environmental Monitoring, a branch of Central Office for Hydrometeorology and Environmental Monitoring, a federal state budgetary institution
(Tula TsGMS — a Central UGMS FGBU's branch)

Address: 1g Priupskaya ul., Tula, 300031

Tel./fax: 8 (4872) 70-12-06, 70-23-16

Email: tcgms.buh@gmail.com

15 July 2016.

No. 08/07-244

BACKGROUND CONCENTRATIONS
of indicators of the physical and chemical composition of water
in the Degotnya river for JSC Shchekinoazot

Indicators of the physical and chemical composition of water	Background concentration, mg/dm ³	The least mean monthly water flow-rate Q _{95%} , m ³ /s	Period used for calculation	Note
1	2	3	4	5
BOD5, mg/dm ³	2.97	0.007	February 2013 — January 2016	
Suspended matter, mg/dm	15.5			
Dry residue, mg/dm ³	818.5			
Chlorides, mg/dm ³	42.1			
Sulphates, mg/dm ³	237.6			
Calcium, mg/dm ³	171.7			
Magnesium, mg/dm ³	19.9			
Ammonium ion, mg/dm ³	0.97			
Nitrite ion, mg/dm ³	0.04			
Nitrate ion, mg/dm	7.24			
Total iron, mg/dm ³	0.30			
Phosphates (P), mg/dm ³	0.17			
Phenols, mg/dm ³	0.0005			
Formaldehyde, mg/dm ³	0.02			
Oil products, mg/dm ³	0.03			
Surfactants, mg/dm ³	0.03			
Methanol, mg/dm ³	0.05			

The background concentrations of pollutants shall be valid from 15 July 2016 until 14 July 2021.

The background concentrations have been calculated according to the data from the laboratory of CLATI (Centre for Laboratory Analysis and Technical Measurements) branch for the Tula Region of CLATI for the Central Federal District — a federal budgetary institution.

The reference statement shall be used only for the customer's purpose and shall not be subject to transfer to other organisations.

Head of Tula TsGMS — a Central UGMS FGBU's branch

Stamp here

L.V. Ravcheyeva
(4872)438-068
klms.tcgms@gmail.com

/signed/
/Seal: Federal state budgetary institution
Central Office for Hydrometeorology and Environmental Monitoring
Tula Centre for Hydrometeorology and Environmental Monitoring,
a branch of Federal state budgetary institution
OGRN 1127747295170
INN 7703782266
Tula TsGMS/

S.A. Astapov

0800251



Ministry of Natural Resources and Environment of The Russian
Federation, Federal Agency for Water Resources
(Rosvodresursy)

**MOSKVA-OKA BASIN WATER
ADMINISTRATION**

Water resources department for the Tula Region

53 Friedrich Engels ul., Tula, 300041
Tel./fax: (4872) 30-81-73
email: tula@m-obvu.ru, <http://www.m-obvu.ru>

10 September 2016 No. TO-347

In reply to No. _____ dated _____

The water resources department for the Tula Region of the Moskva-Oka basin water administration (BWA) does hereby send the Order of the Moskva-Oka BWA No.518 dated 7 October 2016 on approval of ADR (Allowable discharge rate) for outlet No.1 in the Degotnya river.

Appendix on 6 pages

Deputy head of the
Moskva-Oka BWA

/signed/

I. S. Zaitsev

Executed by Kodratenko
36-29-84



**FEDERAL AGENCY OF WATER RESOURCES
(Rosvodresursy)**

MOSKVA-OKA BASIN WATER ADMINISTRATION

ORDER

MOSCOW city

07 October 2016.

No. 518

**On approval of the standard rates of permissible discharge of
substances and microorganisms into water objects**

In accordance with the Decree of the Government of the Russian Federation dated 23 July 2007 No.469 "On the order of approval of the standard rates of permissible discharges of substances and microorganisms into water objects for water users", by the order of the Ministry of Natural Resources and Environment of the Russian Federation dated 02 June 2014 No.246 "On approval of the administrative regulation of the Federal agency for water resources on providing a state service for approval of the standard rates of permissible discharges of substances (except radioactive substances) and microorganisms into water objects for water users as agreed with the Federal Service for Hydrometeorology and Environmental Monitoring, Federal Service for the Oversight of Consumer Protection and Welfare, Federal Agency for Fishery, Federal Service for Supervision of Natural Resources, I do hereby order that:

The standard rates of permissible discharges of substances and microorganisms into the water object of the Degotnya river (Tula Region) with waste water from Shchekinoazot Open Joint-Stock Company should be approved, agreed upon, in accordance with the established procedure for discharge outlet No.1 specified in the appendix to this order, for a period until 07 October 2019.

Acting Head of Office

/signed/

V.G. Astakhov

Standard rates of permissible discharge
into the Degotnya river
09.01.01.003 Upa river from the source to the mouth
(name of water object and water economic area)

Reg. No. 071016 518

Name of water user (legal entity, natural person or individual entrepreneur): Shchekinoazot Open Joint-Stock Company (JSC Shchekinoazot)

1. Water user's details (legal entity, natural person or individual entrepreneur):

Location: 19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212.

TIN (Taxpayer Identification Number): 7118004789

PSRN (Primary State Registration Number): 102700507015

Full name and telephone of the official being responsible for water management, his/her position: Deputy technical director for industrial and ecological safety Valeriy Vladimirovich Ordynets, contact telephone (48751) 9-26-37

2. Water use goals: discharge of water water into water object

3. Place of discharge of water water including drainage water (geographical coordinates and distance from the mouth (for waterways): Degotnya river, Shchekino district, Tula Region, place of discharge of waste water located at the distance of 260 km from the mouth, geographical coordinates of the outlet head: 54°01'11" N and 37°31'18" E.

4. Type of outlet head for waste water including drainage water: dissipative

5. Category of waste water including drainage water: industrial water, storm water and domestic sewage

6. Approved flow-rate of waste water including drainage water for establishing ADR

m ³ /h	m ³ /month												thous. m ³ /year
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
2525.80	18791 95.20	16973 37.60	18791 95.20	18185 76.00	18791 95.20	1818576. 00	1879195. 20	1879195. 20	1818576. 00	1879195. 20	1818576. 00	1879195. 20	22126.00

7. Approved standard rate of permissible discharge of substances and microorganisms.

7.1. Approved standard rate of permissible discharge substances into water object.

Name of discharge outlet: discharge outlet No.1 into the Degotnya river

Discharge of substances, which are not indicated below, is prohibited.

No.	Name of substances	Hazard class	Approved standard rate of permissible discharge of substances, mg/dm ³	Approved standard rate of permissible discharge of substances									
				january		february		March		april		may	
				g/h	t/month	g/h	t/month	g/h	t/month	g/h	t/month	g/h	t/month
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Ammonium ion	4	0.5	1262.90	0.940	1262.90	0.849	1262.90	0.940	1262.90	0.909	1262.90	0.940
2	BOD total	-	3.055	7716.32	5.741	7716.32	5.185	7716.32	5.741	7716.32	5.556	7716.32	5.741
3	Suspended matter	-	15.57	39326.71	29.259	39326.71	26.428	39326.71	29.259	39326.71	28.315	39326.71	29.259
4	Total ferrum	4	0.1	252.58	0.188	252.58	0.170	252.58	0.188	252.58	0.182	252.58	0.188
5	Calcium	4	195.2	493036.16	366.819	493036.16	331.320	493036.16	366.819	493036.16	354.986	493036.16	366.819
6	Caprolactam	3	0.01	25.26	0.019	25.26	0.017	25.26	0.019	25.26	0.018	25.26	0.019
7	Magnesium	4	58	146496.40	108.993	146496.40	98.446	146496.40	108.993	146496.40	105.477	146496.40	108.993
8	Methanol	4	0.19	479.90	0.357	479.90	0.322	479.90	0.357	479.90	0.346	479.90	0.357
9	Oil products	3.	0.087	219.74	0.163	219.74	0.148	219.74	0.163	219.74	0.158	219.74	0.163
10	Nitrate-anion	4	99.8	252074.84	187.544	252074.84	169.394	252074.84	187.544	252074.84	181.494	252074.84	187.544
11	Nitrite-anion	4	0.153	386.45	0.288	386.45	0.260	386.45	0.288	386.45	0.278	386.45	0.288
12	Anionic surfactants	4	0.1	252.58	0.188	252.58	0.170	252.58	0.188	252.58	0.182	252.58	0.188
13	Sulphate-anion	-	100	252580.00	187.920	252580.00	169.734	252580.00	187.920	252580.00	181.858	252580.00	187.920
14	Dry residue	-	1290	3258282.00	2424.162	3258282.00	2189.566	3258282.00	2424.162	3258282.00	2346.00	3258282.00	2424.162
15	Phosphates by phosphorus	4	0.463	1169.45	0.870	1169.45	0.786	1169.45	0.870	1169.45	0.842	1169.45	0.870
16	Chloride-anion	4	270.3	682723.74	507.946	682723.74	458.790	682723.74	507.946	682723.74	491.561	682723.74	507.946
17	Phenol	3	0.00191	4.82	0.004	4.82	0.003	4.82	0.004	4.82	0.003	4.82	0.004
18	Formaldehyde	2	0.096	242.48	0.180	242.48	0.163	242.48	0.180	242.48	0.175	242.48	0.180

Approved standard rate of permissible discharge of substances														Approved standard rate of permissible discharge of substances*
JUN		JUL		August		september		october		november		december		
g/h	t/month	g/h	t/month	g/h	t/month	g/h	t/month	g/h	t/month	g/h	t/month	g/h	t/month	t/year
1262.90	0.909	1262.90	0.940	1262.90	0.940	1262.90	0.909	1262.90	0.940	1262.90	0.909	1262.90	0.940	11.065
7716.32	5.556	7716.32	5.741	7716.32	5.741	7716.32	5.556	7716.32	5.741	7716.32	5.556	7716.32	5.741	67.596
39326.71	28.315	39326.71	29.259	39326.71	29.259	39326.71	28.315	39326.71	29.259	39326.71	28.315	39326.71	29.259	344.501
252.58	0.182	252.58	0.188	252.58	0.188	252.58	0.182	252.58	0.188	252.58	0.182	252.58	0.188	2.214
493036.16	354.986	493036.16	366.819	493036.16	366.819	493036.16	354.986	493036.16	366.819	493036.16	354.986	493036.16	366.819	4318.997
25.26	0.018	25.26	0.019	25.26	0.019	25.26	0.018	25.26	0.019	25.26	0.018	25.26	0.019	0.222
146496.40	105.477	146496.40	108.993	146496.40	108.993	146496.40	105.477	146496.40	108.993	146496.40	105.477	146496.40	108.993	1283.305
479.90	0.346	479.90	0.357	479.90	0.357	479.90	0.346	479.90	0.357	479.90	0.346	479.90	0.357	4.205
219.74	0.158	219.74	0.163	219.74	0.163	219.74	0.158	219.74	0.163	219.74	0.158	219.74	0.163	1.921
252074.84	181.494	252074.84	187.544	252074.84	187.544	252074.84	181.494	252074.84	187.544	252074.84	181.494	252074.84	187.544	2208.178
386.45	0.278	386.45	0.288	386.45	0.288	386.45	0.278	386.45	0.288	386.45	0.278	386.45	0.288	3.388
252.58	0.182	252.58	0.188	252.58	0.188	252.58	0.182	252.58	0.188	252.58	0.182	252.58	0.188	2.214
252580.00	181.858	252580.00	187.920	252580.00	187.920	252580.00	181.858	252580.00	187.920	252580.00	181.858	252580.00	187.920	2212.606
3258282.00	2346.00	3258282.00	2424.162	3258282.00	2424.162	3258282.00	2346.00	3258282.00	2424.162	3258282.00	2346.00	3258282.00	2424.162	28542.662
1169.45	0.842	1169.45	0.870	1169.45	0.870	1169.45	0.842	1169.45	0.870	1169.45	0.842	1169.45	0.870	10.244
682723.74	491.561	682723.74	507.946	682723.74	507.946	682723.74	491.561	682723.74	507.946	682723.74	491.561	682723.74	507.946	5980.657
4.82	0.003	4.82	0.004	4.82	0.004	4.82	0.003	4.82	0.004	4.82	0.003	4.82	0.004	0.043
242.48	0.175	242.48	0.180	242.48	0.180	242.48	0.175	242.48	0.180	242.48	0.175	242.48	0.180	2.123

Continued

Note: * conversion into tons per year is performed by summation of values in tons per month.

7.2. Approved standard rate of permissible discharge of microorganisms into water object.

Name of discharge outlet: discharge outlet No.1 into the Degotnya river

No.	Indicators by types of microorganisms	Dimension	Permissible content	Approved standard rate of permissible discharge, units per hours
1	2	3	4	5
1	Total Coliforms	KOE/100 ml	not more than 500	2.5258×10^{10}
2	Coliphages	BFU/100 ml	no more than 100	2.5258×10^8
3	Causative agents of infectious diseases	-	should not be contained	-
4	Viable helminth larvae	-	should not be contained in 25 l of water	-
5	Viable cysts of enteric pathogenic protozoa	-	should not be contained in 25 l of water	-
6	Thermotolerant coliform bacteria	KOE/100 ml	no more than 100	2.5258×10^9

8. Coordinated general properties of waste water including drainage water

- 1) **floating impurities (substances):** not allowed; on the water surface no films of petroleum products, oils, greases and accumulations of other impurities should not be detectable;
- 2) **temperature (°C):** water temperature should not rise as compared to the natural temperature of the water object more than by 5°C with the general temperature rise more than to 28°C in summer and 8°C in winter;
- 3) **hydrogen indicator (pH):** should not come out the limit range: 6.5 — 8.5;
- 4) **dissolved oxygen:** at least 4 — 6 mg/dm³;
- 5) **mineralisation:** not more than 1000 mg/dm³;
- 6) **toxicity:** waste water at the discharge outlet into a water object should not exert any acute toxic actions on test items. Water in the water object at the reference gauge should not exert any chronic toxic action on test items.

ADR has been approved on 07 October 2016 for a period until 07 October 2019.

In the package, total bound, numbered, tied and affixed
with seal 6 (six) pages
Deputy head of water resources department for the Tula
Region in Moskva-Oka BWA /signature/
T.V. Kondratenko
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**FEDERAL SERVICE FOR SUPERVISION OF
NATURAL RESOURCES**

**DIRECTORATE OF FEDERAL SERVICE FOR
SUPERVISION OF NATURAL RESOURCES
(ROSPRIRODNADZOR) FOR THE TULA REGION**

(Directorate of Rosprirodnadzor for the Tula Region)

38 Svobody ul., Tula, 300041 — Tel.: (4872) 30-84-89,
fax: (4872) 36-44-83

Email: rpn71@rpn.gov.ru
www.71.rpn.gov.ru

05 December 2016 No. IZ-03/3548

In reply to No. _____

To: General Director
of JSC Shchekinoazot

A.K. Surba

19 Simferopolskaya ul., Pervomayskiy workers'
settlement, Shchekino district, Tula Region, the Russian
Federation 301212.

"On issuance of a permission for discharge"

Directorate of Rosprirodnadzor for the Tula Region has considered a set of documents for obtaining a permission for the discharge of substances (except radioactive substances) and microorganisms from JSC Shchekinoazot for discharge outlet No.1 into the Degotnya river.

1. The set of documents presented for obtaining a permission for the discharge of substances (except radioactive substances) and microorganisms from JSC Shchekinoazot for discharge outlet No.1 into the Degotnya river complies with the requirements established by applicable legislation of the Russian Federation.

2. According to the result of analysis of the documentation presented, JSC Shchekinoazot has been given a permission for the discharge of substances (except radioactive substances) and microorganisms for discharge outlet No.1 into the Degotnya river within the limits of allowable discharge rates (ADR) and within the limits of approved temporary coordinated discharges (VSS) with the period of validity from 05 December 2016 until 04 December 2017

3. This permission for the discharge of substances (except radioactive substances) and microorganisms for discharge outlet No.1 in the Degotnya river for JSC Shchekinoazot will lose its legal force in case when changes are introduced into the production technologies, waste water treatment methods, discharge parameters.

Head of Directorate

/signed/

I.M. Zabolina

Permission No.62
for the discharge of pollutants into the environment

On the grounds of the order by the Directorate of the Federal Service for Supervision of Natural Resources for the Tula Region dated 5 December 2016 No.548

(name of the territorial authority of Rosprirodnadzor)

Joint-Stock Company Shchekinoazot

19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212.

OGRN — 1027100507015

INN — 7118004789

for legal entity — full name, organisational legal form, location, state registration number of the record on establishing the legal entity; for individual entrepreneur — surname, first name and patronymic (if any) of the individual entrepreneur, place of residence, data of the identity document, main state registration number of the record on state registration of the individual entrepreneur; taxpayer identification number

has given a permission to carry out discharge of pollutants as a part of waste water and/or drainage water into water objects:

for release No.1 during the period from 05 December 2016 until 04 December 2017.

The list and amount of pollutants for each of 1 discharge outlets of waste water and/or drainage water are specified in the appendix (on 2 pages) to this permission being its integral part.

Date of issue of the permission: 05 December 2016.

Head of Directorate
of Rosprirodnadzor for the Tula Region

/signed/
(signed)

(I.M. Zabolina)
Full name

Stamp here

/Seal: Federal Service for Supervision of Natural Resources

Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region

OGRN 1047101134475
INN 7107094990/

**List and amount
of pollutants permitted for the discharge into the Degotnya river**

name of water object

for discharge outlet No. 1 (Geographical coordinates of the outlet: — 54° 01' 11" N, 37° 31' 81" E, 260 km from the mouth)

location

approved flow-rate of waste water and/or drainage water: 2525.80 m3/h; 22126.00 thous. m3/year

No.	Pollutant name	Permissible concentration of pollutant at the discharge outlet of waste water and/or drainage water within the standard range of permissible discharge, mg/dm ³	Permitted discharge of pollutant within the standard range of permissible discharge, t/year (for the period of validity of the permission for discharge)					Permissible concentration of pollutant at the discharge outlet of waste water and/or drainage water within the standard range of permissible discharge, mg/dm ³	Permissible concentration of pollutant within the established limit range, t/year				
			t/year (for the period of validity of the permission for discharge)	with breakdown into quarters, t					t/year (for the period of validity of the permission for discharge)	with breakdown into quarters, t			
				1st quarter	2nd quarter	3rd quarter	4th quarter			1st quarter	2nd quarter	3rd quarter	4th quarter
1	Ammonium ion	0.5	11.065	2.729	2.758	2.789	2.789	1.1	24.339	6.001	6.068	6.135	6.135
2	BOD, total.	3.055	67.596	16.667	16.853	17.038	17.038	5.9	130.543	32.189	32.546	32.904	32.904
3	Suspended matter	15.57	344.501	84.946	85.889	86.833	86.833						
4	Total ferrum	0.10	2.214	0.546	0.552	0.558	0.558	0.4	8.851	2.182	2.207	2.231	2.231
5	Calcium	195.2	4318.997	1064.958	1076.791	1088.624	1088.624						
6	Caprolactam	0.01	0.222	0.055	0.055	0.056	0.056						
7	Magnesium	58	1283.305	316.432	319.947	323.463	323.463						
8	Methanol	0.19	4.205	1.036	1.049	1.060	1.060						
9	Oil products	0.087	1.921	0.474	0.479	0.484	0.484	0.2	4.424	1.091	1.103	1.115	1.115



Federal Service for Supervision of Natural Resources

LICENSE

(71) — 1530-STRB

dated 14 September 2016.

Directorate of Federal Service for Supervision of Natural Resources for the Tula Region

For carrying out the activity

on the collection, transportation, treatment, disposal, neutralisation, placement of waste of hazardous classes I-IV

(indicate the licensed kind of activity)

Kinds of works (services) to be produced (rendered) as a part of the licensed kind of activity, in accordance with Part 2, Article 12 of the Federal Law "On licensing individual kinds of activity": collection of waste of hazardous class I, collection of waste of hazardous class II, collection of waste of hazardous class III, collection of waste of hazardous class IV, transportation of waste of hazardous class II, transportation of waste of hazardous class III, transportation of waste of hazardous class IV, neutralisation of waste of hazardous class IV, placement of waste of hazardous class III, placement of waste of hazardous class IV

(indicate in accordance with the list of works (services) established by the regulation on licensing a particular kind of activity)
[in accordance with the appendix to this license]

This license has been given to the legal entity

Shchekinoazot Joint-Stock Company

(full name of legal entity with indication of organisational legal form)

JSC Shchekinoazot

(short name of legal entity)

Shchekinoazot Open Joint-Stock Company

(corporate name of legal entity)

Open Joint-Stock Company

Organisational legal form of legal entity

Main state registration number of the record on the state registration of the legal entity

1027100507015

Taxpayer identification number

7118004789

0600565

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Location

19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation
301212.

(address of location of the legal entity)

Places of carrying out the licensed kind of activity

[19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation
301212;

17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation
301212;

Deminka village, Lomintsevskoye municipal formation, Shchekino district, Tula Region, 301215; Malaya Andreyevka
railway station, Stepnokhutorskiy rural district, Yefremovskiy district, Tula Region, 301866]

This license has been granted for a period
on the basis of the decision of the licensing authority No. order 424-n

unlimited period
dated 14 September 2016.

This license has 1 appendix being its integral part on 13 (thirteen) pages.

Head of Directorate
of Rosprirodnadzor for the Tula Region
(position of authorised person)

/signed/
(signed)

I.M. Zabolina
(Full name of authorised person)

Stamp here

*/Seal: Federal Service for Supervision of Natural
Resources
Directorate of Federal Service for Supervision of
Natural Resources (Rosprirodnadzor) for the Tula
Region
OGRN 1047101134475
INN 7107094990/*

(71)-1530-STRB dated 14 September 2016.
(not valid without the license)

List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Soil contaminated with sulphur during repair of sulphur storage pit, sulphur pads, sulphur pipelines	3 12 113 95 20 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	Malaya Andreyevka railway station, Stepnokhutorskiy rural district, Yefremovskiy district, Tula Region, 301866 .
Waste vanadium catalyst of - sulphur acid production	3 12 221 01 49 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Dehydrated sediment (sludge) of neutralisation of waste water of the sulphur acid production with lime milk	3 12 228 21 39 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	Malaya Andreyevka railway station, Stepnokhutorskiy rural district, Yefremovskiy district, Tula Region, 301866 .
Neutralised waste from stripping of sulphur acid storage tanks	3 12 229 12 29 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	Malaya Andreyevka railway station, Stepnokhutorskiy rural district, Yefremovskiy district, Tula Region, 301866 .

Head of Directorate

/signed/

I.M. Zabotina

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Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region
OGRN 1047101134475
INN 7107094990/

This appendix is an integral part of the license

(71)-1530-STRB dated 14 September 2016.
(not valid without the license)

List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification - Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Mixture of bottom settlement water and equipment steaming condensate at the production of main organic chemical substances	3 13 802 31 10 4	IV	Neutralisation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste of non-halogenated polymers in a mixture from equipment stripping in their production	3 15 811 91 2 04	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Lime slaking sediment during - lime milk production	3 46 910 01 39 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	Deminka village, Lomintsevskoye municipal formation, Shchekino district, - Tula Region, 301215; .
Waste emulsions and emulsion mixtures for metal polishing containing oils or oil products in the amount of 15% and more	3 61 222 01 31 3	III	Transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212

Head of Directorate

/signed/

I.M. Zabolina

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Directorate of Federal Service for Supervision of Natural Resources (Rosprirrodnadzor) for the Tula Region
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INN 7107094990/

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(71)-1530-STRB dated 14 September 2016.
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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification - Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Waste of metal grit with an impurity of slag crust	3 63 110 02 20 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Uncontaminated special clothes from cotton and mixed fabrics that have lost their consumer properties	4 02 110 01 62 4	IV	Collection of waste of hazard class IV; transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Uncontaminated special clothes from synthetic and artificial fibres that have lost their consumer properties	4 02 140 01 62 4	IV	Collection of waste of hazard class IV; transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Working leather footwear that has lost its consumer properties	4 03 101 00 52 4	IV	Collection of waste of - hazard class IV; transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212

Head of Directorate

/signed/

I.M. Zabolotina

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Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region
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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Waste of engine mineral oils	4 06 110 01 31 3	III	Collection of waste of - hazard class III; transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste of hydraulic mineral oils not containing halogens	4 06 120 01 31 3	III		
Waste of industrial mineral oils	4 06 130 01 31 3	III		
Waste of transformer mineral oils not containing halogens	4 06 140 01 31 3	III		
Waste of transmission mineral oils	4 06 150 01 31 3	III		
Waste of compressor mineral oils	4 06 166 01 31 3	III		
Waste of turbine mineral oils	4 06 170 01 31 3	III		
Waste of process mineral oils	4 06 180 01 31 3	III		
Waste of other mineral oils	4 06 190 01 31 3	III		

Head of Directorate

/signed/

I.M. Zabolina

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INN 7107094990/

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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Float oil products from oil traps and similar facilities	4 06 350 01 31 3	III	Transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Residues of diesel fuel that has lost its consumer properties	4 06 910 01 103	III		
Waste of synthetic and semi-synthetic engine oils	4 13 100 01 31 3	III	Collection of waste of - hazard class III; transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste of synthetic and semi-synthetic industrial oils	4 13 200 01 31 3	III		
Waste of compressor synthetic oils	4 13 400 01 31 3	III		
Waste of other synthetic oils	4 13 50001 31 3	III		
Waste of paint and varnish materials based on alkyd resins in the environment of non-halogenated organic solvents	4 14 420 11 39 3	III	Transportation of waste of hazard class III;	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
		III	Placement of waste of hazard class III	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste of high temperature organic coolants based on diphenyl ether and biphenyl	4 19 912 21 31 3	III	Transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212

Head of Directorate

/signed/

I.M. Zabotina

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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Waste catalyst based on aluminium oxide containing platinum	4 41 001 03 49 3	III	Transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste catalyst based on active - aluminium oxide containing - palladium	4 41 001 04 49 3	III		
Waste nickel catalyst on aluminosilicate basis with nickel content over 35.0%	4 41 002 01 49 2	II	Transportation of waste of hazard class II	
Waste nickel catalyst on aluminosilicate basis with nickel content of not more than 35.0%	4 41 002 02 49 3	III	Transportation of waste of hazard class III	
Waste catalyst based on calcium aluminate / aluminium oxide with nickel content of not more than 35.0%	4 41 002 04 49 3	III		
Waste catalyst based on aluminium oxide with nickel oxide content of not mote than 11.0%	4 41 002 06 49 3	III		

Head of Directorate

/signed/

I.M. Zabolina

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OGRN 1047101134475
INN 7107094990/

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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Waste catalyst based on nickel alloy with aluminium with nickel content over 35%	4 41 002 08 40 2	II	Transportation of waste of hazard class II	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste molybdenum catalyst based on aluminium oxide containing nickel oxide	4 41 003 03 49 3	III	Transportation of waste of hazard class III	
Waste molybdenum catalyst based on magnesium metasilicate containing iron oxides	4 41 003 13 49 3	III		
Waste catalyst based on iron oxide containing chromium (III)	4 41 004 06 49 3	III		
Waste zinc-copper catalyst	4 41 005 03 49 3	III		
Waste cobalt-molybdenum catalyst based on aluminium oxide	4 41 006 03 49 3	III		

Head of Directorate

/signed/

I.M. Zabolina

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Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region
OGRN 1047101134475
INN 7107094990/

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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Waste catalyst based on silicon oxides and aluminium oxides	4 41 012 99 49 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste iron-containing catalyst	4 41 902 01 49 4	IV		
Waste activated coal contaminated with oil products (content of oil product less than 15%)	4 42 504 02 20 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Activated coal contaminated with sulphates and nonohaklogenated substances (- total content less than 10%)	4 42 504 12 20 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Quartz sand of natural water purification filters contaminated with iron oxides	4 43 701 01 49 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
				Malaya Andreyevka railway station, Stepnokhutorskiy rural district, Yefremovskiy district, Tula Region, 301866 .

Head of Directorate

/signed/

I.M. Zabotina

0010720

✱

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Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region
OGRN 1047101134475
INN 7107094990/

This appendix is an integral part of the license

(71)-1530-STRB dated 14 September 2016.
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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Waste sorbent based on zinc oxide	4 42 601 01 20 3	III	Transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste of abrasive material in powder form	4 56 200 52 41 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Uncontaminated slag wool waste	4 57 111 01 20 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Unsorted uncontaminated copper scrap and waste	4 62 110 99 20 3	III	Transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Unsorted tin scrap and waste	4 62 700 99 20 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Lamps — mercury, mercury quartz, luminescent that have lost their consumer properties	4 71 101 01 52 1	I	Collection of waste of hazard class I	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212

Head of Directorate

/signed/

I.M. Zabolina
0016721 ✱

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Directorate of Federal Service for Supervision of Natural Resources (Rosprirrodnadzor) for the Tula Region
OGRN 1047101134475
INN 7107094990/

This appendix is an integral part of the license

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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Computer system unit that has lost its consumer properties	4 81 201 01 52 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Printers, scanners, multifunctional devices (MFD) that have lost their consumer properties	4 81 202 01 52 4	IV		
Waste cartridges of printing devices with toner content of less than 7%	4 81 203 02 52 4	IV		
Keyboard, mouse manipulator with connecting wires that have lost their consumer properties	4 81 204 01 52 4	IV		
Computer liquid-crystal monitor assemblies that have lost their consumer properties	4 81 205 02 52 4	IV		
Waste of chemical cleaning of boiler and heat energy equipment using a hydrochloric acid solution	6 18 311 11 10 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	Deminka village, Lomintsevskoye municipal formation, Shchekino district, Tula Region, 301215; .

Head of Directorate

/signed/

I.M. Zabotina

0016722

✱

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Directorate of Federal Service for Supervision of Natural Resources (Rosprirodnadzor) for the Tula Region
OGRN 1047101134475
INN 7107094990/

This appendix is an integral part of the license

(71)-1530-STRB dated 14 September 2016.
(not valid without the license)

List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Waste (sediments) of purification of washing water during regeneration of sand filters for iron removal from natural water	7 10 120 01 39 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212 Malaya Andreyevka railway station, Stepnokhutorskiy rural district, Yefremovskiy district, Tula Region, 301866 .
Excessive sludge of biological waste water treatment facilities in a mixture with a sediment of mechanical cleaning of domestic waste water, sewage and mixed effluents	7 22 201 11 39 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	Malaya Andreyevka railway station, Stepnokhutorskiy rural district, Yefremovskiy district, Tula Region, 301866 .
Sediment of mechanical purification of petroleum containing waste water containing oil products in the amount less than 15%	7 23 102 02 39 4	IV	Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212

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I.M. Zabotina

0016723

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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Unsorted garbage from office and domestic premises of organisations (excluding big-sized items)	7 33 100 01 72 4	IV	Collection of waste of hazard class IV; transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste (sediments) of the regeneration of waste mineral oils by physical methods	7 43 611 12 33 3	III	Transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste wooden railway sleepers impregnated with antiseptic agents	8 41 000 01 51 3	III		
Sludge from cleaning of tanks and pipelines from petroleum and oil products	9 11 200 02 39 3	III		
Sand contaminated with petroleum or oil products (containing petroleum or oil products at the level of 15% and more)	9 19 201 01 39 3	III	Collection of waste of hazard class III; transportation of waste of hazard class III	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste filters for cleaning motor road vehicle oils	9 21 302 01 52 3	III		

Head of Directorate

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I.M. Zabolina

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List of waste of hazard classes I-IV and kinds of work as a part of the activity for collection, transportation, treatment, disposal, neutralisation, placement of waste of hazed classes I-IV

Description of the kind of activity	Code of waste according to Federal Classification Catalogue of Waste	Hazard class for surrounding natural environment	Kinds of work to be produced as a part of the licensed kind of activity	Place of carrying out the activity (including branches and isolated subdivisions)
Wiping cloth contaminated with petroleum and oil products (the content of petroleum and oil products less than 15%).	9 19 204 02 60 4	IV	Collection of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste undamaged lead storage batteries with electrolyte	9 20 110 01 53 2	II	Collection of waste of - hazard class III; - transportation of waste of hazard class II	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste undamaged nickel-iron - storage batteries with electrolyte	9 20 130 01 53 2	II	Transportation of waste of hazard class II	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste pneumatic motor road vehicle tyres	9 21 110 01 50 4	IV	Collection of waste of - hazard class IV; - transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
Waste air filters of motor road vehicles	9 21 301 01 52 4	IV	Collection of waste of - hazard class IV; - transportation of waste of hazard class IV	17 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212
			Placement of waste of hazard class IV	19 Simferopolskaya ul., Pervomayskiy workers' settlement, Shchekino district, Tula Region, the Russian Federation 301212

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I.M. Zabotina
0016725 ✱

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bound, numbered and affixed with official seal
14 (fourteen) pages*

*Head of Directorate
Directorate of Rosprirodnadzor
for the Tula Region /signed/ I.M. Zabolina*

14 September 2016

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OGRN 1047101134475
INN 7107094990/*

State Regional Center for Standardisation, Metrology and Testing in the Tula Region, a federal budgetary institution

Federal Service for Supervision of Natural Resources
(ROSPRIRODNADZOR)

Centre for Laboratory Analysis and Technical Measurements for the Central Federal District, a federal state budgetary institution (CLATI for CFD FGGU), CLATI for the Tula Region, a branch of CLATI for CFD FGGU

CERTIFICATE

No. AL — 156 CLATI — 2017

ON THE STATE OF MEASUREMENTS IN THE LABORATORY

Issued on 02 May 2017

Valid until 02 May 2020

This is to certify that

in the air service laboratory and in the sanitary laboratory
(name of laboratory)

of JSC Shchekinoazot
(name of enterprise)

there are conditions being necessary for carrying out measurements in the area of activity fixed with the department.

Appendix: list of facilities and indicators being controlled therein.

Deputy director for technical regulation and metrology,
Tula TsSM FBU

Head of CLATI for the Tula Region, a
branch of CLATI for CFD FBU

/signed/ T.N. Smetannikova

*/Seal: Federal Agency for Technical Regulation and
Metrology*

*State Regional Centre for Standardisation, Metrology and
Testing in the Tula Region, a federal budgetary institution*

/signed/ A.A. Kamykin

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Resources*

*(ROSPRIRODNADZOR)
Centre for Laboratory Analysis and Technical
Measurements for the Central Federal District, a
federal state budgetary institution (CLATI for
CFD FGGU), CLATI for the Tula Region, a
branch of CLATI for CFD FGGU
FOR DOCUMENTS/*

APPENDIX

To certificate № АЛ-156 ИЛАН-2017 dd. 02.05.2017

(two pages)

List of facilities and parameters to be controlled there

List of facilities to be controlled	List of components to be controlled
1	2
1. <u>Waste,</u> <u>natural water</u>	1. Active chlorine 2. Ammonium ion 3. Anionic surfactants 4. Biochemical oxygen demand (BOD) 5. Suspended matter 6. pH 7. Iron 8. Calcium 9. Caprolactam 10. Magnesium 11. Methanol 12. Oil products 13. Nitrate ions 14. Nitrite ions 15. Dissolved oxygen 16. Sulphate ions 17. Dry residue 18. Phenol 19. Formaldehyde 20. Phosphate ions 21. Phosphate phosphorus 22. Chemical oxygen demand (COD) 23. Chloride ions

1.	2.
2. <u>Industrial emissions to atmosphere</u>	1. Ammonia 2. Nitrogen oxides 3. Benzene 4. Caprolactam 5. Methanol 6. Dust 7. Sulphuric acid 8. Sulphur dioxide 9. Trichloroethylene 10. Carbon oxide 11. Phenol 12. Formaldehyde 13. Cyclohexane 14. Cyclohexanol 15. Cyclohexanone 16. Gas and dust flow velocity 17. Gas and dust flow rate 18. Gas and dust flow pressure 19. Gas and dust flow temperature
3. <u>Atmospheric air</u>	1. Nitrogen dioxide 2. Ammonia 3. Benzene 4. Methanol 5. Dust 6. Hydrogen sulphide 7. Phenol 8. Formaldehyde 9. Carbon oxide 10. Noise

Regional Director
Centre for Laboratory Analysis and
Technical Measurement, Tula Region

A.A. Kamynin

Appendix K

Dissipation Calculation

The contamination calculations were performed in accordance with OND-86 - "Guidelines to calculate concentrations of hazardous emissions from industrial plants to the atmospheric air" using EKO-Centre (UPRZA) standardized software for calculation of atmospheric air pollutions.

1.1 Input data for atmospheric air pollutions calculations

Feasibility threshold for emission sources: **0.05;**
 Area of the city (to extrapolate the background), sq. km: **0.5;**
 Target year **2017.**

Climatic data and factors:

Factor depending on temperature lamination on the atmosphere: **140;**
 Average temperature of the ambient air, °C: **39.2;**
 Terrain factor: **1.**

Wind selection parameters:

direction, meteo °: **0 - 360 (interval 1);**
 speed, m/s **0.5 - 5.3 (interval 0.1).**

Main coordinate system — counter-clockwise (right), axis OY oriented northward.

Local plant coordinate system: Reference point for X = 403388, for Y = -637494; right side; angle of rotation for axis OY clockwise = -68°.

For calculations in the protected area, factor **0.8** MAC is applied.

The quantity of contaminants used in the calculation is 81 (including 31 solid contaminants and 50 liquid and gaseous contaminants) with 20 summation groups. List and codes of the substances and summation groups to be considered in the atmospheric pollution calculations along with their hazard classes and maximum allowed concentrations (MAC) or tentative safe exposure levels (TSEL) are given in Table 1.1.1.

Table 1.1.1 — List of contaminants and summation groups

Pollutant		Hazard class	Maximum allowed concentration, mg/sq.m.			
Code	description		Maximum single	Daily average	SRLI	To be used in calculations
1	2	3	4	5	6	7
301	Nitrogen dioxide	3	0.2	0.04	-	0.2
303	Ammonia	4	0.2	0.04	-	0.2
304	Nitrogen oxide	3	0.4	0.06	-	0.4
330	Sulphur dioxide	3	0.5	0.05	-	0.5
333	Hydrogen sulphide	2	0.008	-	-	0.008
337	Carbon oxide	4	5	3	-	5
1325	Formaldehyde	2	0.05	0.003	-	0.05
2909	Inorganic dust: SiO ₂ <20%	3	0.5	0.15	-	0.5
6003	Ammonia, hydrogen sulphide					1
6004	Ammonia, hydrogen sulphide, formaldehyde					1
6005	Ammonia, formaldehyde					1
6046	Carbon oxide and dust from cement production					1

Note: For summation groups in columns 4-6, the MAC is not shown. In column 7, there is a combined effects factor.

Data about concentration of contaminants at background checkpoints to be used in atmospheric pollution calculations are given in Table 1.1.2.

Table № 1.1.2 — Data about concentration of contaminants at background checkpoints

Background checkpoint description	Checkpoint coordinates		Pollutant		Concentration, mg/m ³				
					Wind speed, m/s				
					0 – 2	3 – u*			
	X	Y	Code	description		wind direction			
1	2	3	4	5	6	7	8	9	10
Calculation site 1 (CS Local general enterprise coordinate system)									
1. Yasnaya Polyana background checkpoint	401829.17	-633223.17	2902	Suspended matter	0.2	0.2	0.2	0.2	0.2
			330	Sulphur dioxide	0.004	0.004	0.004	0.004	0.004
			337	Carbon oxide	2.1	2.1	2.1	2.1	2.1
			301	Nitrogen dioxide	0.077	0.066	0.077	0.066	0.047
			303	Ammonia	0.088	0.088	0.088	0.088	0.088
			1052	Methanol	0.493	0.493	0.493	0.493	0.493

Data about types and coordinates of the points where atmospheric contamination was measured are given in Table 1.1.3.

Table 1.1.3 — Calculation point parameters

Description	Coordinates			Point type
	X	Y	height, m	
1	2	3	4	5
Calculation site 1 (CS Local general enterprise coordinate system)				
1. At the boundary of calc. SPZ	128.91	-532.25	2	A point at the SPZ boundary
2. At the boundary of calc. SPZ	45.7	-174.85	2	A point at the SPZ boundary
3. At the boundary of calc. SPZ and garden plots	-11.84	52.64	2	A point at the SPZ boundary
4. At the boundary of calc. SPZ and garden plots	-187.7	525.5	2	A point at the SPZ boundary
5. At the boundary of calc. SPZ and garden plots	-336.17	1010.98	2	A point at the SPZ boundary
6. At the boundary of calc. SPZ and garden plots	-302.49	1171.47	2	A point at the SPZ boundary
7. At the boundary of calc. SPZ and garden plots	-9.7	1186.5	2	A point at the SPZ boundary
8. At the boundary of calc. SPZ and garden plots	-109.14	1589.8	2	A point at the SPZ boundary
9. At the boundary of calc. SPZ and garden plots	69.92	1693.68	2	A point at the SPZ boundary
10. At the boundary of design SPZ	549.22	1778.21	2	A point at the SPZ boundary
11. At the boundary of design SPZ	1055.33	1854.85	2	A point at the SPZ boundary
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	1493.95	1863.25	2	A point at the SPZ boundary
13. At the boundary of design SPZ	2067.88	2004.67	2	A point at the SPZ boundary
14. At the boundary of design SPZ	2565.28	1975.93	2	A point at the SPZ boundary
15. At the boundary of design SPZ	2890.93	1732.73	2	A point at the SPZ boundary
16. At the boundary of design SPZ	3382.52	1752.4	2	A point at the SPZ boundary
17. At the boundary of design SPZ	3729.32	1400.13	2	A point at the SPZ boundary
18. At the boundary of design SPZ	3844.83	905.33	2	A point at the SPZ boundary
19. At the boundary of design SPZ	3937.25	401.98	2	A point at the SPZ boundary
20. At the boundary of design SPZ	3872.65	-99.74	2	A point at the SPZ boundary
21. At the boundary of design SPZ	3570.83	-505.93	2	A point at the SPZ boundary
22. At the boundary of design SPZ	3106.43	-698.53	2	A point at the SPZ boundary
23. At the boundary of design SPZ	2596.09	-738.12	2	A point at the SPZ boundary
24. At the boundary of design SPZ	2512.79	-1185.48	2	A point at the SPZ boundary
25. At the boundary of design SPZ	2141	-1530.93	2	A point at the SPZ boundary
26. At the boundary of design SPZ	1666.25	-1722.31	2	A point at the SPZ boundary
27. At the boundary of design SPZ	1181.83	-1765.76	2	A point at the SPZ boundary
28. At the boundary of design SPZ	935.23	-1331.96	2	A point at the SPZ boundary
29. At the boundary of design SPZ	449.01	-1337.58	2	A point at the SPZ boundary
30. At the boundary of design SPZ	233.62	-1045.12	2	A point at the SPZ boundary
31. At the boundary of Deminka populated locality	2584.9	-779	2	A point in residential zone
32. At the boundary of Myasotedovo populated locality	2326	-1762.6	2	A point in residential zone
33. At the boundary of Myasotedovo populated locality	1766.8	-2105.5	2	A point in residential zone
34. At the boundary of Kaznacheyevskiy populated locality	68.3	-635.6	2	A point in residential zone
35. At the boundary of workers camp of Mine No.20	-164.5	-73.3	2	A point in residential zone
36. At the boundary of Shechekino populated locality	-1565.2	358.29	2	A point in residential zone

Table 1.1.3 (continued)

Description	Coordinates			Point type
	X	Y	height, m	
1	2	3	4	5
37. At the boundary of Shechekino populated locality	-1835.9	994.4	2	A point in residential zone
38. At the boundary of Yasekni populated locality	-849.5	1835.8	2	A point in residential zone
39. At the boundary of Pervomayskiy populated locality	753.2	1825.6	2	A point in residential zone
40. At the boundary of Pervomayskiy populated locality	1777.8	1990.7	2	A point in residential zone
At the boundary of Kochaki populated locality	2843.1	1777.1	2	A point in residential zone
42. At the boundary of Ozerniy populated locality	5036.1	-1445.81	2	A point in residential zone

Data about coordinates of calculation areas, calculation grid size (each grid nod forms a calculation point) are given in Table 1.1.4.

Table 1.1.4 — Calculation area parameters

Description	Centerline coordinates				Width, m	Height, m	Grid size, m	SPZ interval m
	Point 1		Point 2					
	X ₁	Y ₁	X ₂	Y ₂				
1	2	3	4	5	6	7	8	9
1. Calculation for the entire cluster of industrial enterprises and plants within the industrial site (CS:1, local general enterprise coordinate system)	433.97	2953.75	2687.02	-2622.75	6023.145	2	500	500

Description of time schedule of atmospheric emission sources is given in Table 1.1.5.

Table 1.1.15 — Description of time schedule of atmospheric emission sources

Performance schedule		Hours of operation for the calculated year																											
No.	description	hours a day	total for the year	description																									
1	2	3	4	5																									
1			24	8760																									
	2017	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
	January							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	February			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	March			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	April			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	May	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	June			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	July			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	August	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	September			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	October			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	November			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	December			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

The hazardous wind speed, maximum concentration of emissions as a share of the MAC and the distance where it reaches the maximum concentration are established for each source.

Parameters of atmospheric contamination sources to be included in this calculation, are given in Table 1.1.6.

Table 1.1.6 — Parameters of atmospheric contamination sources

ACS No.	Type	Height, m	Dia-meter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazar-dous wind speed, m/s	Pollutant			Max. concen-tration, % MAC	Distance to the maxi-mum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Facility:				1. JSC Shchekinoazot												
Site:				1. JSC Shchekinoazot (local CS:1. local plant coordinate system)												
Shop:				1. Cyclohexanone production												

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
54	1	6	0.4	14.8	1.86	22	1576.7	757.7	-	1	1.283	408	0.2862	1	0.09	87.73
												1077	0.00324	1	0.024	87.73
												1411	0.038358	1	0.42	87.73
55	1	6	0.4	14.2	1.784	22	1576.9	791.1	-	1	1.231	408	0.10057	1	0.034	84.18
												1077	0.001602	1	0.013	84.18
												1411	0.009078	1	0.107	84.18
56	1	6	0.5	11.1	2.179	22	1531.6	786.9	-	1	1.203	408	0.04	1	0.014	82.25
												1077	0.001	1	0.008	82.25
												1411	0.004	1	0.049	82.25
57	1	6	0.4	18.9	2.375	22	1532.1	769	-	1	1.638	408	0.05773	1	0.012	112.04
												1077	0.00138	1	0.007	112.04
												1411	0.00736	1	0.053	112.04
60	1	6	0.13	0.2	0.00265	20	1535.51	774.8	-	1	0.5	408	0.03699	1	0.051	34.2
												1077	0.0000097	1	3·10-4	34.2
												1411	0.0000332	1	0.002	34.2
61	1	6	0.2	0.2	0.00628	20	1529.9	780.1	-	1	0.5	408	0.242723	1	0.334	34.2
												1077	0.000203	1	0.007	34.2
												1411	0.006727	1	0.324	34.2
62	1	6	0.13	0.3	0.00398	20	1540.34	774.61	-	1	0.5	408	0.060894	1	0.084	34.2
												1077	0.0000143	1	5·10-4	34.2
												1411	0.007164	1	0.345	34.2
63	1	20	0.8	8.6	4.323	22	1688.8	786.91	-	1	0.5	408	0.17808	1	0.015	114
												1077	0.01302	1	0.025	114
												1411	0.0168	1	0.049	114
64	1	20	0.8	8.4	4.222	22	1704.2	787.7	-	1	0.5	408	0.168	1	0.014	114
												1077	0.0112	1	0.022	114
												1411	0.016	1	0.046	114
65	1	20	0.8	7.5	3.77	22	1674.8	770.7	-	1	0.5	408	0.13468	1	0.011	114
												1077	0.00518	1	0.01	114
												1411	0.01517	1	0.044	114
66	1	20	0.8	7.4	3.72	22	1685	770.2	-	1	0.5	408	0.10416	1	0.009	114
												1077	0.005208	1	0.01	114
												1411	0.010788	1	0.031	114
70	1	20	0.6	16.2	4.58	22	1730	798	-	1	0.632	408	0.035266	1	0.002	144.05
												1411	0.010076	1	0.021	144.05
71	1	15	0.3	7.8	0.551	22	1717.1	798.8	-	1	0.5	408	0.000715	1	1·10-4	85.5
												1411	0.012705	1	0.072	85.5
73	1	20	0.3	8	0.565	20	1732.5	779.2	-	1	0.5	301	0.015345	1	0.009	114
												337	0.09605	1	0.002	114
												408	0.02034	1	0.002	114
												1077	0.001469	1	0.003	114
												1411	0.005565	1	0.016	114
353	1	22	0.08	5.6	0.02815	20	1731.1	810.59	-	1	0.5	337	0.05404	1	0.001	125.4
												408	0.0002156	1	1·10-5	125.4
												1077	0.0021896	1	0.003	125.4
												1411	0.0087444	1	0.02	125.4
510	1	20	0.2	0.1	0.00314	22	1630.4	807.8	-	1	0.5	408	0.069316	1	0.006	114
												1077	0.0023467	1	0.005	114
												1411	0.0013423	1	0.004	114
511	1	15	0.2	0.1	0.00314	22	1627.1	747	-	1	0.5	408	0.0821221	1	0.013	85.5
												1077	0.001612	1	0.006	85.5
												1411	0.0020646	1	0.012	85.5
927	1	20	0.3	8	0.565	20	1748.2	779.61	-	1	0.5	301	0.0156505	1	0.009	114
												337	0.09605	1	0.002	114
												408	0.019775	1	0.002	114
												1077	0.001243	1	0.002	114
												1411	0.005763	1	0.017	114
928	1	20	0.3	8	0.565	20	1742.8	779.4	-	1	0.5	301	0.015481	1	0.009	114
												337	0.0963325	1	0.002	114
												408	0.020453	1	0.002	114
												1077	0.001356	1	0.003	114
												1411	0.005989	1	0.017	114

ACS No.	Type	Height, m	Dia-meter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazar-dous wind speed, m/s	Pollutant			Max. concen-tration, % MAC	Distance to the maxi-mum, m
				speed, m/s	volume, m³/s	temp., °C	X1	Y1	width, m							
							X2	Y2								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
929	1	20	0.3	8	0.565	20	1737.9	779.6	-	1	0.5	301	0.015481	1	0.009	114
												337	0.09605	1	0.002	114
												408	0.0198315	1	0.002	114
												1077	0.0012995	1	0.003	114
												1411	0.0059325	1	0.017	114
20	1	6.5	0.35	4.261	0.41	19.7	1663.5	498.1	-	1	0.5	408	0.017589	1	0.02	37.05
												602	0.002952	1	0.016	37.05
22	1	11	0.75	5.772	2.55	19.7	1699	507.4	-	1	0.512	408	0.06375	1	0.021	64.16
												602	0.00102	1	0.002	64.16
23	1	10.5	0.75	4.369	1.93	19.6	1630	520.7	-	1	0.5	408	0.047864	1	0.018	59.85
												602	0.000579	1	0.001	59.85
24	1	7	0.4	14.404	1.81	19.7	1630.9	515.5	-	1	1.07	408	0.108419	1	0.033	85.39
												602	0.776671	1	1.1	85.39
26	1	11	0.1	0.102	0.0008	19.7	1652.6	506.4	-	1	0.5	408	0.0065608	1	0.002	62.7
												602	0.000064	1	10·10-5	62.7
28	1	6	0.3	9.479	0.67	19.7	1692.37	447.24	-	1	0.616	408	0.006968	1	0.007	42.14
												602	0.001742	1	0.008	42.14
												902	0.002211	1	0.001	42.14
												1077	0.002613	1	0.063	42.14
												1411	0.000871	1	0.032	42.14
												1412	0.000335	1	0.005	42.14
29	1	5	0.3	7.781	0.55	19.7	1690.9	429.1	-	1	0.607	408	0.00748	1	0.012	34.59
												602	0.002145	1	0.016	34.59
												902	0.002695	1	0.002	34.59
												1077	0.0011	1	0.042	34.59
												1411	0.00044	1	0.025	34.59
												1412	0.000605	1	0.014	34.59
30	1	5	0.13	0.625	0.0083	19.7	1682	419.8	-	1	0.5	408	0.5579509	1	1.17	28.5
												602	0.0156953	1	0.154	28.5
												902	0.003462	1	0.003	28.5
												1077	0.000391	1	0.019	28.5
												1411	0.000259	1	0.019	28.5
												1412	0.0003652	1	0.011	28.5
31	1	5.5	0.4	8.037	1.01	19.7	16									

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
344	1	40	2.2	5.13	19.501	350	1720.4	453.2	-	1	3.607	301	1.2305229	1	0.034	592.49
												303	0.3418119	1	0.009	592.49
												330	0.09165	1	0.001	592.49
												337	8.5452979	1	0.009	592.49
												304	0.19996	1	0.003	592.49
345	1	40	2.2	5.13	19.501	350	1729.3	452.5	-	1	3.607	301	1.2305229	1	0.034	592.49
												303	0.3418119	1	0.009	592.49
												330	0.0819	1	0.001	592.49
												337	8.5452979	1	0.009	592.49
												304	0.19996	1	0.003	592.49
346	1	10	0.35	4.158	0.4	19.7	1678.51	507.25	-	1	0.5	408	0.01596	1	0.007	57
												602	0.00068	1	0.001	57
347	1	3.5	0.08	1.651	0.0083	19.7	1625.1	483	-	1	0.5	408	0.0011205	1	0.005	19.95
												602	0.0007446	1	0.017	19.95
348	1	25	0.6	11.318	3.2	19.7	1815	114	-	1	0.5	408	0.03776	1	0.002	142.5
												602	0.03104	1	0.007	142.5
350	1	25	0.5	81.487	16	19.7	1728	356.6	-	1	4.661	408	0.00128	1	7·10-6	582.22
												602	0.5968	1	0.015	582.22
												902	0.16	1	3·10-4	582.22
374	1	6	0.1	7	0.055	19.7	1877.5	114.1	-	1	0.5	408	0.001155	1	0.002	34.2
												602	0.0017325	1	0.011	34.2
6186	3	4	-	-	-	-	1495.5 1496	335.6 336.1	0.5	1	0.5	408	1.836	1	6.5	22.8
919	1	40	1.6	9.699	19.501	350	1702.33	455.08	-	1	3.694	301	1.2305348	1	0.031	619.22
												303	0.3418152	1	0.009	619.22
												330	0.078	1	0.001	619.22
												337	8.5453805	1	0.009	619.22
												304	0.1999619	1	0.003	619.22
920	1	2	0.2	0.02827	0.00089	19.7	1665	506	-	1	0.5	408	0.0452897	1	0.81	11.4
												602	0.000474	1	0.04	11.4
1	1	27	0.6	7.675	2.17	18	1371.97	624.2	-	1	0.5	408	0.2835	1	0.012	153.9
												1077	0.00294	1	0.003	153.9
												1411	0.00294	1	0.004	153.9
2	1	27	0.6	9.196	2.6	18.2	1435.93	624.16	-	1	0.5	408	0.08398	1	0.003	153.9
												1077	0.0065	1	0.006	153.9
												1411	0.00026	1	4·10-4	153.9
4	1	27	0.6	13.369	3.78	18.2	1374.09	624.3	-	1	0.5	408	0.02516	1	0.001	153.9
												1077	0.00259	1	0.002	153.9
												1411	0.00185	1	0.003	153.9
5	1	27	0.7	9.874	3.8	18.1	1434.38	624.07	-	1	0.5	408	0.03838	1	0.002	153.9
												1077	0.001596	1	0.002	153.9
												1411	0.000722	1	0.001	153.9
6	1	27	0.7	9095	3500.17	18.1	1375.85	624.48	-	1	74.148	408	0.0826	1	2·10-5	2508
												1077	0.003535	1	2·10-5	2508
												1411	0.001785	1	2·10-5	2508
7	1	27	0.7	9.224	3.55	18.2	1432.53	624.08	-	1	0.5	408	0.092655	1	0.004	153.9
												1077	0.0014555	1	0.001	153.9
												1411	0.002556	1	0.004	153.9
8	1	27	0.7	8.705	3.35	18	1377.52	624.61	-	1	0.5	408	0.09581	1	0.004	153.9
												1077	0.00201	1	0.002	153.9
9	1	27	0.7	8.575	3.3	18.1	1430.69	624.09	-	1	0.5	408	0.05313	1	0.002	153.9
												1077	0.001353	1	0.001	153.9
												1411	0.001716	1	0.002	153.9
10	1	27	0.7	9.354	3.6	18	1379.55	624.67	-	1	0.5	408	0.3528	1	0.015	153.9
												1077	0.00216	1	0.002	153.9
												1411	0.00036	1	0.001	153.9
12	1	27	0.2	0.541	0.017	18	1410.3	600.1	-	1	0.5	408	0.0008177	1	3·10-5	153.9
												1077	0.0008177	1	0.001	153.9
												1411	0.000017	1	2·10-5	153.9
16	1	29	0.05	0.0509	0.0001	18.1	1390.22	624.67	-	1	0.5	408	0.00157	1	5·10-5	165.3
												1077	0.0000009	1	7·10-7	165.3
												1411	0.0000151	1	2·10-5	165.3

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
18	1	29	0.2	8.849	0.278	18.3	1387.37	600.67	-	1	0.5	337	0.0196268	1	2·10 ⁻⁴	165.3
												408	0.0000278	1	10·10 ⁻⁷	165.3
												1077	0.0006394	1	0.001	165.3
												1411	0.0010286	1	0.001	165.3
19	1	29	0.5	15.584	3.06	18.4	1399.59	600.96	-	1	0.5	337	0.179622	1	0.002	165.3
												408	0.004284	1	1·10 ⁻⁴	165.3
												1077	0.00306	1	0.002	165.3
												1411	0.00153	1	0.002	165.3
343	1	6	0.08	0.00398	0.00002	18.4	1401.31	624.73	-	1	0.5	408	0.0024	1	0.003	34.2
												1077	0.000002	1	6·10 ⁻⁵	34.2
												1411	0.0000097	1	5·10 ⁻⁴	34.2
500	1	20	0.8	7.182	3.61	448	1291.43	637.5	-	1	2.891	337	0.5202492	1	0.003	272.06
												408	0.037905	1	0.001	272.06
												1077	0.026353	1	0.014	272.06
												1411	0.03971	1	0.033	272.06
841	1	27	0.4	11.937	1.5	18.1	1499.64	606.65	-	1	0.5	408	0.07485	1	0.003	153.9
												1077	0.0015	1	0.001	153.9
												1411	0.00105	1	0.002	153.9
842	1	60	0.5	1.5	0.2945	150	1380.21	641.44	-	1	0.531	301	0.0017143	1	3·10 ⁻⁴	163.82
												304	0.0002786	1	3·10 ⁻⁵	163.82
												337	0.0142857	1	1·10 ⁻⁴	163.82
												410	0.0000357	1	3·10 ⁻⁸	163.82
11	1	27	0.7	9.874	3.8	18.4	1428.54	624.08	-	1	0.5	408	0.16112	1	0.007	153.9
												1077	0.00418	1	0.004	153.9
												1411	0.0076	1	0.011	153.9
924	1	6	0.3	1.03	0.0728	22	1400.37	563.52	-	1	0.5	123	0.0013128	3	0.019	17.1
												143	0.0001634	3	0.094	17.1
												203	0.0000369	3	0.014	17.1
												301	0.00051	1	0.005	34.2
												304	0.0000829	1	4·10 ⁻⁴	34.2
												337	0.0031403	1	0.001	34.2
												342	0.0002291	1	0.022	34.2
												344	0.0000945	3	0.003	17.1
												2908	0.0000945	3	0.002	17.1
												925	1	10	0.315	11.42
1077	0.00445	1	0.043	57												
1411	0.005073	1	0.074	57												
926	1	10	0.25	18.131	0.89	18.2	1587.88	644.78	-	1	0.589	408	0.003382	1	0.001	67.18
												1077	0.000979	1	0.008	67.18
												1411	0.000534	1	0.006	67.18
Shop: 2. Caprolactam production																
76	1	22	0.3	18.816	1.33	18.8	1431.61	778.54	-	1	0.5	301	0.2155328	1	0.1	125.4
												304	0.0350336	1	0.008	125.4
												303	0.0330027	1	0.015	125.4
77	1	22	0.4	13.608	1.71	18.8	1441	778.2	-	1	0.5	301	0.007182	1	0.003	125.4
												303	0.000855	1	4·10 ⁻⁴	125.4
78	1	22	0.66	13.913	4.76	18.8	1444.69	750.5	-	1	0.543	301	0.033796	1	0.014	136.09
												303	0.269892	1	0.113	136.09
79	1	22	0.7	12.161	4.68	18.8	1325.8	738.3	-	1	0.503	301	0.024336	1	0.011	126.16
												303	0.00468	1	0.002	126.16
80	1	22	0.7	12.265	4.72	18.8	1403.6	713.9	-	1	0.507	301	0.01652	1	0.008	127.23
												303	0.003304	1	0.002	127.23
81	1	22	0.7	11.901	4.58	18.8	1383.7	693.3	-	1	0.5	301	0.025648	1	0.012	125.4
												303	0.004122	1	0.002	125.4
82	1	22	0.7	11.901	4.58	18.8	1424.18	778.46	-	1	0.5	301	0.027022	1	0.013	125.4
												303	0.003206	1	0.001	125.4
83	1	22	0.4	13.449	1.69	18.8	1198.2	650.01	-	1	0.5	301	0.00642	1	0.003	125.4
84	1	8	0.08	0.0398	0.0002	18.7	1561.89	525.5	-	1	0.5	303	0.0000018	1	9·10 ⁻⁶	45.6
85	1	2	0.5	1	0.1963	22	1578.8	526.4	-	1	0.5	123	0.0174	3	3.26	5.7
												2930	0.0114	3	21.4	5.7
86	1	8	0.08	2.586	0.013	18.8	1546.8	532.8	-	1	0.5	322	0.0002327	1	0.001	45.6
89	1	6	0.1	0.1146	0.0009	18.8	1537.9	532.3	-	1	0.5	301	0.0000198	1	2·10 ⁻⁴	34.2
91	1	8	0.08	2.487	0.0125	18.7	1465.17	535.69	-	1	0.5	301	0.000001	1	5·10 ⁻⁶	45.6
92	1	12	0.05	0.2037	0.0004	18.7	1465.8	552.6	-	1	0.5	301	0.0000832	1	2·10 ⁻⁴	68.4

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
93	1	22	0.08	0.2387	0.0012	18.7	1478.4	535.5	-	1	0.5	301	0.0008868	1	4·10-4	125.4
96	1	22	0.05	0.509	0.001	18.7	1523.8	541.73	-	1	0.5	322	0.0000959	1	3·10-5	125.4
98	1	22	0.05	0.509	0.001	18.8	1559.4	563.79	-	1	0.5	322	0.0000063	1	2·10-6	125.4
100	1	22	0.05	0.509	0.001	18.8	1538.2	563.8	-	1	0.5	301	0.0000179	1	8·10-6	125.4
266	1	24	0.1	11.937	0.0937	150	1498.4	535.9	-	1	0.5	301	0.6289142	1	0.82	69.52
												304	0.1021986	1	0.067	69.52
												337	5.2409514	1	0.274	69.52
												410	0.1310238	1	0.001	69.52
321	1	22	0.4	19.099	2.4	18.8	1257.5	508.7	-	1	0.5	322	0.000936	1	3·10-4	125.4
355	1	22	0.6	14.501	4.1	18.8	1495.5	560.9	-	1	0.514	301	0.01025	1	0.005	128.94
356	1	22	0.4	5.889	0.74	18.8	1498.2	561.1	-	1	0.5	301	0.001924	1	0.001	125.4
357	1	22	0.08	0.0398	0.0002	18.8	1521.21	563.4	-	1	0.5	301	0.0000015	1	7·10-7	125.4
358	1	22	0.15	10.186	0.18	18.8	1526.5	563.8	-	1	0.5	301	0.001296	1	0.001	125.4
360	1	22	0.05	0.1019	0.0002	18.7	1539.7	552.7	-	1	0.5	301	0.0000065	1	3·10-6	125.4
361	1	6	0.05	0.1019	0.0002	18.7	1460.9	516.4	-	1	0.5	301	0.0000006	1	5·10-6	34.2
362	1	12	0.08	3.979	0.02	18.8	1565.8	490.9	-	1	0.5	301	0.008512	1	0.016	68.4
363	1	10	0.08	1.194	0.006	18.8	1305.6	518.2	-	1	0.5	322	0.0023148	1	0.005	57
364	1	10	0.08	1.194	0.006	18.8	1287.3	517.7	-	1	0.5	322	0.0019674	1	0.004	57
365	1	12	0.4	15.12	1.9	18.8	1549	475.5	-	1	0.655	301	0.0038	1	0.005	89.63
367	1	6	0.3	11.8	0.834	18.8	1274.9	408.6	-	1	0.767	322	0.0042534	1	0.015	52.46
368	1	9	0.03	0.1132	0.00008	18.8	1529.7	537.2	-	1	0.5	303	0.0000005	1	2·10-6	51.3
375	1	10	0.1	1.019	0.008	18.8	1258.4	516.7	-	1	0.5	322	0.002736	1	0.005	57
376	1	12	0.4	14.881	1.87	18.8	1549.3	466.5	-	1	0.645	301	0.007293	1	0.01	88.21
531	1	1.5	0.1	3.82	0.03	18.8	1249.6	465.6	-	1	0.5	322	0.002196	1	0.183	11.4
916	1	24	0.2	11.937	0.375	150	1493	536.2	-	1	0.78	301	0.0565714	1	0.036	112.57
												304	0.0091929	1	0.003	112.57
												337	0.4714286	1	0.012	112.57
												410	0.0117857	1	3·10-5	112.57
354	1	22	0.6	13.546	3.83	18.8	1492.5	560.9	-	1	0.5	301	0.01149	1	0.005	125.4
922	1	6	0.1	0.1146	0.0009	18.8	1478	543.8	-	1	0.5	301	0.000021	1	2·10-4	34.2
923	1	10	0.1	1.019	0.008	18.8	1275.35	517.27	-	1	0.5	322	0.00272	1	0.005	57
38	1	25	0.66	19.262	6.59	18.6	1397.5	803.6	-	1	0.661	303	0.02795	1	0.007	188.41
												1411	0.02405	1	0.028	188.41
												1412	0.00845	1	0.004	188.41
39	1	25	0.5	16.603	3.26	18.6	1431.61	778.54	-	1	0.5	303	0.017604	1	0.006	142.5
												1411	0.013366	1	0.023	142.5
												1412	0.002934	1	0.002	142.5
40	1	25	0.66	6.781	2.32	18.7	1392.2	775.89	-	1	0.5	303	0.00483	1	0.002	142.5
												1411	0.0023	1	0.004	142.5
												1412	0.0023	1	0.002	142.5
42	1	15	0.6	9.054	2.56	18.6	1441	778.2	-	1	0.5	303	0.09725	1	0.11	85.5
												1411	0.0125	1	0.071	85.5
												1412	0.0125	1	0.028	85.5
44	1	6	0.25	14.26	0.7	18.6	1444.8	745.3	-	1	0.772	303	0.00287	1	0.015	52.83
												902	0.0049	1	0.001	52.83
45	1	6	0.4	11.459	1.44	18.6	1444.69	750.5	-	1	0.993	303	0.009936	1	0.034	67.93
												902	0.02304	1	0.004	67.93
51	1	20	0.5	14.107	2.77	18.7	1167.29	668.2	-	1	0.5	1530	0.08289	1	0.16	114
52	1	15	0.8	19.099	9.6	18.7	1325.8	738.3	-	1	1.324	1530	0.00285	1	0.002	226.44
53	1	15	0.4	15.12	1.9	18.7	1404.3	698.5	-	1	0.524	1530	0.00494	1	0.018	89.63
238	1	4	0.66	1.578	0.54	18.7	1403.6	713.9	-	1	0.5	322	0.0000216	1	4·10-4	22.8
432	1	24	0.09	1.125	0.00716	18.7	1415.6	781.7	-	1	0.5	303	0.00287	1	0.001	136.8
												1411	0.0049	1	0.009	136.8
												1412	0.009936	1	0.008	136.8
433	1	10	0.1	0.979	0.00769	18.6	1383.7	693.3	-	1	0.5	322	0.0082632	1	0.016	57
512	1	15	0.1	1.019	0.008	18.6	1394.2	757.09	-	1	0.5	303	0.0010904	1	0.001	85.5
												902	0.1174704	1	0.007	85.5
												1411	0.0000184	1	1·10-4	85.5
												303	0.0005202	1	0.001	85.5
516	1	15	0.1	0.764	0.006	18.7	1424.18	778.46	-	1	0.5	1411	0.0004896	1	0.003	85.5
												303	0.0017432	1	0.001	114
517	1	20	0.08	1.592	0.008	18.7	1422.89	803.2	-	1	0.5	1411	0.0017216	1	0.005	114
601	1	8	0.66	11.37	3.89	18.7	1198.2	650.01	-	1	1.219	1530	0.10892	1	0.45	111.21
921	1	15	0.8	19.099	9.6	18.7	1305.4	738.3	-	1	1.324	1530	0.0048	1	0.004	226.44

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
125	1	10	0.5	18.335	3.6	18.7	1497.1	701.7	-	1	1.192	351	0.08892	3	0.203	67.93
126	1	25	0.6	12.732	3.6	18.8	1515.7	702.8	-	1	0.5	351	0.35604	2	0.245	106.88
127	1	22	0.8	9.689	4.87	48.8	1534.4	725.3	-	1	0.836	351	0.25728	3	0.276	77.72
129	1	23	0.5	16.807	3.3	18.7	1512.4	727.8	-	1	0.5	303	0.01617	1	0.007	131.1
373	1	22	0.8	9.689	4.87	48.8	1540	703.1	-	1	0.836	351	0.306323	3	0.33	77.72
434	1	10	0.15	0.566	0.01	18.7	1433.42	708.3	-	1	0.5	303	0.000357	1	0.001	57
513	1	24	0.2	10.504	0.33	18.7	14.91	727.1	-	1	0.5	303	0.066	1	0.025	136.8
												902	0.495	1	0.009	136.8
												1411	0.016467	1	0.031	136.8
6031	3	4	-	-	-	-	1574.02 1574.12	700.27 696.9	23.5	1	0.5	2701	0.0070418	3	0.052	11.4
Shop: 3. UFC and urotropine shop																
170	1	8	0.15	0.396	0.007	18	2016.9	363.3	-	1	0.5	1052	0.0021546	1	0.002	45.6
242	1	50	0.5	8.505	1.67	50	1804.19	268.34	-	1	0.5	301	2.2602636	1	0.44	159.64
												304	0.3672928	1	0.036	159.64
												337	18.83553	1	0.146	159.64
												410	0.4708882	1	4·10-4	159.64
397	1	10	0.4	12.732	1.6	19.5	2008.4	345.6	-	1	0.662	303	0.0008	1	0.002	75.48
												1052	0.02672	1	0.011	75.48
												1325	0.00032	1	0.003	75.48
801	1	9	0.6	10.803	3.055	220	2002.8	269.5	-	1	3.237	330	0.1407894	1	0.041	148.46
												337	1.0994521	1	0.032	148.46
												1052	0.01771	1	0.003	148.46
												1325	0.001527	1	0.004	148.46
802	1	4	0.04	0.223	0.00028	50	2019.1	268.6	-	1	0.5	1103	0.0081201	1	18.8	9.99
803	1	6	0.3	1.5	0.106	22.4	1938.55	346	-	1	0.5	1532	0.0022048	3	0.006	17.1
Shop: 4. Ammonia synthesis and compression shop (ИКАУ)																
240	1	5	0.6	8.382	2.37	22.4	1200.8	876.1	-	1	1.308	303	0.282978	1	0.92	74.53
244	1	10	0.5	9.88	1.94	15	1256.12	885.32	-	1	0.642	303	0.0000524	1	1·10-4	73.21
245	1	10	0.5	12.987	2.55	22	1311.47	276.09	-	1	0.844	303	0.0106192	1	0.014	96.23
314	1	5	0.3	14.713	1.04	22.4	1277.29	885.24	-	1	1.148	303	0.001352	1	0.006	65.41
316	1	10	0.4	12.573	1.58	22.4	1311.92	296.33	-	1	0.654	303	0.030336	1	0.061	74.53
380	1	5	0.3	14.854	1.05	15	1209.63	881.85	-	1	1.159	303	0.09807	1	0.395	66.04
213	1	22	0.65	17.358	5.76	22	598.2	862.7	-	1	0.667	303	0.077184	1	0.024	167.21
												337	0.078912	1	0.001	167.21
Shop: 5. Household chemical goods shop																
460	1	5	0.3	14.713	1.04	19.4	1630.9	515.5	-	1	1.148	337	0.000832	1	1·10-4	65.41
461	1	5	0.6	8.382	2.37	19.5	1625.4	643.2	-	1	1.308	337	0.0056406	1	0.001	74.53
												1611	0.0001659	1	4·10-4	74.53
462	1	5	0.3	0.099	0.007	19.5	1711.31	454.15	-	1	0.5	2902	0.000007	3	1·10-4	14.25
466	1	10	0.5	9.88	1.94	19.5	1720.4	453.2	-	1	0.642	1591	0.0000058	3	5·10-4	36.61
470	1	10	0.5	12.987	2.55	19.5	1815	114	-	1	0.844	303	0.0007665	1	0.001	96.23
												316	0.0001275	1	2·10-4	96.23
												337	0.000051	1	3·10-6	96.23
												1611	0.000306	1	3·10-4	96.23
471	1	10	0.4	12.573	1.58	19.5	1702.33	455.08	-	1	0.654	303	0.0005846	1	0.001	74.53
												316	0.0001106	1	2·10-4	74.53
												337	0.00079	1	6·10-5	74.53
												1611	0.0001106	1	1·10-4	74.53
901	1	7.6	0.32	8.082	0.65	19.5	1374.09	624.3	-	1	0.5	316	0.0000325	1	2·10-4	43.32
902	1	9.6	0.2	16.234	0.51	19.5	1377.52	624.61	-	1	0.5	316	0.0000357	1	1·10-4	54.72
903	1	7.6	0.25	10.186	0.5	19.5	1390.22	624.67	-	1	0.5	337	0.0001	1	2·10-5	43.32
												1611	0.000095	1	4·10-4	43.32
904	1	7.6	0.35	11.849	1.14	19.5	1291.43	637.5	-	1	0.709	316	0.000057	1	2·10-4	61.46
905	1	25	0.56	15.753	3.88	19.5	1400.37	563.52	-	1	0.5	316	0.0002716	1	9·10-5	142.5
908	1	7.4	0.44	10.588	1.61	19.5	1984.3	727.5	-	1	0.818	337	0.01127	1	0.001	69.04
												1611	0.0000966	1	2·10-4	69.04
912	1	13	0.63	12.704	3.96	19.5	1922.1	694.41	-	1	0.8	337	0.0005544	1	2·10-5	118.61
												1611	0.0005544	1	3·10-4	118.61
913	1	13	0.63	12.704	3.96	19.5	1991.8	697.5	-	1	0.8	337	0.0014256	1	5·10-5	118.61
												1611	0.000198	1	1·10-4	118.61
914	1	13	0.63	12.704	3.96	19.5	1933.9	695.1	-	1	0.8	303	0.0005544	1	4·10-4	118.61
915	1	10	0.32	10.693	0.86	19.5	1989.2	727.5	-	1	0.5	303	0.0000602	1	2·10-4	57
Shop: 6. Carbon dioxide shop																

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
456	1	11	0.08	13.926	0.07	22.4	1294	927.1	-	1	0.5	337	0.00262	1	2·10-4	62.7
Shop: 7. Road transport shop (RTS)																
6172	3	3	-	-	-	-	970.3 970.3	645.2 645.2	-	1	0.5	333	0.0000467	1	0.057	17.1
												415	5.1899079	1	1	17.1
												416	1.9181262	1	0.31	17.1
												501	0.1917359	1	1.24	17.1
												602	0.176397	1	5.7	17.1
												616	0.0222414	1	1.08	17.1
												621	0.1664268	1	2.7	17.1
												627	0.0046017	1	2.23	17.1
												2754	0.0166305	1	0.16	17.1
521	1	6	0.3	7.074	0.5	22.4	996.1	644.7	-	1	0.5	322	0.0000338	1	2·10-4	34.2
523	1	5	0.2	15.915	0.5	22.4	256.1	973.7	-	1	0.828	301	0.0000256	1	2·10-4	47.17
												304	0.0000042	1	1·10-5	47.17
												330	0.0000071	1	2·10-5	47.17
												337	0.0021389	1	0.001	47.17
												2704	0.000291	1	8·10-5	47.17
524	1	5	0.2	15.915	0.5	22.4	310.5	1007	-	1	0.828	123	0.0012278	3	0.013	23.59
												143	0.0001634	3	0.07	23.59
												301	0.0085	1	0.06	47.17
												304	0.0013813	1	0.005	47.17
												337	0.0031403	1	0.001	47.17
												342	0.0001771	1	0.013	47.17
												344	0.0003117	3	0.007	23.59
												2908	0.0001322	3	0.002	23.59
6022	3	5	-	-	-	-	289.47 289.41	1005.23 1031.81	16.1	1	0.5	301	0.031358	1	0.46	28.5
												328	0.0012269	3	0.072	14.25
												330	0.0057484	1	0.034	28.5
												337	0.6471286	1	0.38	28.5
												2704	0.0988383	1	0.058	28.5
												2732	0.0252708	1	0.062	28.5
6023	3	5	-	-	-	-	221.28 221.2	1049.2 1061.02	9.5	1	0.5	304	0.005093	1	0.038	28.5
												301	0.0001556	1	0.002	28.5
												304	0.0000253	1	2·10-4	28.5
												328	0.0000109	3	0.001	14.25
												330	0.0000339	1	2·10-4	28.5
												337	0.0010278	1	0.001	28.5
												2704	0.0001285	1	8·10-5	28.5
6028	3	5	-	-	-	-	244.35 244.3	996.06 1008.68	44.2	1	0.5	2732	0.0001222	1	3·10-4	28.5
												301	0.0267751	1	0.395	28.5
												328	0.0141111	3	0.83	14.25
												330	0.0052681	1	0.031	28.5
												337	0.1851439	1	0.11	28.5
												2732	0.0301322	1	0.074	28.5
6050	3	2	-	-	-	-	273.73 273.44	976.68 992.72	2.4	1	0.5	304	0.0043497	1	0.032	28.5
												2704	0.02	1	0.1	11.4
												2978	0.0226	3	17	5.7
6052	3	5	-	-	-	-	249.25 249.35	1053.2 1055.2	2.7	1	0.5	301	0.0017333	1	0.026	28.5
												304	0.0002817	1	0.002	28.5
												328	0.0002867	3	0.017	14.25
												330	0.0002138	1	0.001	28.5
												337	0.0105	1	0.006	28.5
												2704	0.000588	1	3·10-4	28.5
6116	3	2	-	-	-	-	245.67 245.67	979.36 976.89	18.8	1	0.5	2732	0.002035	1	0.005	28.5
												123	0.000935	3	0.175	5.7
												143	0.0001634	3	1.23	5.7
												342	0.0000944	1	0.118	11.4
6173	3	2	-	-	-	-	261.88 262.14	988.75 983.75	5	1	0.5	301	0.0000633	1	0.008	11.4
												304	0.0000103	1	0.001	11.4
												328	0.0000033	3	0.002	5.7
												330	0.000009	1	4·10-4	11.4
												337	0.0001942	1	0.001	11.4
												2732	0.0000323	1	0.001	11.4

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m		
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.				
							X ₂	Y ₂										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
6174	3	2	-	-	-	-	232.48	988.98	5	1	0.5	301	0.0003446	1	0.043	11.4		
							232.46	983.98				304	0.000056	1	0.004	11.4		
												328	0.0000178	3	0.009	5.7		
												330	0.0000236	1	0.001	11.4		
												337	0.0043761	1	0.022	11.4		
												2732	0.00008	1	0.002	11.4		
917	1	5.5	0.3	7.074	0.5	39.2	239.01	995.2	-	1	0.502	2732	0.7808333	1	1.55	31.45		
Shop: 8. Heat, water supply and sewage shop (power generation) — HWSS																		
422	1	40	15	1.726	305.001	24.4	1881.32	558.99	-	1	0.841	303	0.00107	1	6·10-5	383.68		
423	1	40	15	4.244	750	24.4	1188	522	-	1	4.552	303	0.005852	1	7·10-5	920.58		
424	1	40	15	4.244	750	24.4	1980.7	610.3	-	1	4.552	303	0.000336	1	4·10-6	920.58		
425	1	40	15	4.244	750	24.4	1929	611.3	-	1	4.552	303	0.018828	1	2·10-4	920.58		
426	1	40	15	1.726	305.001	24.4	-22	814	-	1	0.841	303	0.00238	1	1·10-4	383.68		
6011	3	5	-	-	-	-	182.8	1067.48	4.7	1	0.5	301	0.0025702	1	0.038	28.5		
							187.18	1067.49				304	0.0004176	1	0.003	28.5		
												328	0.00129	3	0.076	14.25		
												330	0.0005336	1	0.003	28.5		
												337	0.0390953	1	0.023	28.5		
												2704	0.0018833	1	0.001	28.5		
												2732	0.002845	1	0.007	28.5		
6123	3	2	-	-	-	-	199.58	1042.91	1.6	1	0.5	123	0.0184792	3	3.47	5.7		
							196.61	1042.89				143	0.0002708	3	2.03	5.7		
												301	0.0041556	1	0.52	11.4		
												304	0.0006753	1	0.042	11.4		
												337	0.0061042	1	0.031	11.4		
												342	0.0001771	1	0.22	11.4		
												344	0.0007792	3	0.29	5.7		
												2908	0.0003306	3	0.083	5.7		
6175	3	2	-	-	-	-	121.5	988.3	1	1	0.5	301	0.0009111	1	0.114	11.4		
							121.88	987.37				304	0.0001481	1	0.009	11.4		
												330	0.0001349	1	0.007	11.4		
												337	0.0960153	1	0.48	11.4		
												2704	0.0211639	1	0.106	11.4		
109	1	2	0.3	2.5	0.1767	22	970.3	645.2	-	1	0.5	123	0.0118467	3	2.2	5.7		
														143	0.0001756	3	1.32	5.7
														301	0.0120134	1	1.5	11.4
														304	0.0019522	1	0.122	11.4
														337	0.0160667	1	0.08	11.4
														342	0.0002196	1	0.275	11.4
														344	0.0000945	3	0.035	5.7
														2908	0.0000945	3	0.024	5.7
174	1	2	0.13	8.15	0.1082	24.4	969.3	674.1	-	1	0.689	123	0.016	3	1.9	7.85		
												2930	0.0108	3	12.9	7.85		
6115	3	2	-	-	-	-	956.36	668.71	7.5	1	0.5	123	0.0013128	3	0.246	5.7		
							956.46	662.1				143	0.0001634	3	1.23	5.7		
												301	0.00051	1	0.064	11.4		
												304	0.0000829	1	0.005	11.4		
												337	0.0031403	1	0.016	11.4		
												342	0.0002196	1	0.275	11.4		
												344	0.0000945	3	0.035	5.7		
												2908	0.0000945	3	0.024	5.7		
918	1	9	0.5	2.5	0.491	18	996.1	644.7	-	1	0.5	301	0.0003023	1	0.001	51.3		
														304	0.0000492	1	9·10-5	51.3
														328	0.0000135	3	2·10-4	25.65
														330	0.0000086	1	1·10-4	51.3
														337	0.0041389	1	0.001	51.3
														2704	0.000491	1	7·10-5	51.3
														2732	0.0002942	1	2·10-4	51.3
6219	3	2	-	-	-	-	637.5	599.52	10	1	0.5	2909	0.0008	3	0.12	5.7		
6220	3	2	-	-	-	-	637.64	588.22	1	1	0.5	123	0.0014857	3	0.28	5.7		
							509.9	663.7				143	0.0001568	3	1.18	5.7		
6221	3	2	-	-	-	-	495.3	662.2	1	1	0.5	123	0.0102	3	1.9	5.7		
							496.3	663.2				2930	0.0066	3	12.4	5.7		

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
974	1	12	0.3	2.8	0.198	20	55.2	599	-	1	0.5	123	0.0098856	3	0.028	34.2
												143	0.0001568	3	0.018	34.2
												301	0.0041556	1	0.008	68.4
												304	0.0006753	1	0.001	68.4
												2908	0.0000387	3	1·10-4	34.2
												2930	0.0052	3	0.15	34.2
975	1	15	0.018	0.6	0.00015	20	497.48	723.81	-	1	0.5	303	0.0164	1	0.019	85.5
976	1	12	0.018	0.6	0.00015	20	497.6	740.2	-	1	0.5	303	0.0194564	1	0.037	68.4
6216	3	2	-	-	-	-	82.3 83.3	599.2 600.2	1	1	0.5	415	0.00293	1	0.001	11.4
6217	3	2	-	-	-	-	56.1 56.48	628.1 627.18	1	1	0.5	415	0.000018	1	9·10-6	11.4
6218	3	2	-	-	-	-	61.3 61.67	598.7 597.77	1	1	0.5	2936	0.195	3	29.3	5.7
269	1	63.4	3.47	14.442	136.577	1670	577.9	706.4	-	1	10.274	301	6.4041885	1	0.021	1582.4
												304	1.0406806	1	0.002	1582.4
												337	53.368237	1	0.007	1582.4
												410	1.3342059	1	2·10-5	1582.4
Shop: 9. Electrical shop (power generation)																
147	1	11	0.5	5.602	1.1	40	2005.9	912.5	-	1	0.5	621	0.1866898	1	0.146	62.7
												1042	0.0366898	1	0.172	62.7
												1061	0.0416667	1	0.004	62.7
												1119	0.0467593	1	0.031	62.7
												1210	0.0622685	1	0.29	62.7
												1401	0.0194444	1	0.026	62.7
148	1	3.5	0.25	12.427	0.61	40	1981.4	927.6	-	1	1.154	616	0.0094444	1	0.088	46.04
												621	0.0151806	1	0.047	46.04
												1042	0.0067361	1	0.126	46.04
												1119	0.0074778	1	0.02	46.04
												1210	0.0109389	1	0.204	46.04
												1240	0.0018889	1	0.035	46.04
149	1	9	0.4	15.12	1.9	22.4	1947.6	936.89	-	1	0.874	123	0.0013128	3	0.003	44.81
												143	0.0001634	3	0.016	44.81
												301	0.0028333	1	0.005	89.63
												337	0.0031403	1	2·10-4	89.63
												342	0.0002196	1	0.004	89.63
												344	0.0000944	3	5·10-4	44.81
												2908	0.0000944	3	3·10-4	44.81
												304	0.0004604	1	4·10-4	89.63
150	1	6	0.3	9.903	0.7	22.4	1962.92	890.2	-	1	0.644	168	0.0000907	3	0.002	22.01
												184	0.0001653	3	0.68	22.01
528	1	19	0.5	14.26	2.8	22.4	1936.5	935.91	-	1	0.5	621	0.012446	1	0.003	108.3
												1042	0.002446	1	0.003	108.3
												1061	0.0027778	1	7·10-5	108.3
												1119	0.0031173	1	0.001	108.3
												1210	0.0041512	1	0.005	108.3
												1401	0.0012963	1	5·10-4	108.3
529	1	11	0.5	14.26	2.8	22.4	1994.9	936.1	-	1	0.843	2902	0.0002963	2	2·10-4	81.23
												621	0.017713	1	0.006	105.67
												1042	0.0034907	1	0.008	105.67
												1061	0.0041667	1	2·10-4	105.67
												1119	0.0041852	1	0.001	105.67
												1210	0.005537	1	0.012	105.67
												1401	0.0019444	1	0.001	105.67
												2902	0.0004444	2	4·10-4	79.25
930	1	20	0.25	14.433	0.708	35	1921.5	897.8	-	1	0.5	301	0.00275	1	0.002	114
												316	0.0139	1	0.008	114
												328	0.00005	3	1·10-4	57
												337	1.667	1	0.039	114

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
6211	3	2	-	-	-	-	393.6 393.98	733.3 732.37	1	1	0.5	123	0.0056856	3	1.07	5.7
												143	0.0001568	3	1.18	5.7
												301	0.0041556	1	0.52	11.4
												304	0.0006753	1	0.042	11.4
												2908	0.0000387	3	0.01	5.7
												2930	0.0026	3	4.9	5.7
6212	3	2	-	-	-	-	394.8 395.17	747.4 746.47	1	1	0.5	123	0.0034	3	0.64	5.7
												2907	0.0028	3	1.4	5.7
6213	3	2	-	-	-	-	421.31 421.68	747.85 746.92	1	1	0.5	123	0.0042	3	0.79	5.7
												2907	0.0026	3	1.3	5.7
6214	3	2	-	-	-	-	146.85 146.86	684.31 670.01	32.8	1	0.5	2754	0.0405	1	1.01	11.4
6215	3	2	-	-	-	-	440.4 440.78	842.9 841.98	1	1	0.5	184	0.000005	3	0.375	5.7
Shop: 10. Repair shop																
454	1	6	0.3	7.8	0.551	22.4	881.7	611.84	-	1	0.507	2907	0.0150828	3	0.58	17.34
455	1	6	0.3	6	0.424	22.4	888.3	627.9	-	1	0.5	2930	0.000912	2	0.088	25.65
												123	0.001392	2	0.013	25.65
931	1	4	0.25	12.456	0.611	22.4	882.1	628.4	-	1	1.012	123	0.0013128	3	0.017	23.07
												143	0.0001029	3	0.053	23.07
												203	0.0000227	3	0.008	23.07
												301	0.00051	1	0.004	46.15
												304	0.0000829	1	4·10-4	46.15
												337	0.0031403	1	0.001	46.15
												342	0.0003778	1	0.032	46.15
												344	0.0000944	3	0.002	23.07
												2908	0.0000944	3	0.002	23.07
6176	3	2	-	-	-	-	914.85 914.96	615.6 606.79	5	1	0.5	123	0.0386	3	7.2	5.7
												2930	0.017	3	31.9	5.7
932	1	22	0.5	10.852	2.131	22.4	1379.7	943.5	-	1	0.5	118	0.0000028	3	2·10-6	62.7
												123	0.0008406	3	0.001	62.7
												143	0.0000756	3	0.002	62.7
												203	0.0000803	3	0.001	62.7
												301	0.000187	1	9·10-5	125.4
												304	0.0000304	1	7·10-6	125.4
												337	0.0008028	1	1·10-5	125.4
												342	0.0003778	1	0.002	125.4
												344	0.00017	3	2·10-4	62.7
												2908	0.000068	3	6·10-5	62.7
933	1	25	0.5	10.852	2.131	22.4	1404.8	901	-	1	0.5	123	0.0013128	3	0.001	71.25
												143	0.0001029	3	0.002	71.25
												203	0.0000227	3	3·10-4	71.25
												301	0.00051	1	2·10-4	142.5
												304	0.0000829	1	1·10-5	142.5
												337	0.0031403	1	4·10-5	142.5
												342	0.0003778	1	0.001	142.5
												344	0.0000944	3	10·10-5	71.25
												2908	0.0000944	3	7·10-5	71.25
934	1	22	0.3	8.57	0.606	22.4	1397.3	943.5	-	1	0.5	301	0.0003451	1	2·10-4	125.4
												304	0.0000561	1	1·10-5	125.4
												328	0.0000513	3	10·10-5	62.7
												330	0.0000666	1	1·10-5	125.4
												337	0.0014193	1	3·10-5	125.4
												2732	0.0001953	1	2·10-5	125.4
935	1	22	0.3	8.57	0.606	22.4	1384.79	900.6	-	1	0.5	123	0.01212	3	0.008	62.7
												2930	0.0064	3	0.045	62.7
936	1	25	0.8	10.678	5.367	22.4	1507	887	-	1	0.5	123	0.0014611	3	0.001	71.25
												143	0.0000595	3	0.001	71.25
												164	0.0000038	3	8·10-5	71.25
												203	0.0000406	3	0.001	71.25
												337	0.0001181	1	2·10-6	142.5
												342	0.0003801	1	0.001	142.5

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
937	1	25	0.8	10.678	5.367	22.4	1624.7	842.7	-	1	0.5	123	0.0024639	3	0.001	71.25
												143	0.0000361	3	0.001	71.25
												301	0.0013333	1	5·10-4	142.5
												304	0.0002167	1	4·10-5	142.5
												337	0.0020347	1	3·10-5	142.5
938	1	6	0.3	6	0.424	22.4	1472.3	890	-	1	0.5	123	0.0348	3	0.5	17.1
												2930	0.0228	3	3.3	17.1
6177	3	2	-	-	-	-	1488.99 1490.98	858.52 858.49	2	1	0.5	123	0.1089	3	20.4	5.7
												2930	0.06	3	112.5	5.7
939	1	25	0.5	9.35	1.836	110	1683.9	865	-	1	1.126	301	0.007525	1	0.002	178.21
												304	0.0012228	1	2·10-4	178.21
												337	0.0407969	1	5·10-4	178.21
940	1	25	0.5	9.35	1.836	110	1671.6	865.09	-	1	1.126	301	0.007525	1	0.002	178.21
												304	0.0012228	1	2·10-4	178.21
												337	0.0407969	1	5·10-4	178.21
941	1	25	0.5	9.35	1.836	110	1660.59	865.1	-	1	1.126	301	0.007525	1	0.002	178.21
												304	0.0012228	1	2·10-4	178.21
												337	0.0407969	1	5·10-4	178.21
942	1	6	0.3	4.52	0.3195	22.4	1650.1	840.2	-	1	0.5	2735	0.0000926	1	0.004	34.2
943	1	4	0.3	3.28	0.232	22.4	612.9	920.7	-	1	0.5	123	0.0013128	3	0.049	11.4
												143	0.0001634	3	0.243	11.4
												301	0.00051	1	0.013	22.8
												304	0.0000829	1	0.001	22.8
												337	0.0031403	1	0.003	22.8
												342	0.0002196	1	0.054	22.8
												344	0.0000944	3	0.007	11.4
												2908	0.0000944	3	0.005	11.4
6178	3	2	-	-	-	-	742.9 743.27	921.49 920.57	1	1	0.5	123	0.024	3	4.5	5.7
												2930	0.016	3	30	5.7
												3722	0.007	3	6.6	5.7
944	1	4.5	0.25	2.23	0.1095	22.4	730	913.8	-	1	0.5	123	0.0116	3	0.33	12.83
												2930	0.0076	3	2.15	12.83
6180	3	2	-	-	-	-	760.5 760.88	839.4 838.47	1	1	0.5	301	0.0024627	1	0.31	11.4
												304	0.0004002	1	0.025	11.4
												328	0.00129	3	0.65	5.7
												330	0.0004889	1	0.024	11.4
												337	0.0175717	1	0.088	11.4
												2732	0.002845	1	0.059	11.4
6181	3	2	-	-	-	-	722.1 722.47	855.7 854.77	1	1	0.5	123	0.029	3	5.4	5.7
												2930	0.019	3	35.6	5.7
												3722	0.007	3	6.6	5.7
945	1	4.5	0.4	3.765	0.473	22.4	814.6	944.6	-	1	0.5	123	0.0154328	3	0.44	12.83
												143	0.0001029	3	0.116	12.83
												301	0.00051	1	0.01	25.65
												304	0.0000829	1	0.001	25.65
												337	0.0031403	1	0.002	25.65
												342	0.0002196	1	0.041	25.65
												344	0.0000944	3	0.005	12.83
												2908	0.0000944	3	0.004	12.83
946	1	6.5	0.3	4.136	0.2924	22.4	804.4	840.9	-	1	0.5	123	0.011855	3	0.142	18.53
												143	0.0001039	3	0.05	18.53
												203	0.0000227	3	0.007	18.53
												342	0.0003778	1	0.03	37.05
												2930	0.0052	3	0.62	18.53
6182	3	2	-	-	-	-	717 718	767 768	1	1	0.5	301	0.0024627	1	0.31	11.4
												304	0.0004002	1	0.025	11.4
												328	0.00129	3	0.65	5.7
												330	0.0004889	1	0.024	11.4
												337	0.0175717	1	0.088	11.4
												2732	0.002845	1	0.059	11.4

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
6183	3	2	-	-	-	-	1405 1406	471 471.99	1	1	0.5	123	0.0385819	3	7.2	5.7
												143	0.0002574	3	1.93	5.7
												301	0.00051	1	0.064	11.4
												304	0.0000829	1	0.005	11.4
												337	0.0031403	1	0.016	11.4
												342	0.0002196	1	0.275	11.4
												344	0.0002361	3	0.089	5.7
												2908	0.002361	3	0.59	5.7
												2930	0.019	3	35.6	5.7
947	1	15	0.3	5.265	0.372	22.4	717	848.9	-	1	0.5	123	0.0013123	3	0.002	42.75
												143	0.0001039	3	0.007	42.75
												203	0.0000227	3	0.001	42.75
												301	0.00051	1	0.001	85.5
												304	0.0000829	1	5·10-5	85.5
												337	0.0031403	1	1·10-4	85.5
												342	0.0003778	1	0.004	85.5
												344	0.0000944	3	3·10-4	42.75
												2908	0.0000944	3	2·10-4	42.75
948	1	6.5	0.3	4.27	0.302	22.4	239.6	918.1	-	1	0.5	123	0.0009227	3	0.011	18.53
												143	0.0001634	3	0.078	18.53
												203	0.0000227	3	0.007	18.53
												342	0.0003778	1	0.03	37.05
949	1	6.5	0.3	4.27	0.302	22.4	248	916.7	-	1	0.5	123	0.0013128	3	0.016	18.53
												143	0.0001039	3	0.05	18.53
												301	0.0041556	1	0.033	37.05
												304	0.0006753	1	0.003	37.05
												337	0.0031403	1	0.001	37.05
												342	0.0002196	1	0.018	37.05
												344	0.0000944	3	0.002	18.53
												2908	0.0000944	3	0.002	18.53
950	1	7	0.3	5.158	0.3646	22.4	723.2	914	-	1	0.5	123	0.0013128	3	0.013	19.95
												143	0.0001029	3	0.041	19.95
												203	0.0000227	3	0.006	19.95
												301	0.00051	1	0.003	39.9
												304	0.0000829	1	3·10-4	39.9
												337	0.0031403	1	0.001	39.9
												342	0.0003778	1	0.025	39.9
												344	0.0000944	3	0.002	19.95
2908	0.0000944	3	0.001	19.95												
6184	3	2	-	-	-	-	623.4 624.4	925.2 926.2	1	1	0.5	123	0.0353	3	6.6	5.7
												293	0.019	3	71.3	5.7
951	1	6.5	0.3	4.27	0.32	39.2	292.8	913.2	-	1	0.5	123	0.0013128	3	0.016	18.53
												143	0.0001039	3	0.05	18.53
												301	0.00051	1	0.004	37.05
												304	0.0000829	1	3·10-4	37.05
												337	0.0031403	1	0.001	37.05
												342	0.0002196	1	0.018	37.05
												344	0.0000944	3	0.002	18.53
												2908	0.0000944	3	0.002	18.53
6185	3	2	-	-	-	-	285.47 286.47	904.7 905.7	1	1	0.5	123	0.0353	3	6.6	5.7
												2930	0.019	3	35.6	5.7
959	1	3.2	0.3	3.537	0.25	25	75.2	712.1	-	1	0.5	123	0.0116	3	0.73	9.12
												2930	0.0076	3	4.8	9.12
6206	3	2	-	-	-	-	60.17 60.54	712.49 711.56	1	1	0.5	123	0.0464	3	8.7	5.7
												2930	0.0038	3	7.1	5.7
Shop: 11. Instrumentation shop:																
167	1	2	0.3	11.5	0.813	22.4	2124.8	799.5	-	1	4.934	621	0.0152167	1	0.065	47.92
												1042	0.00295	1	0.076	47.92
												1061	0.0025	1	0.001	47.92
												1119	0.0048667	1	0.018	47.92
												1210	0.0066333	1	0.17	47.92
												1401	0.0011667	1	0.009	47.92
												2902	0.00012	2	0.001	35.94
Shop: 12. Railway transport shop (RTP)																

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
154	1	5	0.4	5.22	0.656	22.4	1858.67	882.74	-	1	0.543	322	0.0000625	1	0.001	30.94
157	1	12	0.4	1	0.1257	22.4	1871.5	852.5	-	1	0.5	1052	0.7333333	1	0.28	68.4
												1325	0.0666667	1	0.51	68.4
												123	0.0009227	3	0.173	5.7
6140	3	2	-	-	-	-	1665.57 1665.94	908.88 907.96	1	1	0.5	143	0.0001634	3	1.23	5.7
												342	0.0000944	1	0.118	11.4
												301	0.6573332	1	9.7	28.5
6158	3	5	-	-	-	-	1676.4 1676.78	887.3 886.37	1	1	0.5	304	0.1068166	1	0.79	28.5
												328	0.0238888	3	1.4	14.25
												330	0.1408	1	0.83	28.5
												337	0.2355554	1	0.14	28.5
												2732	0.6336	1	1.56	28.5
												333	0.0001109	1	0.346	11.4
6222	3	2	-	-	-	-	1615.69 1615.69	906.85 906.85	-	1	0.5	2754	0.0394849	1	0.99	11.4
Shop: 13. Wastewater treatment and neutralization shop																
6141	3	2	-	-	-	-	1034.77 1012.41	283.04 282.7	11.6	1	0.5	303	0.0017924	1	0.224	11.4
6142	3	2	-	-	-	-	964.69 938.4	349.15 349.3	10.4	1	0.5	303	0.0004305	1	0.054	11.4
												333	0.0000228	1	0.071	11.4
6143	3	2	-	-	-	-	1027.57 938.14	331.16 331.1	23.7	1	0.5	303	0.001381	1	0.173	11.4
												333	0.0014241	1	4.45	11.4
6144	3	2	-	-	-	-	993.21 978.62	331.95 332.06	13.7	1	0.5	303	0.0001337	1	0.017	11.4
												333	0.0000146	1	0.046	11.4
6145	3	2	-	-	-	-	1021.33 1012.24	295.9 295.91	10.1	1	0.5	410	0.001	1	0.001	11.4
6146	3	2	-	-	-	-	1241.52 1186.82	335.77 336.11	22.7	1	0.5	410	0.001	1	0.001	11.4
												303	0.0063215	1	0.79	11.4
6147	3	2	-	-	-	-	1238.54 1052.98	252.6 251.08	107	1	0.5	410	0.001	1	0.001	11.4
6148	3	2	-	-	-	-	1174.04 1125.02	252.26 251.69	104.1	1	0.5	410	0.001	1	0.001	11.4
6149	3	2	-	-	-	-	1030.68 993.92	350.69 350.92	5.6	1	0.5	410	0.001	1	0.001	11.4
												303	0.0005744	1	0.072	11.4
												333	0.000071	1	0.22	11.4
6150	3	2	-	-	-	-	1105.38 643.49	-80.8 -104.52	293.5	1	0.5	410	0.001	1	0.001	11.4
6189	3	2	-	-	-	-	1271.67 1277.9	216.37 200.97	17.4	1	0.5	410	0.001	1	0.001	11.4
6190	3	2	-	-	-	-	1013.33 1019.92	214.82 198.52	18.9	1	0.5	410	0.001	1	0.001	11.4
6191	3	2	-	-	-	-	901.75 916.5	301.57 269.06	10	1	0.5	410	0.001	1	0.001	11.4
6192	3	2	-	-	-	-	879.91 895.34	54.29 51.24	17.4	1	0.5	349	0.329865	1	82.5	11.4
												316	0.329865	1	41.2	11.4
6188	3	2	-	-	-	-	953.45 954.45	288.34 289.34	1	1	0.5	410	0.001	1	0.001	11.4
6187	3	2	-	-	-	-	1004.56 1004.64	301.3 291.3	10	1	0.5	333	0.000025	1	0.078	11.4
Shop: 14. Unit M-450																
804	1	40	2.2	7.974	30.31	169	1105.7	708	-	1	3.296	301	1.26048	1	0.033	604.04
												304	0.204626	1	0.003	604.04
												330	0.03333	1	4·10-4	604.04
												337	0.303	1	3·10-4	604.04
805	1	19.5	0.2	2.642	0.083	44.8	1065.1	1028.7	-	1	0.5	1052	0.0037931	1	0.002	52.79
806	1	60	1.1	0.164	0.156	1298	1077.2	1012.2	-	1	0.965	301	3.727954	1	0.29	288.12
												304	0.60634	1	0.024	288.12
												337	0.181902	1	0.001	288.12
807	1	20.5	0.56	13.873	3.417	19.8	920.1	979.5	-	1	0.5	337	0.013668	1	3·10-4	116.85
												410	0.028	1	6·10-5	116.85
808	1	20.5	0.56	13.804	3.4	19.8	946.8	965.5	-	1	0.5	337	0.01292	1	3·10-4	116.85
												410	0.028	1	6·10-5	116.85
809	1	20.5	0.56	13.479	3.32	19.8	946.4	976.1	-	1	0.5	337	0.01328	1	3·10-4	116.85
												410	0.028	1	6·10-5	116.85

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
810	1	20.5	0.56	13.804	3.4	19.8	946.5	973.4	-	1	0.5	337	0.01224	1	3·10-4	116.85
												410	0.028	1	6·10-5	116.85
811	1	20.5	0.56	13.682	3.37	19.8	946.5	969.5	-	1	0.5	337	0.01011	1	2·10-4	116.85
												410	0.028	1	6·10-5	116.85
812	1	20.5	0.56	13.764	3.39	19.8	895.6	966.9	-	1	0.5	337	0.013899	1	3·10-4	116.85
												410	0.028	1	6·10-5	116.85
813	1	18	0.2	3.724	0.117	50	1200.8	1016.6	-	1	0.5	1052	0.0117702	1	0.006	50.88
814	1	12.4	0.2	0.00637	0.0002	75	1224.8	1029.1	-	1	0.5	150	0.0001	3	0.05	15.38
815	1	12.5	0.45	10.501	1.67	12	1243.69	1027.6	-	1	0.5	150	0.00062	3	0.065	35.63
816	1	11.5	0.25	8.556	0.42	21.9	1243.8	1013.4	-	1	0.5	150	0.00011	3	0.014	32.78
444	1	5.2	0.5	2.04	0.4006	20	1575	354.2	-	1	0.5	1052	0.54012	1	1.45	29.64
831	1	25	1	11.29	8.867	273	1100.4	715.6	-	1	3.152	301	2.75808	1	0.223	373.45
												304	0.4481593	1	0.018	373.45
												330	0.2873	1	0.009	373.45
												337	1.4365	1	0.005	373.45
832	1	46.5	0.4	0.452	0.0568	1200	1105.7	708	-	1	0.73	301	0.0012616	1	3·10-4	169.59
												304	0.000205	1	2·10-5	169.59
												330	0.0008193	1	7·10-5	169.59
												337	0.1051384	1	0.001	169.59
												410	0.002628	1	2·10-6	169.59
		46.5	0.4	67.533	8.486	1200				1	4.271	301	25.23345	1	0.36	802.04
												304	4.1	1	0.029	802.04
												330	0.0069189	1	4·10-5	802.04
												337	210.37161	1	0.12	802.04
												410	5.259328	1	3·10-4	802.04
833	1	10	2.2	23.873	90.749	22	1052.33	746.9	-	1	15.021	3401	0.0138	1	0.005	418.08
Shop: 15. Unit M-450 — A-135																
844	1	50	3	16.21	114.582	156	684.32	737.03	-	1	5.015	301	5.906	1	0.053	995.63
												330	0.036	1	1·10-4	995.63
												337	0.729	1	3·10-4	995.63
845	1	23	0.1	33.75	0.265	130	914.9	692.81	-	1	0.66	303	0.02	1	0.014	103.18
846	1	60	1.5	0.083	0.1467	990	663.6	752.6	-	1	0.861	301	0.0186	1	0.002	256.76
												330	0.00047	1	2·10-5	256.76
												337	0.0019	1	7·10-6	256.76
		60	1.5	73	128.9	990				1	9.762	301	16.27	1	0.05	1654.4
												337	1.62	1	2·10-4	1654.4
847	1	60	0.6	0.35	0.099	990	663.3	757.8	-	1	0.755	301	0.0124	1	0.001	226.03
												330	0.00031	1	1·10-5	226.03
												337	0.00124	1	6·10-6	226.03
		60	0.6	248.1	70.11	990				1	9.387	301	8.855	1	0.024	1764.2
												337	0.88	1	10·10-5	1764.2
848	1	13	0.2	1.32	0.0415	53	911.51	757	-	1	0.5	1052	0.267	1	0.35	34.45
850	1	49	1.5	16.76	29.617	115	875.32	727.35	-	1	2.751	301	2.4996	1	0.044	716.87
												330	0.0104	1	7·10-5	716.87
												337	0.625	1	4·10-4	716.87
851	1	25	0.3	16.8	1.188	990	991.2	488.69	-	1	2.42	301	3.0995795	1	0.38	305.19
												304	0.5036817	1	0.031	305.19
												337	25.829829	1	0.126	305.19
												415	0.1467162	1	7·10-5	305.19
		25	0.3	56.6	4.001	990				1	4	301	2.1163739	1	0.127	433.14
												303	3.1684294	1	0.19	433.14
												304	0.3439108	1	0.01	433.14
												337	17.63645	1	0.042	433.14
												415	0.1467162	1	4·10-5	433.14
852	1	7	0.2	1.15	0.0361	20	840.9	782.4	-	1	0.5	303	0.078	1	0.52	39.9
												1052	0.0045	1	0.006	39.9
853	1	7	0.2	1.15	0.0361	20	841.9	775.4	-	1	0.5	303	0.078	1	0.52	39.9
												1052	0.0045	1	0.006	39.9
854	1	7	0.2	1.15	0.0361	20	846.01	765.6	-	1	0.5	303	0.078	1	0.52	39.9
												1052	0.0045	1	0.006	39.9
855	1	7	0.2	1.15	0.0361	20	841	759.8	-	1	0.5	303	0.078	1	0.52	39.9
												1052	0.0045	1	0.006	39.9
856	1	6	0.1	0.35	0.00275	35	772.2	774.5	-	1	0.5	1052	0.997	1	1.92	34.2

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
857	1	25	1.2	1.36	1.538	530	739.12	764.99	-	1	2.045	301	0.124	1	0.02	262.46
												330	0.005	1	3·10-4	262.46
												337	0.015	1	10·10-5	262.46
858	1	18	0.2	208	6.535	100	699.59	746.4	-	1	6.61	303	0.059	1	0.003	499.2
859	1	20.5	0.2	1.27	0.0399	100	758.5	762.4	-	1	0.5	303	0.036	1	0.086	52.97
861	1	8.15	0.56	7.8	1.921	20	846.5	782.39	-	1	0.697	303	0.027	1	0.08	64.73
												1052	0.0067	1	0.004	64.73
862	1	22.6	0.71	5.5	2.178	35.7	761.2	739.7	-	1	0.5	303	0.209	1	0.091	128.82
												337	0.00333	1	6·10-5	128.82
												410	0.0542	1	9·10-5	128.82
863	1	22.6	0.71	5.5	2.178	35.7	770.6	735.5	-	1	0.5	303	0.209	1	0.091	128.82
												337	0.00333	1	6·10-5	128.82
												410	0.0542	1	9·10-5	128.82
864	1	22.6	0.71	5.5	2.178	35.7	793	739.4	-	1	0.5	303	0.209	1	0.091	128.82
												337	0.00333	1	6·10-5	128.82
												410	0.0542	1	9·10-5	128.82
865	1	22.6	0.71	5.5	2.178	35.7	800.4	736.7	-	1	0.5	303	0.209	1	0.091	128.82
												337	0.00333	1	6·10-5	128.82
												410	0.0542	1	9·10-5	128.82
866	1	22.6	1.12	8.4	8.276	35.7	750.1	742.59	-	1	0.541	303	0.209	1	0.083	139.43
												337	0.00333	1	5·10-5	139.43
												410	0.0542	1	9·10-5	139.43
867	1	22.6	1.12	8.4	8.276	35.7	776.1	731.7	-	1	0.541	303	0.209	1	0.083	139.43
												337	0.00333	1	5·10-5	139.43
												410	0.0542	1	9·10-5	139.43
868	1	22.6	1.12	8.4	8.276	35.7	823.1	741.9	-	1	0.541	303	0.209	1	0.083	139.43
												337	0.00333	1	5·10-5	139.43
												410	0.0542	1	9·10-5	139.43
869	1	13.6	1.7	1.9	4.313	34	949.2	443.2	-	1	0.5	303	0.02	1	0.029	77.52
6180	3	2	-	-	-	-	673.2	747.6	1	1	0.5	410	0.0106	1	0.005	11.4
							673.58	746.68								
6181	3	2	-	-	-	-	689.06	747.79	1	1	0.5	410	0.0038	1	0.002	11.4
							689.43	746.86								
6182	3	2	-	-	-	-	693.5	732.9	-	1	0.5	337	0.0004	1	0.002	11.4
							693.5	732.9				410	0.0014	1	0.001	11.4
6183	3	2	-	-	-	-	729.4	735.8	1	1	0.5	337	0.0016	1	0.008	11.4
							729.77	734.87				410	0.0066	1	0.003	11.4
6184	3	2	-	-	-	-	693.36	748.78	1.1	1	0.5	337	0.003	1	0.015	11.4
							693.68	747.99								
6185	3	2	-	-	-	-	680.2	748.01	1	1	0.5	337	0.000054	1	3·10-4	11.4
							680.58	747.08								
6186	3	2	-	-	-	-	755.9	766.9	1	1	0.5	337	0.0014	1	0.007	11.4
							756.27	765.97				410	0.000003	1	2·10-6	11.4
												1052	0.0101	1	0.25	11.4
6187	3	2	-	-	-	-	757.2	773.7	1	1	0.5	410	0.0007	1	4·10-4	11.4
							757.58	772.77								
6188	3	2	-	-	-	-	734.6	756.9	1	1	0.5	410	0.0047	1	0.002	11.4
							734.98	755.97								
6189	3	2	-	-	-	-	719.2	760.9	1	1	0.5	303	0.016	1	2	11.4
							719.57	759.98				410	0.000212	1	1·10-4	11.4
6190	3	2	-	-	-	-	701.3	756.6	1	1	0.5	303	0.0046	1	0.58	11.4
							701.67	755.68				410	0.0018	1	0.001	11.4
6191	3	2	-	-	-	-	697	760.8	1	1	0.5	410	0.0017	1	0.001	11.4
							697.38	759.87								
6192	3	2	-	-	-	-	795.5	774.91	1	1	0.5	1052	0.0083	1	0.208	11.4
							795.88	773.98								
6193	3	2	-	-	-	-	877.8	782.2	1	1	0.5	1052	0.0058	1	0.145	11.4
							878.18	781.27								
6194	3	2	-	-	-	-	862.38	720.52	1	1	0.5	410	0.0372	1	0.019	11.4
							862.76	719.59								
6195	3	2	-	-	-	-	663.6	755.41	1	1	0.5	410	0.0027	1	0.001	11.4
							663.98	754.48								
6196	3	2	-	-	-	-	779	742.3	1	1	0.5	337	0.0011	1	0.006	11.4
							779.38	741.37				410	0.0001	1	5·10-5	11.4

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
6197	3	2	-	-	-	-	769.7	742	1	1	0.5	303	0.0017	1	0.213	11.4
							770.07	741.08				410	0.0007	1	4·10-4	11.4
6198	3	2	-	-	-	-	750.4	750.1	1	1	0.5	303	0.012	1	1.5	11.4
							750.77	749.18								
6199	3	2	-	-	-	-	1037.3	434.73	47.6	1	0.5	303	0.206	1	25.8	11.4
							990.97	433.97								
6200	3	2	-	-	-	-	1050.28	421.84	17.7	1	0.5	303	0.0272	1	3.4	11.4
							1042.38	421.73								
6201	3	2	-	-	-	-	1120.34	385.7	12.9	1	0.5	303	0.0265	1	3.3	11.4
							1071.28	386.04								
6202	3	2	-	-	-	-	957.88	429.29	10	1	0.5	303	0.00012	1	0.015	11.4
							953.06	429.21								
6203	3	2	-	-	-	-	994.85	489.55	2.7	1	0.5	303	0.0027	1	0.34	11.4
							995.94	486.86								
6204	3	2	-	-	-	-	941.49	426.95	5.8	1	0.5	303	0.0083	1	1.04	11.4
							936.71	426.97								
860	1	4	0.3	16.8	1.188	13	1090.1	387.5	-	1	1.638	301	0.0000003	1	1·10-6	74.69
												303	0.0006	1	0.002	74.69
Shop: 16. Boiler and turbine shop (power generation production)																
952	1	120	5	8.149	160.005	152	355	892.9	-	1	3.644	301	27.091731	1	0.055	1819.4
												304	4.53657	1	0.005	1819.4
												330	12.5	1	0.01	1819.4
												337	6.21297	1	0.001	1819.4
												703	0.0000001	3	1·10-5	909.68
												2904	0.0002715	2	1·10-5	1364.5
												328	10.38789	2	0.056	1364.5
												2926	16.593643	2	0.27	1364.5
953	1	120	5	7.894	154.998	152	399.3	893.6	-	1	3.6	301	26.186764	1	0.054	1804.4
												304	4.34479	1	0.004	1804.4
												330	12.5	1	0.01	1804.4
												337	6.21297	1	0.001	1804.4
												703	0.0000001	3	1·10-5	902.18
												328	16.947007	2	0.093	1353.3
												2926	27.071193	2	0.45	1353.3
954	1	12	0.22	0.5	0.019	50	420	775.7	-	1	0.5	2754	0.0135	1	0.023	30.68
955	1	12	0.22	0.5	0.019	50	403.6	774.8	-	1	0.5	2754	0.0135	1	0.023	30.68
956	1	12	0.22	0.5	0.019	50	388.8	774.5	-	1	0.5	2754	0.0135	1	0.023	30.68
957	1	12	0.22	0.5	0.019	50	373.1	773.6	-	1	0.5	2754	0.0135	1	0.023	30.68
958	1	12	0.22	0.5	0.019	50	359.3	773.3	-	1	0.5	2754	0.0135	1	0.023	30.68
6205	3	2	-	-	-	-	350.8	869.4	1	1	0.5	123	0.0042	3	0.79	5.7
							351.18	868.47				2930	0.0026	3	4.9	5.7
960	1	10	0.35	21.619	2.08	24.2	666.16	553.2	-	1	0.984	2909	0.0674453	2	0.057	84.1
961	1	9	0.35	18.709	1.8	24.2	478.55	556.3	-	1	0.946	2909	0.1529425	2	0.177	72.78
962	1	8	0.35	21.619	2.08	24.2	477.8	488.9	-	1	1.23	2909	0.0004261	2	4·10-4	84.1
963	1	14	0.35	28.947	2.785	24.2	547.25	552.45	-	1	0.941	2909	0.2698929	2	0.112	112.61
964	1	15	0.5	13.456	2.642	24.2	467.5	819.69	-	1	0.583	2909	0.1754628	2	0.13	74.78
965	1	14	0.5	15.564	3.056	24.2	478.4	659.7	-	1	0.723	2909	0.2548901	2	0.162	86.5
966	1	14	0.35	26.213	2.522	24.2	471.5	548.4	-	1	0.852	2909	0.2036328	2	0.1	101.98
967	1	14	0.5	10.186	2	24.2	470.7	482.8	-	1	0.5	2909	0.0003895	2	4·10-4	59.85
968	1	14	0.35	29.03	2.793	24.2	458.5	815.5	-	1	0.943	2909	0.2221788	2	0.092	112.93
969	1	14	0.5	13.466	2.644	24.2	470.6	651.8	-	1	0.625	2909	0.2921736	2	0.23	74.84
970	1	14	0.5	10.924	2.145	24.2	341.9	841.5	-	1	0.507	2909	0.1783158	2	0.19	60.71
971	1	14	0.35	24.301	2.338	24.2	366.4	839.49	-	1	0.79	2909	0.1361594	2	0.075	94.54
972	1	14	0.5	11.113	2.182	24.2	388.9	837.9	-	1	0.516	2909	0.1882063	2	0.194	61.76
973	1	14	0.35	28.271	2.72	24.2	415.49	834.5	-	1	0.919	2909	0.2181208	2	0.094	109.98
6207	3	2	-	-	-	-	102.94	666.21	1	1	0.5	333	0.0003853	1	1.2	11.4
							102.56	667.14				2754	0.0798723	1	2	11.4
6208	3	2	-	-	-	-	659.58	500.8	10	1	0.5	2909	0.019125	3	2.87	5.7
							659.81	490.8								
6209	3	2	-	-	-	-	569.43	541.9	150	1	0.5	2909	4.1270627	3	619.1	5.7
							569.27	491.9								
6210	3	2	-	-	-	-	503.59	615.95	1	1	0.5	123	0.0048	3	0.9	5.7
							504.59	616.95				2930	0.0032	3	6	5.7
Shop: 17. Dimethyl ether (DME) production																

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
834	1	30	0.2	0.32	0.01005	1200	1291.3	728.1	-	1	0.5	301	0.0006	1	0.001	74.94
												304	0.094	1	0.05	74.94
												337	0.000073	1	3·10-6	74.94
	30	0.2	1.86	0.0584	900				1	0.772	301	0.0176199	1	0.009	117.76	
											304	0.094	1	0.025	117.76	
												337	0.000073	1	2·10-6	117.76
Shop: 18. Sulfuric acid production																
917	1	95	1.5	7.47	13.2	35	1512.89	582.4	-	1	0.5	303	0.088	1	0.001	541.5
												322	0.0933905	1	0.001	541.5
												330	1.998225	1	0.012	541.5
918	1	7	0.1	0.229	0.0018	60	1479.89	540.4	-	1	0.5	322	0.0034028	1	0.071	17.55
919	1	9	0.7	5	1.924	60	1529.89	540.4	-	1	1.069	301	0.1607663	1	0.34	76.71
												304	0.0261245	1	0.028	76.71
												337	0.6691897	1	0.057	76.71
												703	0.000001	3	0.128	38.36
920	1	15.1	0.2	0.1974	0.0062	30	1446.9	443.4	-	1	0.5	331	0.0011348	3	0.011	43.04
921	1	13.3	0.15	0.592	0.01046	30	1446.9	428.4	-	1	0.5	331	0.001914	3	0.025	37.91
922	1	15.1	0.2	0.1974	0.0062	30	1446.9	413.4	-	1	0.5	331	0.0011348	3	0.011	43.04
923	1	13.3	0.15	0.592	0.01046	30	1446.9	398.4	-	1	0.5	331	0.001914	3	0.025	37.91
924	1	2	0.1	2.801	0.022	30	1406.9	423.4	-	1	0.5	331	0.004067	3	4.4	5.7
925	1	16.1	0.1	0.3565	0.0028	50	1401.89	669.4	-	1	0.5	322	0.0014292	1	0.004	40.23
6802	3	2	-	-	-	-	1396.9 1376.89	423.4 423.4	7	1	0.5	301	0.04928	1	6.2	11.4
												304	0.008008	1	0.5	11.4
												328	0.00179	3	0.9	5.7
												330	0.01056	1	0.53	11.4
												337	0.0177	1	0.089	11.4
												2754	0.04752	1	1.19	11.4
6803	3	2	-	-	-	-	1376.9 1396.89	663.4 663.4	7	1	0.5	301	0.04928	1	6.2	11.4
												304	0.008008	1	0.5	11.4
												328	0.00179	3	0.9	5.7
												330	0.01056	1	0.53	11.4
												337	0.0177	1	0.089	11.4
												2754	0.04752	1	1.19	11.4
6804	3	2	-	-	-	-	1381.9 1391.89	671.4 671.4	5	1	0.5	301	0.0174917	1	2.2	11.4
												304	0.0028424	1	0.178	11.4
												328	0.0017479	3	0.87	5.7
												330	0.0016656	1	0.083	11.4
												337	0.0865479	1	0.43	11.4
												2732	0.0116729	1	0.243	11.4
6805	3	2	-	-	-	-	1511.89 1516.89	507.4 507.39	3	1	0.5	123	0.0009722	3	0.182	5.7
												143	0.0002315	3	1.74	5.7
												203	0.0000153	3	0.077	5.7
												342	0.0001018	1	0.127	11.4
Shop: 19. Ammonium sulphate volume reduction unit																
6806	3	5	-	-	-	-	1643.3 1643.3	715.3 715.3	-	1	0.5	337	0.0755	1	0.045	28.5
												415	0.00772	1	5·10-4	28.5
												304	0.0118	1	0.087	28.5
												330	0.000098	1	0.006	28.5
977	1	22.7	1	8.5	6.676	25	1658.3	699.4	-	1	0.5	2902	0.833	2	0.29	97.04
978	1	22.7	1	8.5	6.676	25	1643.5	701.4	-	1	0.5	2902	0.111	2	0.038	97.04
Shop: 20. Industrial effluent and storm water runoff (IE&SWR) treatment facilities																
6209	3	2	-	-	-	-	747.19 832.14	-105.2 -120.95	18	1	0.5	301	0.0000278	1	0.003	11.4
												303	0.0001697	1	0.021	11.4
												304	0.0000475	1	0.003	11.4
												333	0.000333	1	1.04	11.4
												1728	0.0000012	1	0.6	11.4
6208	3	2	-	-	-	-	803.14 868.89	-62.78 -48.99	30	1	0.5	301	0.0000194	1	0.002	11.4
												303	0.0004597	1	0.057	11.4
												304	0.0003387	1	0.021	11.4
												333	0.000155	1	0.48	11.4
												1728	0.0000063	1	3.15	11.4

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
6207	3	2	-	-	-	-	693.13 732.04	-55.05 -54.64	30	1	0.5	301	0.0002119	1	0.026	11.4
												303	0.0050333	1	0.63	11.4
												304	0.0037088	1	0.23	11.4
												333	0.0016954	1	5.3	11.4
												1728	0.0000689	1	34.5	11.4
6206	3	2	-	-	-	-	945.75 975.34	-106.78 -38.4	20	1	0.5	301	0.0000729	1	0.009	11.4
												303	0.0004443	1	0.056	11.4
												304	0.0001244	1	0.008	11.4
												333	0.000871	1	2.7	11.4
												1728	0.0000032	1	1.6	11.4
6205	3	2	-	-	-	-	916.61 980.09	-164.88 -186.87	20	1	0.5	301	0.0008466	1	0.106	11.4
												303	0.0051621	1	0.65	11.4
												304	0.0014454	1	0.09	11.4
												333	0.0101178	1	31.6	11.4
												1728	0.0000372	1	18.6	11.4
870	1	15	0.3	3.5	0.2474	20	722.12	-131.11	-	1	0.5	301	0.00009	1	1·10-4	85.5
												303	0.00055	1	0.001	85.5
												304	0.000154	1	9·10-5	85.5
												333	0.0011	1	0.031	85.5
												1728	0.000004	1	0.018	85.5
Shop: 21. Methanol M-500 unit																
871	1	35	3	16.692	117.99	140	472.29	296.3	-	1	5.952	301	2.4955	1	0.04	798.17
												303	0.2276	1	0.004	798.17
												304	0.4055	1	0.003	798.17
												330	0.02276	1	1·10-4	798.17
												337	0.7799	1	5·10-4	798.17
872	1	46.5	0.4	1761.77	0.28	1200	555.1	292.1	-	1	24.602	301	0.00005	1	8·10-8	2488
												304	0.0255	1	2·10-5	2488
												337	0.00013	1	9·10-9	2488
		46.5	0.4	9505.77	1194.53	1200				1	24.602	301	0.1284	1	2·10-4	2488
	304						51.3667	1	0.043			2488				
												337	0.1027	1	7·10-6	2488
Facility: 2. Shchekinoazot Industrial and Construction Company LLC																
Site: 1. Shchekinoazot Industrial and Construction Company LLC (local CS:1. local plant coordinate system)																
Shop: 2. Shop No.2 ATU																
3	1	4	0.3	0.4	0.0283	18	478.5	556.3	-	1	0.5	123	0.0006513	3	0.024	11.4
												143	0.0001153	3	0.17	11.4
												301	0.00003	1	0.001	22.8
												337	0.0001478	1	1·10-4	22.8
												342	0.0000267	1	0.007	22.8
												344	0.0000111	3	0.001	11.4
												2908	0.0000111	3	0.001	11.4
15	1	0.1	0.15	6	0.106	18	470.7	482.8	-	1	0.585	2902	0.0042	3	0.51	6.67
												2930	0.0026	3	3.96	6.67
6006	3	2	-	-	-	-	366.4 366.4	839.49 839.49	-	1	0.5	322	0.0000079	1	0.001	11.4
6010	3	5	-	-	-	-	659.58 659.81	500.8 490.8	10	1	0.5	301	0.0009317	1	0.014	28.5
												328	0.0000361	3	0.002	14.25
												330	0.0001201	1	0.001	28.5
												337	0.0117444	1	0.007	28.5
												2704	0.00105	1	0.001	28.5
												2732	0.0003194	1	0.001	28.5
6011	3	5	-	-	-	-	146.85 146.86	684.31 670.01	32.8	1	0.5	301	0.001611	1	0.024	28.5
												328	0.0000722	3	0.004	14.25
												330	0.0001797	1	0.001	28.5
												337	0.00445	1	0.003	28.5
												2732	0.0006389	1	0.002	28.5
6016	3	5	-	-	-	-	61.3 61.67	598.7 597.77	1	1	0.5	301	0.0106306	1	0.157	28.5
												328	0.0047078	3	0.28	14.25
												330	0.0016769	1	0.01	28.5
												337	0.060675	1	0.036	28.5
												2732	0.0099733	1	0.024	28.5

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
6017	3	2	-	-	-	-	630.9	245.55	-	1	0.5	123	0.0009046	3	0.17	5.7
							630.9	245.55				143	0.0001602	3	1.2	5.7
												342	0.000037	1	0.046	11.4
6018	3	5	-	-	-	-	645.3	241.6	1	1	0.5	301	0.0009222	1	0.014	28.5
							645.68	240.67				328	0.00004	3	0.002	14.25
												330	0.0001062	1	0.001	28.5
												337	0.01316	1	0.008	28.5
												2704	0.0013722	1	0.001	28.5
												2732	0.0003556	1	0.001	28.5
6020	3	5	-	-	-	-	649.2	265.3	1	1	0.5	301	0.023836	1	0.35	28.5
							649.57	264.38				328	0.0037058	3	0.22	14.25
												330	0.0030769	1	0.018	28.5
												337	0.1765604	1	0.104	28.5
												2704	0.0132539	1	0.008	28.5
												2732	0.0121604	1	0.03	28.5
Shop: 4. Shop No.4 Storage facility																
6012	3	2	-	-	-	-	625.9	265.2	1	1	0.5	2908	0.0576	3	14.4	5.7
							626.28	264.27				2909	0.035568	3	5.3	5.7
6013	3	2	-	-	-	-	840.34	386.56	105.8	1	0.5	2908	0.05768	3	14.4	5.7
							839.42	372.1				2909	0.031824	3	4.8	5.7
Facility: 3. Hexion-Shchekinoazot LLC																
Site: 1. Hexion-Shchekinoazot LLC (local CS:1. local plant coordinate system)																
Shop: 1. Shop No.1																
1	1	30.2	0.2	9.74	0.306	20	1887.5	275.01	-	1	0.5	1052	0.0387675	1	0.002	172.14
												1071	0.0000767	1	3·10-4	172.14
												1325	0.0013888	1	0.001	172.14
2	1	30.2	0.8	7.998	4.02	20	1886.3	252.2	-	1	0.5	1071	0.0000362	1	2·10-4	172.14
												1325	0.0000965	1	9·10-5	172.14
												1532	0.01608	3	0.001	86.07
4	1	2.4	0.3	6.5	0.4595	232	1906.4	239.1	-	1	3.042	301	0.0746666	1	1.15	40.3
												304	0.0121333	1	0.093	40.3
												328	0.0027778	3	0.17	20.15
												330	0.038889	1	0.24	40.3
												337	0.0736111	1	0.045	40.3
												703	0.0000001	3	0.092	20.15
												1325	0.0007937	1	0.049	40.3
												2732	0.0190476	1	0.049	40.3
6	1	24.4	0.4	6.211	0.781	20	1898.7	276.8	-	1	0.5	150	0.0000131	3	3·10-4	69.54
												302	0.0005	1	9·10-5	139.08
												316	0.000132	1	5·10-5	139.08
												322	0.0000267	1	6·10-6	139.08
7	1	24.4	0.4	6.211	0.781	20	1907.8	276	-	1	0.5	150	0.0000131	3	3·10-4	69.54
												302	0.0005	1	9·10-5	139.08
												316	0.000132	1	5·10-5	139.08
												322	0.0000267	1	6·10-6	139.08
8	1	19.8	0.2	19.894	0.625	20	1954.1	258.4	-	1	0.5	150	0.0000209	3	0.001	56.43
												1071	0.0320803	1	0.38	112.86
												1325	0.0181217	1	0.043	112.86
6001	3	2	-	-	-	-	2002.56	311.61	39.8	1	0.5	1071	0.0320803	1	80.2	11.4
							2002.39	301.61				1325	0.0181217	1	9.1	11.4
												1863	0.0332625	1	5.9	11.4
Facility: 4. Shchekinsky Linoleum LLC																
Site: 1. Shchekinsky Linoleum LLC (local CS:1. local plant coordinate system)																
Shop: 1. Shop No.1																

Table 1.1.6 (continued)

ACS No.	Type	Height, m	Diameter, m	Gas-and-air mix parameters			Coordinates			K rel.	Hazardous wind speed, m/s	Pollutant			Max. concentration, % MAC	Distance to the maximum, m
				speed, m/s	volume, m³/s	temp., °C	X ₁	Y ₁	width, m			Code	Emission weight, g/s	K res.		
							X ₂	Y ₂								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
140	1	15	0.47	30.5	6.74	25	2541.01	664.7	-	1	1.242	1217	0.1012	3	0.83	106.22
												827	0.00032	1	2·10-4	212.44
												403	0.00031	1	3·10-7	212.44
												508	0.00018	1	3·10-5	212.44
												416	0.01864	1	2·10-5	212.44
												869	0.00207	1	1·10-5	212.44
												602	0.01805	1	0.003	212.44
												902	0.0034	1	5·10-5	212.44
												621	0.001	1	9·10-5	212.44
												612	0.0014	1	0.005	212.44
												2047	0.0007	3	0.012	106.22
												627	0.00087	1	0.002	212.44
												1411	0.000347	1	5·10-4	212.44
												1050	0.000146	1	5·10-5	212.44
												632	0.000027	1	1·10-5	212.44
												316	0.0712	1	0.02	212.44
												2921	0.01418	2.5	0.019	132.78
141	1	15	0.48	22.5	5.18	25	2542	650.8	-	1	0.936	1217	0.0711	3	0.95	80.03
												827	0.00017	1	2·10-4	160.06
												403	0.00008	1	1·10-7	160.06
												508	0.00065	1	2·10-4	160.06
												416	0.005	1	7·10-6	160.06
												869	0.002	1	2·10-5	160.06
												602	0.0176	1	0.005	160.06
												902	0.0046	1	1·10-4	160.06
												621	0.0094	1	0.001	160.06
												612	0.0023	1	0.015	160.06
												2047	0.00046	3	0.012	80.03
												627	0.00069	1	0.003	160.06
												1411	0.00076	1	0.002	160.06
												632	0.00046	1	4·10-4	160.06
												316	0.0488	1	0.022	160.06
												2921	0.01204	2.5	0.027	100.04
												142	1	12	0.35	6.5
143	1	12	0.35	17.6	1.69	25	2543.5	624.6	-	1	0.667	2921	0.0109	3	0.084	45.65

1.2 Calculation of contamination — substance 301. Nitrogen Dioxide

Full description of the substance — code 301 — Nitrogen Dioxide (Nitrogen (Iv) Oxide). The maximum single allowed concentration is 0.2 mg/m³, hazard class 3.

The number of sources of atmospheric contamination to be considered in the calculation is 108 (including: 80 stationary sources, 28 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 49; 11-20 m – 12; 21-29 m – 28; 30-50 m – 12; 51-100 m – 5; above 100 m – 2.

The total emissions from the sources used in the calculations makes up 140.932 g/s and 2068.969 TPA.

The calculation included the background concentrations given in Atmospheric Contamination Checkpoint No. 1 (ACCP).

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.8**, which is reached in point No. 7 *at the boundary of SPZ and garden plots*, X=402284.26 Y=-637058.5, at wind direction 47 and wind speed 3.8 m/s inclusive of: background concentration – 0.077 (background concentration before interpolation — 0.01547), input from plant emitters — 0.78;

- in the residential area, it makes up **0.66**, which is reached in point No.39 *at the boundary of Pervomayskiy*, X=401977.49 Y=-636111.8, wind direction is 95, wind velocity is 3.7 m/s inclusive of: background concentration – 0.103 (background concentration before interpolation — 0.02066), input from plant emitters — 0.64.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.2.1.

Table 1.2.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.6	0.12	0.011	0.59	330 ↘ 4	1.14.832	0.27	44.7
										1.15.851	0.127	21.2
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.66	0.132	0.011	0.65	343 ↓ 3.9	1.14.832	0.286	43.4
										1.15.851	0.133	20.2
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.68	0.137	0.011	0.67	353 ↓ 3.9	1.14.832	0.29	42.7
										1.15.851	0.12	17.4
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.7	0.139	0.012	0.68	14 ↓ 3.9	1.14.832	0.297	42.8
										1.14.831	0.103	14.8
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.76	0.152	0.012	0.75	35 ↙ 4.1	1.14.832	0.277	36.3
										1.14.831	0.088	11.5
										1.15.851	0.05	6.6
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.78	0.157	0.012	0.77	42 ↙ 4.1	1.14.832	0.27	34.4
										1.14.831	0.085	10.9
										1.15.851	0.056	7.1

Table 1.2.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					X	Y
1	2	3	4	5	6	7	8	9	1	2	3	4
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.8	0.159	0.015	0.78	47 ↙ 3.8	1.14.832	0.294	37
										1.14.831	0.107	13.5
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.64	0.127	0.016	0.62	58 ↙ 3.9	1.14.832	0.274	43.1
										1.14.831	0.087	13.7
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.62	0.125	0.017	0.61	65 ↙ 3.8	1.14.832	0.28	44.6
										1.14.831	0.092	14.8
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.63	0.126	0.019	0.61	84 ← 3.6	1.14.832	0.297	47
										1.14.831	0.111	17.7
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.7	0.141	0.023	0.68	111 ← 3.8	1.14.832	0.304	43.2
										1.14.831	0.117	16.6
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.67	0.134	0.027	0.64	132 ↖ 3.9	1.14.832	0.3	44.8
										1.15.851	0.12	17.8
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.58	0.115	0.031	0.55	150 ↖ 4	1.14.832	0.257	44.6
										1.14.831	0.078	13.6
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.56	0.112	0.038	0.52	162 ↑ 4	1.14.832	0.227	40.6
										1.14.831	0.061	10.9
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.59	0.117	0.037	0.55	173 ↑ 4.1	1.14.832	0.216	36.8
										1.14.831	0.056	9.5
										1.15.851	0.049	8.4
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.54	0.108	0.04	0.5	178 ↑ 5.3	1.14.832	0.187	34.5
										1.14.831	0.043	7.9
										1.12.6158	0.04	7.5
										1.15.851	0.037	6.9
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.53	0.107	0.03	0.5	188 ↑ 5.3	1.14.832	0.17	32
										1.12.6158	0.039	7.3
										1.14.831	0.037	7
										1.15.851	0.031	5.9
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.55	0.11	0.023	0.53	198 ↑ 5.3	1.14.832	0.17	31
										1.14.831	0.037	6.7
										1.16.952	0.033	6.1
										1.16.953	0.033	6
										1.15.851	0.032	5.8
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.56	0.111	0.019	0.54	208 ↗ 5.3	1.14.832	0.163	29.4
										1.16.952	0.039	7
										1.16.953	0.038	6.8
										1.14.831	0.035	6.2
										1.15.851	0.031	5.5
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.57	0.114	0.016	0.55	217 ↗ 5.3	1.14.832	0.157	27.6
										1.16.952	0.04	7
										1.16.953	0.039	6.9
										1.15.851	0.034	6
										1.14.831	0.033	5.8
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.59	0.118	0.01	0.58	227 ↗ 5.3	1.14.832	0.166	28.2
										1.16.952	0.04	6.8
										1.16.953	0.04	6.7
										1.14.831	0.036	6.1
										1.15.851	0.036	6.1
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.6	0.121	0.01	0.6	236 ↗ 4.2	1.14.832	0.18	29.8
										1.14.831	0.042	6.9
										1.15.851	0.042	6.9
										1.3.242	0.039	6.4
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.59	0.118	0.009	0.58	246 ↗ 3.8	1.14.832	0.21	35.9
										1.14.831	0.054	9.1
										1.15.851	0.045	7.6
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.49	0.098	0.008	0.48	254 → 3.9	1.14.832	0.184	37.5
										1.15.851	0.05	10.1
										1.14.831	0.043	8.8

Table 1.2.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					X	Y
1	2	3	4	5	6	7	8	9	1	2	3	4
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.44	0.087	0.008	0.43	265 → 4	1.14.832	0.17	39.1
										1.15.851	0.054	12.4
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.41	0.082	0.007	0.4	277 → 4	1.14.832	0.17	41.3
										1.15.851	0.057	13.8
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.404	0.081	0.007	0.4	289 → 4.1	1.14.832	0.177	43.9
										1.15.851	0.059	14.7
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.47	0.094	0.007	0.46	296 ↘ 4.1	1.14.832	0.217	46.2
										1.15.851	0.082	17.4
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.46	0.091	0.007	0.45	309 ↘ 4.1	1.14.832	0.208	45.5
										1.15.851	0.081	17.8
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.5	0.1	0.01	0.49	318 ↘ 4.1	1.14.832	0.227	45.4
										1.15.851	0.096	19.1
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.58	0.115	0.009	0.57	246 ↗ 3.9	1.14.832	0.21	36.1
										1.14.831	0.053	9.1
										1.15.851	0.051	8.9
32. At the boundary of Myasotodovo populated locality	Resident.	2326	-1762.6	2	0.41	0.082	0.007	0.4	264 → 4	1.14.832	0.153	37.5
										1.15.851	0.044	10.8
										1.14.831	0.033	8.1
33. At the boundary of Myasotodovo populated locality	Resident.	1766.8	-2105.5	2	0.37	0.074	0.007	0.36	277 → 4	1.14.832	0.144	38.9
										1.15.851	0.044	11.9
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.57	0.113	0.01	0.56	330 ↘ 4	1.14.832	0.254	44.8
										1.15.851	0.117	20.7
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.65	0.129	0.011	0.64	352 ↓ 4	1.14.832	0.27	41.6
										1.15.851	0.115	17.8
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.52	0.103	0.009	0.51	14 ↓ 5.3	1.14.832	0.173	33.5
										1.14.831	0.038	7.4
										1.15.844	0.035	6.8
										1.15.851	0.035	6.7
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.53	0.107	0.009	0.52	27 ↙ 5.3	1.14.832	0.155	29.1
										1.16.952	0.045	8.5
										1.16.953	0.044	8.3
										1.15.844	0.033	6.2
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.59	0.118	0.014	0.58	54 ↙ 4.6	1.14.832	0.193	32.6
										1.15.851	0.048	8.2
										1.14.831	0.047	7.9
										1.16.953	0.035	5.9
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.66	0.131	0.021	0.64	95 ← 3.7	1.14.832	0.305	46.4
										1.14.831	0.116	17.6
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.6	0.121	0.027	0.58	141 ↖ 4	1.14.832	0.276	45.7
										1.15.851	0.095	15.7
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.58	0.116	0.037	0.54	171 ↑ 4.1	1.14.832	0.22	37.6
										1.14.831	0.057	9.8
										1.15.851	0.052	8.9
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.34	0.067	0.008	0.33	230 ↗ 5.3	1.14.832	0.087	25.7
										1.16.952	0.03	8.9
										1.16.953	0.03	8.8
										1.15.846	0.019	5.7
										1.15.851	0.017	5

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.2.2.

Table 1.2.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.44	0.089	0.009	0.44	41 ↙	5.3
2	-2171.24	1361.8	0.49	0.097	0.009	0.48	34 ↙	5.3
3	-1983.94	898.21	0.51	0.102	0.009	0.5	25 ↙	5.3
4	-1796.63	434.62	0.5	0.1	0.009	0.49	16 ↓	5.3
5	-1609.33	-28.98	0.47	0.095	0.009	0.465	6 ↓	5.3
6	-1422.03	-492.57	0.45	0.09	0.009	0.44	356 ↓	5.3
7	-1234.72	-956.16	0.42	0.084	0.008	0.41	346 ↓	5.3
8	-1047.42	-1419.75	0.385	0.077	0.008	0.38	336 ↘	5.3
9	-860.12	-1883.34	0.35	0.07	0.008	0.34	327 ↘	5.3
10	-672.81	-2346.94	0.32	0.064	0.008	0.31	320 ↘	5.3
11	-485.51	-2810.53	0.29	0.058	0.005	0.286	314 ↘	5.3
12	-298.21	-3274.12	0.27	0.054	0.005	0.264	309 ↘	5.3
13	-110.9	-3737.71	0.25	0.05	0.005	0.244	305 ↘	5.3
14	-1894.95	2012.7	0.49	0.098	0.011	0.48	47 ↙	5.3
15	-1707.65	1549.1	0.55	0.11	0.01	0.54	39 ↙	5.3
16	-1520.35	1085.51	0.59	0.118	0.01	0.58	30 ↙	5.3
17	-1333.04	621.92	0.57	0.115	0.01	0.56	19 ↓	5.3
18	-1145.74	158.33	0.53	0.107	0.01	0.52	8 ↓	5.3
19	-958.44	-305.26	0.51	0.102	0.009	0.5	356 ↓	5.3
20	-771.13	-768.86	0.47	0.095	0.009	0.465	343 ↓	5.3
21	-583.83	-1232.45	0.42	0.085	0.009	0.41	332 ↘	4.7
22	-396.53	-1696.04	0.38	0.076	0.008	0.37	323 ↘	5.3
23	-209.22	-2159.63	0.34	0.069	0.008	0.335	315 ↘	5.3
24	-21.92	-2623.22	0.307	0.061	0.006	0.3	308 ↘	4
25	165.38	-3086.82	0.284	0.057	0.005	0.28	303 ↘	5.3
26	352.69	-3550.41	0.26	0.052	0.005	0.256	299 ↘	5.3
27	-1431.36	2200	0.51	0.102	0.012	0.5	54 ↙	5.3
28	-1244.06	1736.41	0.6	0.119	0.012	0.58	47 ↙	5.3
29	-1056.75	1272.81	0.67	0.134	0.011	0.66	37 ↙	5.3
30	-869.45	809.22	0.65	0.131	0.011	0.64	25 ↙	4.7
31	-682.15	345.63	0.6	0.12	0.011	0.59	11 ↓	4.1
32	-494.84	-117.96	0.58	0.117	0.01	0.57	355 ↓	4.1
33	-307.54	-581.55	0.54	0.108	0.01	0.53	339 ↓	4.1
34	-120.24	-1045.14	0.47	0.095	0.01	0.465	326 ↘	4.1
35	67.07	-1508.74	0.42	0.083	0.009	0.41	316 ↘	5.3
36	254.37	-1972.33	0.365	0.073	0.006	0.36	308 ↘	4.1
37	441.67	-2435.92	0.33	0.066	0.006	0.32	302 ↘	4.1
38	628.98	-2899.51	0.3	0.06	0.006	0.294	297 ↘	5.3
39	816.28	-3363.1	0.27	0.054	0.005	0.267	293 ↘	4.6
40	-967.77	2387.3	0.49	0.098	0.014	0.475	63 ↙	4.5
41	-780.46	1923.71	0.57	0.114	0.014	0.56	57 ↙	4.1
42	-593.16	1460.12	0.69	0.138	0.014	0.68	48 ↙	4.5
43	-405.86	996.53	0.75	0.15	0.012	0.74	34 ↙	4.1
44	-218.55	532.93	0.7	0.139	0.012	0.69	15 ↓	3.9
45	-31.25	69.34	0.68	0.136	0.011	0.67	354 ↓	3.9
46	156.05	-394.25	0.63	0.127	0.011	0.62	333 ↘	3.9
47	343.35	-857.84	0.55	0.11	0.01	0.54	317 ↘	4
48	530.66	-1321.43	0.46	0.093	0.007	0.46	307 ↘	4.1
49	717.96	-1785.03	0.4	0.079	0.007	0.39	300 ↘	5.3
50	905.26	-2248.62	0.35	0.07	0.006	0.344	294 ↘	4
51	1092.57	-2712.21	0.317	0.063	0.006	0.31	290 →	5.3
52	1279.87	-3175.8	0.286	0.057	0.006	0.28	287 →	4.6
53	-504.18	2574.61	0.46	0.092	0.015	0.45	72 ←	4
54	-316.87	2111.01	0.53	0.106	0.016	0.52	67 ↙	4
55	-129.57	1647.42	0.62	0.125	0.016	0.61	59 ↙	3.9
56	57.73	1183.83	0.76	0.153	0.016	0.75	48 ↙	3.8
57	245.04	720.24	0.8	0.159	0.013	0.78	23 ↙	3.9
58	432.34	256.65	0.72	0.144	0.013	0.71	351 ↓	3.4
59	619.64	-206.95	0.79	0.157	0.012	0.77	320 ↘	3.8
60	806.95	-670.54	0.64	0.128	0.008	0.63	303 ↘	4
61	994.25	-1134.13	0.51	0.102	0.008	0.5	294 ↘	4.1
62	1181.55	-1597.72	0.43	0.085	0.007	0.42	289 →	4.1
63	1368.86	-2061.31	0.37	0.074	0.007	0.365	285 →	4

Table 1.2.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
64	1556.16	-2524.91	0.33	0.066	0.006	0.326	282 →	4.1
65	1743.46	-2988.5	0.3	0.06	0.006	0.294	280 →	4.6
66	-40.58	2761.91	0.45	0.09	0.017	0.43	83 ←	4
67	146.72	2298.32	0.53	0.105	0.018	0.51	81 ←	3.9
68	334.02	1834.72	0.61	0.122	0.018	0.59	77 ←	3.7
69	521.33	1371.13	0.67	0.134	0.018	0.65	69 ←	3.7
70	708.63	907.54	0.81	0.162	0.018	0.8	48 ↙	3.9
71	895.93	443.95	0.45	0.09	0.014	0.435	330 ↘	3.7
72	1083.24	-19.64	0.73	0.146	0.01	0.72	291 →	3.3
73	1270.54	-483.24	0.64	0.128	0.009	0.63	282 →	3.8
74	1457.84	-946.83	0.53	0.107	0.008	0.53	278 →	3.9
75	1645.15	-1410.42	0.45	0.091	0.008	0.445	276 →	4
76	1832.45	-1874.01	0.395	0.079	0.007	0.39	274 →	4
77	2019.75	-2337.6	0.35	0.07	0.007	0.34	273 →	4.2
78	2207.06	-2801.19	0.315	0.063	0.006	0.31	272 →	5.3
79	423.01	2949.21	0.44	0.088	0.02	0.42	96 ←	4
80	610.31	2485.62	0.52	0.104	0.021	0.5	97 ←	3.9
81	797.61	2022.03	0.63	0.126	0.022	0.61	99 ←	3.8
82	984.92	1558.44	0.77	0.154	0.021	0.75	105 ←	3.6
83	1172.22	1094.84	0.7	0.14	0.02	0.68	124 ↖	3.5
84	1359.52	631.25	3.74	0.748	0.019	3.7	331 ↘	0.7
85	1546.83	167.66	0.7	0.139	0.011	0.69	254 →	3.9
86	1734.13	-295.93	0.6	0.121	0.01	0.6	259 →	3.7
87	1921.43	-759.52	0.55	0.109	0.009	0.54	261 →	3.8
88	2108.74	-1223.12	0.48	0.095	0.008	0.47	262 →	3.9
89	2296.04	-1686.71	0.42	0.084	0.008	0.41	264 →	3.9
90	2483.34	-2150.3	0.37	0.074	0.007	0.36	264 →	4
91	2670.65	-2613.89	0.33	0.066	0.006	0.32	265 →	5.3
92	886.6	3136.51	0.42	0.085	0.024	0.4	108 ←	4
93	1073.9	2672.92	0.5	0.1	0.026	0.475	112 ←	4
94	1261.21	2209.33	0.6	0.121	0.026	0.58	119 ↖	4
95	1448.51	1745.74	0.7	0.14	0.026	0.67	132 ↖	3.9
96	1635.81	1282.15	0.84	0.169	0.024	0.82	106 ←	3.6
97	1823.12	818.56	2.6	0.518	0.022	2.57	226 ↗	0.9
98	2010.42	354.96	1.05	0.211	0.017	1.04	222 ↗	3.8
99	2197.72	-108.63	0.8	0.159	0.018	0.78	241 ↗	2.4
100	2385.03	-572.22	0.61	0.122	0.01	0.6	246 ↗	3.7
101	2572.33	-1035.81	0.52	0.104	0.009	0.51	251 →	3.9
102	2759.63	-1499.4	0.446	0.089	0.008	0.44	254 →	4
103	2946.94	-1963	0.39	0.078	0.007	0.38	256 →	5.3
104	3134.24	-2426.59	0.34	0.068	0.007	0.335	258 →	5.3
105	1350.19	3323.82	0.405	0.081	0.029	0.375	119 ↖	5.3
106	1537.49	2860.23	0.47	0.094	0.032	0.44	125 ↖	4.1
107	1724.8	2396.63	0.54	0.108	0.034	0.51	134 ↖	4
108	1912.1	1933.04	0.6	0.12	0.028	0.57	147 ↖	4
109	2099.4	1469.45	0.66	0.132	0.025	0.63	164 ↑	3.9
110	2286.71	1005.86	1.01	0.203	0.022	1	189 ↑	4.5
111	2474.01	542.27	0.81	0.163	0.019	0.8	208 ↗	4
112	2661.31	78.67	0.87	0.174	0.017	0.85	222 ↗	4.1
113	2848.62	-384.92	0.72	0.145	0.011	0.71	233 ↗	4.1
114	3035.92	-848.51	0.57	0.114	0.009	0.56	240 ↗	4.1
115	3223.22	-1312.1	0.47	0.095	0.008	0.46	245 ↗	4.6
116	3410.53	-1775.69	0.41	0.081	0.008	0.4	248 →	5.3
117	3597.83	-2239.28	0.35	0.07	0.007	0.345	251 →	5.3
118	1813.78	3511.12	0.394	0.079	0.043	0.35	128 ↖	5.3
119	2001.09	3047.53	0.455	0.091	0.059	0.4	134 ↖	5.3
120	2188.39	2583.94	0.49	0.098	0.04	0.45	144 ↖	4.1
121	2375.69	2120.35	0.54	0.109	0.038	0.51	155 ↖	4
122	2563	1656.75	0.62	0.124	0.032	0.59	169 ↑	4
123	2750.3	1193.16	0.75	0.149	0.026	0.72	186 ↑	5.3
124	2937.6	729.57	0.72	0.144	0.022	0.7	202 ↑	4.1
125	3124.91	265.98	0.72	0.144	0.018	0.7	213 ↗	4.7
126	3312.21	-197.61	0.68	0.136	0.016	0.66	223 ↗	5.3
127	3499.51	-661.21	0.58	0.115	0.01	0.57	231 ↗	5.3
128	3686.82	-1124.8	0.48	0.097	0.009	0.47	237 ↗	5.3

Table 1.2.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
129	3874.12	-1588.39	0.41	0.082	0.008	0.4	241 ↗	5.3
130	4061.42	-2051.98	0.354	0.071	0.007	0.35	244 ↗	5.3
131	2277.38	3698.42	0.43	0.086	0.104	0.324	134 ↖	5.3
132	2464.68	3234.83	0.52	0.104	0.19	0.33	142 ↖	2.4
133	2651.98	2771.24	0.61	0.121	0.238	0.37	150 ↖	2.4
134	2839.29	2307.65	0.57	0.115	0.163	0.41	160 ↑	2.4
135	3026.59	1844.06	0.56	0.112	0.041	0.52	172 ↑	5.3
136	3213.89	1380.47	0.61	0.123	0.031	0.58	185 ↑	5.3
137	3401.2	916.87	0.62	0.124	0.024	0.6	197 ↑	5.1
138	3588.5	453.28	0.61	0.123	0.02	0.6	207 ↗	5.3
139	3775.8	-10.31	0.59	0.118	0.017	0.57	216 ↗	5.3
140	3963.11	-473.9	0.53	0.106	0.014	0.52	224 ↗	5.3
141	4150.41	-937.49	0.46	0.092	0.009	0.45	230 ↗	5.3
142	4337.71	-1401.09	0.4	0.079	0.008	0.39	234 ↗	5.3
143	4525.01	-1864.68	0.345	0.069	0.007	0.34	238 ↗	5.3
144	2740.97	3885.73	0.45	0.09	0.173	0.276	140 ↖	1.5
145	2928.27	3422.14	0.57	0.113	0.264	0.3	147 ↖	2.4
146	3115.57	2958.54	0.58	0.117	0.25	0.33	155 ↖	2.4
147	3302.88	2494.95	0.6	0.121	0.24	0.366	164 ↑	2.4
148	3490.18	2031.36	0.53	0.106	0.134	0.4	174 ↑	2.4
149	3677.48	1567.77	0.53	0.105	0.034	0.49	184 ↑	5.3
150	3864.79	1104.18	0.53	0.107	0.026	0.51	194 ↑	5.3
151	4052.09	640.58	0.53	0.106	0.021	0.51	203 ↗	5.3
152	4239.39	176.99	0.51	0.102	0.017	0.49	211 ↗	5.3
153	4426.7	-286.6	0.47	0.094	0.015	0.46	218 ↗	5.3
154	4614	-750.19	0.42	0.085	0.013	0.41	224 ↗	5.3
155	4801.3	-1213.78	0.37	0.074	0.008	0.36	229 ↗	5.3
156	4988.61	-1677.37	0.33	0.065	0.007	0.32	233 ↗	5.3
157	3204.56	4073.03	0.44	0.088	0.184	0.256	145 ↖	1.5
158	3391.86	3609.44	0.55	0.11	0.275	0.275	151 ↖	1.5
159	3579.17	3145.85	0.56	0.113	0.266	0.3	159 ↑	2.4
160	3766.47	2682.26	0.58	0.116	0.256	0.32	166 ↑	2.4
161	3953.77	2218.66	0.5	0.1	0.16	0.34	175 ↑	2.4
162	4141.08	1755.07	0.46	0.091	0.034	0.42	184 ↑	5.3
163	4328.38	1291.48	0.46	0.092	0.026	0.435	192 ↑	5.3
164	4515.68	827.89	0.46	0.091	0.021	0.435	200 ↑	5.3
165	4702.99	364.3	0.44	0.088	0.017	0.42	207 ↗	5.3
166	4890.29	-99.3	0.41	0.083	0.015	0.4	214 ↗	5.3
167	5077.59	-562.89	0.38	0.076	0.013	0.37	219 ↗	5.3
168	5264.9	-1026.48	0.34	0.069	0.011	0.33	224 ↗	5.3
169	5452.2	-1490.07	0.304	0.061	0.007	0.297	228 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.2.1, scale **1:50000**.

301. Nitrogen dioxide



Figure 1.2.1 — Case No. 1, calculation for all enterprises and plants within the industrial site — prospects for development.
 Site No. 1 — calculation for the entire cluster of industrial enterprises and plants within the industrial site.

Scale 1:50000

1.3 Calculation of contamination — substance 303 Ammonia

Full name of the substance with code 303 — ammonia The maximum single allowed concentration is 0.2 mg/m³, hazard class 4.

The number of sources of atmospheric contamination to be considered in the calculation is 91 (including: 70 stationary sources, 21 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 46; 11-20 m – 11; 21-29 m – 23; 30-50 m – 10; 51-100 m – 1; above 100 m – none.

The total emissions from the sources used in the calculations makes up 8.233 g/s and 136.171 TPA.

The calculation included the background concentrations given in Atmospheric Contamination Checkpoint No. 1 (ACCP).

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.39**, which is reached in point No. 7 at the boundary of SPZ and garden plots, X= 402284.26 Y=-637058.5, at wind direction 52 and wind speed 1.1 m/s inclusive of: background concentration – 0.088 (background concentration before interpolation — 0.01768), input from plant emitters — 0.37;

- in the residential area it is **0.5**, which is reached in point No. 1.146 «Calculation for the entire cluster of industrial enterprises and plants within the industrial site, X=401812 Y=-633497, wind direction 153°, wind speed 1.2 m/s inclusive of: background concentration – 0.44 (background concentration before interpolation — 0.402), input from plant emitters — 0.094.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.3.1.

Table 1.3.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.257	0.051	0.014	0.243	330 ↘ 1.1	1.15.6199	0.064	24.8
										1.15.851	0.051	19.8
										1.4.240	0.016	6.2
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.284	0.057	0.015	0.27	343 ↓ 0.9	1.15.6199	0.073	25.7
										1.15.851	0.04	14
										1.4.240	0.017	5.8
										1.15.6200	0.009	3.15
										1.15.868	0.008	2.75
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.304	0.061	0.015	0.29	352 ↓ 0.7	1.15.6199	0.073	24.1
										1.15.851	0.028	9.1
										1.4.240	0.018	5.9
										1.15.867	0.01	3.34
										1.15.868	0.01	3.3
										1.15.865	0.01	3.26
										1.15.863	0.01	3.25

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.33	0.066	0.016	0.32	16 ↓ 0.9	1.15.6199	0.059	17.7
										1.15.851	0.035	10.6
										1.4.240	0.017	5
										1.15.866	0.013	4
										1.15.867	0.013	4
										1.15.862	0.013	3.9
										1.15.863	0.013	3.9
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.313	0.063	0.016	0.3	39 ↙ 1.1	1.15.6199	0.053	16.9
										1.15.851	0.048	15.2
										1.4.240	0.012	3.9
										1.15.866	0.012	3.74
										1.15.867	0.011	3.6
										1.15.862	0.011	3.6
										1.15.863	0.011	3.5
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.31	0.062	0.017	0.294	45 ↙ 1.2	1.15.851	0.05	16
										1.15.6199	0.05	16
										1.4.240	0.012	4
										1.15.866	0.012	3.8
										1.15.867	0.011	3.65
										1.15.862	0.011	3.6
										1.15.863	0.011	3.6
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.39	0.078	0.018	0.37	52 ↙ 1.1	1.15.6199	0.062	15.9
										1.15.851	0.049	12.6
										1.15.866	0.018	4.5
										1.15.862	0.017	4.3
										1.15.867	0.017	4.3
										1.15.863	0.017	4.25
										1.15.864	0.016	4.1
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.294	0.059	0.018	0.276	65 ↙ 1.2	1.15.851	0.052	17.6
										1.15.6199	0.051	17.4
										1.15.866	0.011	3.6
										1.15.867	0.01	3.5
										1.15.862	0.01	3.45
										1.4.240	0.01	3.44
										1.15.863	0.01	3.4
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.3	0.06	0.019	0.28	73 ← 1.2	1.15.6199	0.053	17.7
										1.15.851	0.053	17.5
										1.15.866	0.011	3.6
										1.15.867	0.011	3.5
										1.15.868	0.011	3.5
										1.15.862	0.01	3.46
										1.4.240	0.01	3.46
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.323	0.065	0.022	0.3	94 ← 1	1.15.6199	0.063	19.5
										1.15.851	0.047	14.5
										1.15.868	0.013	3.9
										1.4.240	0.012	3.76
										1.15.865	0.012	3.7
										1.15.864	0.012	3.66
										1.15.867	0.012	3.6
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.306	0.061	0.026	0.28	116 ↖ 1	1.15.6199	0.062	20.4
										1.15.851	0.047	15.3
										1.4.240	0.025	8.1
										1.15.868	0.01	3.2
										1.15.865	0.009	2.9
										1.4.380	0.009	2.9
										1.15.6199	0.057	18.3
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.31	0.062	0.048	0.263	133 ↖ 1.1	1.15.851	0.05	16.1
										1.4.240	0.036	11.5
										1.4.380	0.013	4.2

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.33	0.065	0.122	0.205	149 ↖ 1.5	1.15.851	0.051	15.5
										1.15.6199	0.039	12
										1.4.240	0.025	7.6
										1.4.380	0.009	2.8
										1.2.78	0.007	2.06
										1.15.6200	0.005	1.55
										1.15.6201	0.005	1.39
										1.15.868	0.004	1.3
										1.15.865	0.004	1.2
										1.15.867	0.004	1.18
										1.15.864	0.004	1.17
										1.15.863	0.004	1.12
										1.15.866	0.004	1.1
										1.15.862	0.004	1.09

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.355	0.071	0.188	0.167	160 ↑ 1.6	1.15.851	0.044	12.3
										1.15.6199	0.029	8.2
										1.4.240	0.018	4.9
										1.2.78	0.007	2
										1.4.380	0.007	1.84
										1.15.6200	0.004	1.07
										1.15.6201	0.003	0.98
										1.15.868	0.003	0.9
										1.2.42	0.003	0.88
										1.15.867	0.003	0.84
										1.15.865	0.003	0.84
										1.15.864	0.003	0.83
										1.15.863	0.003	0.8
										1.15.866	0.003	0.8
										1.15.862	0.003	0.78
										1.15.854	0.003	0.74
										1.15.855	0.003	0.74
										1.15.853	0.003	0.73
										1.15.852	0.003	0.72
										1.15.6189	0.002	0.455
										1.1.32	0.001	0.414
										1.15.6198	0.001	0.37
										1.15.6204	0.001	0.317
										1.2.76	0.001	0.25
										1.21.871	0.001	0.25
										1.15.861	0.001	0.23
										1.2.38	0.001	0.223
										1.13.6146	0.001	0.2
										1.4.213	0.001	0.19
										1.1.34	0.001	0.18
										1.2.45	0.001	0.164
										1.1.919	0.001	0.16
										1.15.859	0.001	0.158
										1.1.344	0.001	0.155
										1.4.316	0.001	0.15
										1.1.345	0.001	0.147
										1.1.33	0.001	0.146
										1.15.858	5·10 ⁻⁴	0.14
										1.15.6190	4·10 ⁻⁴	0.127
										1.2.39	4·10 ⁻⁴	0.125
										1.15.869	4·10 ⁻⁴	0.123
										1.1.36	4·10 ⁻⁴	0.115
										1.15.6203	4·10 ⁻⁴	0.113
										1.20.6207	4·10 ⁻⁴	0.105
										1.1.35	4·10 ⁻⁴	0.103
										1.2.129	4·10 ⁻⁴	0.101
										1.15.845	4·10 ⁻⁴	0.1
										1.18.917	3·10 ⁻⁴	0.081
										1.20.6205	3·10 ⁻⁴	0.074
										1.8.976	2·10 ⁻⁴	0.065
										1.13.6141	2·10 ⁻⁴	0.057
										1.2.513	2·10 ⁻⁴	0.056
										1.15.6197	2·10 ⁻⁴	0.054
										1.4.245	2·10 ⁻⁴	0.051
										1.2.44	2·10 ⁻⁴	0.049
										1.8.975	2·10 ⁻⁴	0.048
										1.13.6143	2·10 ⁻⁴	0.048
										1.2.40	1·10 ⁻⁴	0.034
										1.2.79	1·10 ⁻⁴	0.034

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.34	0.068	0.18	0.158	170 ↑ 1.6	1.15.851	0.042	12.3
										1.15.6199	0.026	7.8
										1.4.240	0.014	4.3
										1.2.78	0.007	2.17
										1.4.380	0.005	1.6
										1.15.6200	0.003	1.02
										1.15.6201	0.003	0.96
										1.2.42	0.003	0.92
										1.15.868	0.003	0.84
										1.15.867	0.003	0.8
										1.15.865	0.003	0.79
										1.15.864	0.003	0.78
										1.15.866	0.003	0.76
										1.15.863	0.003	0.76
										1.15.862	0.003	0.74
										1.15.855	0.002	0.71
										1.15.854	0.002	0.71
										1.15.853	0.002	0.7
										1.15.852	0.002	0.7
										1.1.32	0.002	0.64
										1.15.6189	0.001	0.425
										1.15.6198	0.001	0.34
										1.1.919	0.001	0.31
										1.1.344	0.001	0.31
										1.1.345	0.001	0.3
										1.15.6204	0.001	0.3
										1.1.33	0.001	0.28
										1.1.34	0.001	0.275
										1.21.871	0.001	0.27
										1.2.76	0.001	0.257
										1.1.36	0.001	0.223
										1.2.38	0.001	0.22
										1.15.861	0.001	0.217
										1.13.6146	0.001	0.207
										1.1.35	0.001	0.197
										1.4.213	0.001	0.197
										1.2.45	0.001	0.18
										1.4.316	0.001	0.17
										1.15.859	0.001	0.156
										1.15.858	0.001	0.15
										1.2.39	4·10 ⁻⁴	0.13
										1.2.129	4·10 ⁻⁴	0.121
										1.15.6190	4·10 ⁻⁴	0.12
										1.15.869	4·10 ⁻⁴	0.12
										1.18.917	4·10 ⁻⁴	0.111
										1.15.6203	4·10 ⁻⁴	0.106
										1.15.845	3·10 ⁻⁴	0.094
										1.20.6207	3·10 ⁻⁴	0.093
										1.2.513	3·10 ⁻⁴	0.082
										1.8.976	2·10 ⁻⁴	0.072
										1.20.6205	2·10 ⁻⁴	0.064
										1.4.245	2·10 ⁻⁴	0.057
										1.13.6141	2·10 ⁻⁴	0.055
										1.2.44	2·10 ⁻⁴	0.054
										1.8.975	2·10 ⁻⁴	0.052
										1.15.6197	2·10 ⁻⁴	0.05
										1.13.6143	2·10 ⁻⁴	0.045
										1.2.40	1·10 ⁻⁴	0.035
										1.2.79	1·10 ⁻⁴	0.033

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.34	0.068	0.215	0.124	175 ↑ 1.4	1.15.851	0.036	10.5
										1.15.6199	0.017	5
										1.4.240	0.01	3.1
										1.2.78	0.005	1.43
										1.4.380	0.004	1.17
										1.15.6200	0.002	0.66
										1.15.6201	0.002	0.64
										1.15.868	0.002	0.63
										1.15.855	0.002	0.62
										1.15.854	0.002	0.62
										1.15.853	0.002	0.62
										1.2.42	0.002	0.61
										1.15.852	0.002	0.61
										1.15.867	0.002	0.61
										1.15.865	0.002	0.6
										1.15.864	0.002	0.59
										1.15.866	0.002	0.59
										1.1.32	0.002	0.59
										1.15.863	0.002	0.58
										1.15.862	0.002	0.57
										1.1.344	0.002	0.52
										1.1.345	0.002	0.52
										1.1.919	0.002	0.5
										1.1.36	0.001	0.325
										1.15.6189	0.001	0.3
										1.1.33	0.001	0.287
										1.1.34	0.001	0.237
										1.15.6198	0.001	0.233
										1.21.871	0.001	0.227
										1.1.35	0.001	0.194
										1.15.6204	0.001	0.19
										1.15.861	0.001	0.185
										1.4.213	0.001	0.178
										1.2.76	0.001	0.17
										1.4.316	0.001	0.167
										1.13.6146	0.001	0.15
										1.2.38	5·10 ⁻⁴	0.144
										1.15.859	5·10 ⁻⁴	0.138
										1.2.45	4·10 ⁻⁴	0.132
										1.15.858	4·10 ⁻⁴	0.13
										1.18.917	4·10 ⁻⁴	0.122
										1.15.869	3·10 ⁻⁴	0.093
										1.2.513	3·10 ⁻⁴	0.09
										1.2.39	3·10 ⁻⁴	0.085
										1.15.6190	3·10 ⁻⁴	0.084
										1.2.129	3·10 ⁻⁴	0.083
										1.15.845	2·10 ⁻⁴	0.071
										1.8.976	2·10 ⁻⁴	0.069
										1.20.6207	2·10 ⁻⁴	0.068
										1.15.6203	2·10 ⁻⁴	0.067
										1.4.245	2·10 ⁻⁴	0.056
										1.20.6205	2·10 ⁻⁴	0.055
										1.8.975	2·10 ⁻⁴	0.048
										1.2.44	1·10 ⁻⁴	0.041
										1.13.6141	1·10 ⁻⁴	0.038
										1.15.6197	1·10 ⁻⁴	0.034
										1.13.6143	1·10 ⁻⁴	0.03

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.27	0.055	0.157	0.116	185 ↑ 3.6	1.15.851	0.03	11.2
										1.15.6199	0.02	7.2
										1.4.240	0.008	2.9
										1.2.78	0.005	1.83
										1.4.380	0.003	1.02
										1.15.6200	0.003	0.93
										1.15.6201	0.002	0.85
										1.15.868	0.002	0.79
										1.2.42	0.002	0.78
										1.15.867	0.002	0.77
										1.15.865	0.002	0.76
										1.15.864	0.002	0.76
										1.15.863	0.002	0.74
										1.15.866	0.002	0.73
										1.15.862	0.002	0.73
										1.1.32	0.002	0.73
										1.1.344	0.002	0.66
										1.1.919	0.002	0.66
										1.1.345	0.002	0.65
										1.15.855	0.002	0.58
										1.15.854	0.002	0.58
										1.15.853	0.002	0.56
										1.15.852	0.002	0.55
										1.15.6189	0.001	0.42
										1.1.36	0.001	0.41
										1.1.33	0.001	0.37
										1.21.871	0.001	0.34
										1.15.6198	0.001	0.33
										1.1.34	0.001	0.294
										1.15.6204	0.001	0.285
										1.1.35	0.001	0.247
										1.2.76	0.001	0.215
										1.4.213	5·10 ⁻⁴	0.183
										1.15.861	5·10 ⁻⁴	0.17
										1.13.6146	5·10 ⁻⁴	0.17
										1.2.38	4·10 ⁻⁴	0.16
										1.15.858	4·10 ⁻⁴	0.148
										1.2.45	4·10 ⁻⁴	0.14
										1.4.316	4·10 ⁻⁴	0.14
										1.15.859	4·10 ⁻⁴	0.135
										1.15.6190	3·10 ⁻⁴	0.12
										1.2.513	3·10 ⁻⁴	0.113
										1.15.869	3·10 ⁻⁴	0.111
										1.2.129	3·10 ⁻⁴	0.11
										1.2.39	3·10 ⁻⁴	0.105
										1.15.6203	3·10 ⁻⁴	0.098
										1.18.917	2·10 ⁻⁴	0.085
										1.15.845	2·10 ⁻⁴	0.083
										1.8.976	2·10 ⁻⁴	0.072
										1.20.6207	2·10 ⁻⁴	0.069
										1.8.975	1·10 ⁻⁴	0.055
										1.15.6197	1·10 ⁻⁴	0.048
										1.13.6141	1·10 ⁻⁴	0.048
										1.4.245	1·10 ⁻⁴	0.045
										1.13.6143	1·10 ⁻⁴	0.041
										1.2.44	1·10 ⁻⁴	0.041

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.23	0.046	0.107	0.12	195 ↑ 5.3	1.15.851	0.035	15.2
										1.15.6199	0.018	8.1
										1.4.240	0.005	2.4
										1.2.78	0.005	2
										1.1.344	0.003	1.25
										1.1.345	0.003	1.24
										1.1.919	0.003	1.21
										1.1.32	0.003	1.14
										1.15.6200	0.002	1.05
										1.15.868	0.002	1
										1.15.867	0.002	0.99
										1.15.865	0.002	0.99
										1.15.864	0.002	0.98
										1.15.863	0.002	0.97
										1.15.862	0.002	0.96
										1.15.6201	0.002	0.95
										1.15.866	0.002	0.95
										1.2.42	0.002	0.88
										1.4.380	0.002	0.84
										1.1.36	0.002	0.7
										1.15.855	0.002	0.69
										1.15.854	0.002	0.68
										1.15.853	0.002	0.66
										1.15.852	0.001	0.65
										1.1.33	0.001	0.61
										1.15.6189	0.001	0.465
										1.21.871	0.001	0.44
										1.1.34	0.001	0.42
										1.1.35	0.001	0.38
										1.15.6198	0.001	0.36
										1.15.6204	0.001	0.32
										1.4.213	0.001	0.23
										1.2.76	0.001	0.224
										1.15.861	5·10 ⁻⁴	0.2
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.2	0.04	0.079	0.12	206 ↗ 5.3	1.15.851	0.032	16
										1.15.6199	0.017	8.4
										1.4.240	0.006	2.84
										1.2.78	0.004	2
										1.1.345	0.004	1.85
										1.1.344	0.004	1.84
										1.1.919	0.003	1.76
										1.15.868	0.003	1.27
										1.15.867	0.002	1.26
										1.15.865	0.002	1.26
										1.15.864	0.002	1.25
										1.15.863	0.002	1.24
										1.15.862	0.002	1.23
										1.15.866	0.002	1.23
										1.1.32	0.002	1.15
										1.15.6200	0.002	1.1
										1.1.36	0.002	1.02
										1.15.6201	0.002	1
										1.4.380	0.002	0.99
										1.15.855	0.002	0.89
										1.15.854	0.002	0.88

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.18	0.036	0.06	0.12	216 ↗ 5.3	1.15.851	0.031	17.6
										1.15.6199	0.017	9.3
										1.4.240	0.005	2.9
										1.1.345	0.004	2.3
										1.1.344	0.004	2.27
										1.1.919	0.004	2.16
										1.2.78	0.003	1.8
										1.15.868	0.003	1.45
										1.15.867	0.003	1.44
										1.15.865	0.003	1.44
										1.15.864	0.003	1.43
										1.15.863	0.003	1.42
										1.15.862	0.003	1.4
										1.15.866	0.003	1.4
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.17	0.034	0.047	0.122	225 ↗ 5.3	1.1.36	0.002	1.26
										1.15.6200	0.002	1.23
										1.15.851	0.036	21.4
										1.15.6199	0.019	11.2
										1.4.240	0.004	2.55
										1.1.344	0.003	1.93
										1.1.345	0.003	1.9
										1.1.919	0.003	1.88
										1.15.868	0.003	1.65
										1.15.867	0.003	1.65
										1.15.865	0.003	1.64
										1.15.864	0.003	1.64
										1.15.863	0.003	1.63
										1.15.866	0.003	1.62
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.173	0.0346	0.036	0.137	234 ↗ 1.5	1.15.851	0.038	22.2
										1.15.6199	0.023	13.1
										1.4.240	0.009	5
										1.2.78	0.003	1.94
										1.15.6201	0.003	1.85
										1.4.380	0.003	1.84
										1.15.6200	0.003	1.8
										1.1.344	0.003	1.5
										1.1.345	0.003	1.48
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.19	0.038	0.021	0.17	242 ↗ 1.6	1.15.851	0.046	24.2
										1.15.6199	0.036	19.1
										1.4.240	0.009	4.9
										1.15.6201	0.005	2.66
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.165	0.033	0.022	0.143	252 → 1.5	1.15.851	0.042	25.3
										1.15.6199	0.028	16.8
										1.4.240	0.009	5.3
										1.15.6201	0.004	2.4
										1.15.6200	0.004	2.3
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.154	0.031	0.018	0.136	264 → 1.5	1.15.851	0.041	26.7
										1.15.6199	0.027	17.3
										1.4.240	0.009	5.6
										1.15.6201	0.004	2.45
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.15	0.03	0.013	0.136	276 → 1.5	1.15.851	0.042	27.8
										1.15.6199	0.027	18.1
										1.4.240	0.009	5.8
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.153	0.0306	0.013	0.14	288 → 1.5	1.15.851	0.043	27.8
										1.15.6199	0.029	18.6
										1.4.240	0.009	6.1
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.2	0.04	0.014	0.187	294 ↘ 1.4	1.15.851	0.052	25.8
										1.15.6199	0.046	22.8
										1.4.240	0.011	5.7
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.19	0.038	0.013	0.178	308 ↘ 1.5	1.15.851	0.05	26.3
										1.15.6199	0.042	21.9
										1.4.240	0.012	6.1

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.212	0.0424	0.013	0.2	318 ↘ 1.3	1.15.851	0.052	24.7
										1.15.6199	0.049	23.1
										1.4.240	0.013	6
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.188	0.0375	0.021	0.167	243 ↗ 1.6	1.15.851	0.046	24.4
										1.15.6199	0.036	19.1
										1.4.240	0.009	4.9
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.14	0.028	0.022	0.118	262 → 5.3	1.15.851	0.041	29.6
										1.15.6199	0.023	16.3
										1.4.240	0.004	3.1
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.13	0.026	0.019	0.112	275 → 5.3	1.15.851	0.039	30.2
										1.15.6199	0.022	16.9
										1.4.240	0.005	3.5
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.24	0.048	0.014	0.23	330 ↘ 1.1	1.15.6199	0.06	24.6
										1.15.851	0.05	20.8
										1.4.240	0.014	6
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.27	0.054	0.014	0.257	352 ↓ 1	1.15.6199	0.062	23
										1.15.851	0.045	16.7
										1.4.240	0.015	5.7
										1.15.6200	0.008	2.84
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.143	0.0286	0.012	0.13	17 ↓ 5.3	1.15.868	0.007	2.7
										1.15.851	0.04	28.3
										1.15.6199	0.019	13.5
										1.4.240	0.006	4
										1.2.78	0.003	2.4
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.133	0.0266	0.013	0.12	30 ↙ 5.3	1.15.867	0.003	2.27
										1.15.851	0.033	25.1
										1.15.6199	0.017	12.9
										1.4.240	0.005	3.7
										1.15.866	0.003	2.5
										1.15.867	0.003	2.5
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.178	0.0356	0.016	0.162	56 ↙ 5.3	1.15.862	0.003	2.47
										1.15.863	0.003	2.47
										1.15.851	0.048	26.9
										1.15.6199	0.023	12.7
										1.15.866	0.005	3.07
										1.15.862	0.005	3.05
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.315	0.063	0.024	0.29	104 ← 1	1.15.863	0.005	3
										1.15.867	0.005	3
										1.15.6199	0.062	19.8
										1.15.851	0.047	14.8
										1.4.240	0.014	4.6
										1.15.868	0.012	3.8
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.315	0.063	0.088	0.227	141 ↖ 1.3	1.15.865	0.011	3.55
										1.15.864	0.011	3.5
										1.15.851	0.052	16.6
										1.15.6199	0.046	14.6
										1.4.240	0.028	9
										1.4.380	0.011	3.4
										1.2.78	0.006	1.9
										1.15.6200	0.006	1.9
										1.15.6201	0.005	1.68
										1.15.868	0.005	1.66

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.344	0.069	0.185	0.16	169 ↑ 1.6	1.15.851	0.042	12.1
										1.15.6199	0.026	7.6
										1.4.240	0.015	4.4
										1.2.78	0.007	2.1
										1.4.380	0.006	1.65
										1.15.6200	0.003	1
										1.15.6201	0.003	0.93
										1.2.42	0.003	0.9
										1.15.868	0.003	0.87
										1.15.867	0.003	0.82
										1.15.865	0.003	0.82
										1.15.864	0.003	0.8
										1.15.866	0.003	0.79
										1.15.863	0.003	0.78
										1.15.862	0.003	0.77
										1.15.855	0.003	0.74
										1.15.854	0.003	0.74
										1.15.853	0.002	0.73
										1.15.852	0.002	0.72
										1.1.32	0.002	0.57
										1.15.6189	0.002	0.44
										1.15.6198	0.001	0.354
										1.15.6204	0.001	0.295
										1.21.871	0.001	0.27
										1.1.919	0.001	0.253
										1.2.76	0.001	0.25
										1.1.344	0.001	0.25
										1.1.34	0.001	0.244
										1.1.345	0.001	0.24
										1.1.33	0.001	0.237
										1.15.861	0.001	0.225
										1.2.38	0.001	0.22
										1.4.213	0.001	0.206
										1.13.6146	0.001	0.195
										1.1.36	0.001	0.182
										1.2.45	0.001	0.174
										1.1.35	0.001	0.168
										1.15.859	0.001	0.16
										1.4.316	0.001	0.155
										1.15.858	0.001	0.154
										1.2.39	4·10 ⁻⁴	0.128
										1.15.6190	4·10 ⁻⁴	0.125
										1.15.869	4·10 ⁻⁴	0.118
										1.2.129	4·10 ⁻⁴	0.115
										1.15.6203	4·10 ⁻⁴	0.105
										1.18.917	3·10 ⁻⁴	0.1
										1.15.845	3·10 ⁻⁴	0.096
										1.20.6207	3·10 ⁻⁴	0.09
										1.2.513	3·10 ⁻⁴	0.083
										1.8.976	3·10 ⁻⁴	0.074
										1.20.6205	2·10 ⁻⁴	0.06
										1.8.975	2·10 ⁻⁴	0.054
										1.13.6141	2·10 ⁻⁴	0.053
										1.4.245	2·10 ⁻⁴	0.052
										1.15.6197	2·10 ⁻⁴	0.052
										1.2.44	2·10 ⁻⁴	0.052
										1.13.6143	2·10 ⁻⁴	0.044
										1.2.40	1·10 ⁻⁴	0.034
										1.2.79	1·10 ⁻⁴	0.033

Table 1.3.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.11	0.022	0.045	0.065	229 ↗ 5.3	1.15.851	0.016	14.2
										1.15.6199	0.012	10.5
										1.4.240	0.004	3.25
										1.1.344	0.002	1.53
										1.1.345	0.002	1.53
										1.1.919	0.002	1.5
										1.2.78	0.002	1.4
										1.15.6200	0.002	1.4
										1.15.6201	0.002	1.38
										1.15.868	0.001	1.17
										1.15.867	0.001	1.16
										1.15.865	0.001	1.15
										1.4.380	0.001	1.15
										1.15.864	0.001	1.15
										1.15.863	0.001	1.14
										1.15.866	0.001	1.14
										1.15.862	0.001	1.14
										1.15.855	0.001	0.95
										1.15.854	0.001	0.94
										1.15.853	0.001	0.94
										1.15.852	0.001	0.94
										1.1.36	0.001	0.84

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.3.2.

Table 1.3.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.112	0.0225	0.022	0.09	42 ↙	5.3
2	-2171.24	1361.8	0.12	0.024	0.018	0.102	36 ↙	5.3
3	-1983.94	898.21	0.127	0.0254	0.014	0.113	28 ↙	5.3
4	-1796.63	434.62	0.128	0.0256	0.013	0.115	19 ↓	1.3
5	-1609.33	-28.98	0.133	0.0266	0.012	0.12	8 ↓	1.4
6	-1422.03	-492.57	0.133	0.0266	0.011	0.122	358 ↓	1.4
7	-1234.72	-956.16	0.128	0.0256	0.011	0.117	348 ↓	1.3
8	-1047.42	-1419.75	0.12	0.024	0.011	0.108	338 ↓	1.3
9	-860.12	-1883.34	0.111	0.0223	0.013	0.098	329 ↘	5.3
10	-672.81	-2346.94	0.104	0.0207	0.015	0.088	322 ↘	5.3
11	-485.51	-2810.53	0.096	0.019	0.017	0.078	316 ↘	5.3
12	-298.21	-3274.12	0.088	0.0176	0.019	0.069	311 ↘	5.3
13	-110.9	-3737.71	0.08	0.016	0.021	0.06	307 ↘	1
14	-1894.95	2012.7	0.125	0.025	0.022	0.103	48 ↙	5.3
15	-1707.65	1549.1	0.137	0.0273	0.016	0.12	41 ↙	5.3
16	-1520.35	1085.51	0.145	0.029	0.013	0.132	33 ↙	1.4
17	-1333.04	621.92	0.164	0.033	0.013	0.15	22 ↓	1.5
18	-1145.74	158.33	0.175	0.035	0.013	0.162	10 ↓	1.5
19	-958.44	-305.26	0.175	0.035	0.012	0.162	357 ↓	1.6
20	-771.13	-768.86	0.165	0.033	0.012	0.153	345 ↓	1.5
21	-583.83	-1232.45	0.148	0.0296	0.012	0.137	333 ↘	1.5
22	-396.53	-1696.04	0.13	0.026	0.011	0.118	324 ↘	1.4
23	-209.22	-2159.63	0.115	0.023	0.013	0.1	316 ↘	5.3
24	-21.92	-2623.22	0.104	0.0207	0.017	0.087	310 ↘	3.6
25	165.38	-3086.82	0.095	0.019	0.019	0.077	305 ↘	5.3
26	352.69	-3550.41	0.087	0.0174	0.021	0.066	301 ↘	5.3
27	-1431.36	2200	0.14	0.028	0.023	0.116	56 ↙	5.3
28	-1244.06	1736.41	0.152	0.0305	0.017	0.135	49 ↙	1.4

Table 1.3.1 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
29	-1056.75	1272.81	0.185	0.037	0.014	0.17	40 ↙	1.5
30	-869.45	809.22	0.223	0.045	0.014	0.21	28 ↙	1.5
31	-682.15	345.63	0.238	0.0475	0.014	0.224	13 ↓	1.3
32	-494.84	-117.96	0.233	0.047	0.014	0.22	357 ↓	1.2
33	-307.54	-581.55	0.217	0.043	0.013	0.204	341 ↓	1.2
34	-120.24	-1045.14	0.192	0.0384	0.013	0.18	327 ↘	1.5
35	67.07	-1508.74	0.16	0.032	0.012	0.147	316 ↘	1.6
36	254.37	-1972.33	0.13	0.026	0.012	0.118	309 ↘	1.4
37	441.67	-2435.92	0.114	0.023	0.015	0.099	302 ↘	5.3
38	628.98	-2899.51	0.103	0.0205	0.019	0.084	298 ↘	5.3
39	816.28	-3363.1	0.092	0.0185	0.021	0.071	295 ↘	5.3
40	-967.77	2387.3	0.155	0.031	0.026	0.13	65 ↙	5.3
41	-780.46	1923.71	0.178	0.0356	0.016	0.162	59 ↙	5.3
42	-593.16	1460.12	0.235	0.047	0.016	0.22	50 ↙	1.5
43	-405.86	996.53	0.3	0.06	0.016	0.284	37 ↙	1.1
44	-218.55	532.93	0.326	0.065	0.016	0.31	17 ↓	1
45	-31.25	69.34	0.303	0.061	0.015	0.29	353 ↓	0.7
46	156.05	-394.25	0.274	0.055	0.015	0.26	333 ↘	1
47	343.35	-857.84	0.237	0.0475	0.014	0.224	317 ↘	1.2
48	530.66	-1321.43	0.195	0.039	0.013	0.182	306 ↘	1.4
49	717.96	-1785.03	0.15	0.03	0.012	0.138	299 ↘	1.5
50	905.26	-2248.62	0.123	0.0247	0.015	0.108	294 ↘	1.3
51	1092.57	-2712.21	0.108	0.0217	0.02	0.089	290 →	3.7
52	1279.87	-3175.8	0.098	0.0196	0.021	0.076	288 →	5.3
53	-504.18	2574.61	0.17	0.034	0.033	0.137	76 ←	5.3
54	-316.87	2111.01	0.2	0.04	0.018	0.183	71 ←	1.6
55	-129.57	1647.42	0.28	0.056	0.018	0.264	66 ↙	1.3
56	57.73	1183.83	0.42	0.083	0.018	0.4	54 ↙	1.1
57	245.04	720.24	0.6	0.119	0.018	0.58	23 ↙	0.6
58	432.34	256.65	0.44	0.088	0.017	0.425	343 ↓	0.5
59	619.64	-206.95	0.39	0.078	0.016	0.375	318 ↘	0.6
60	806.95	-670.54	0.29	0.058	0.015	0.275	300 ↘	1.1
61	994.25	-1134.13	0.223	0.045	0.014	0.21	292 →	1.2
62	1181.55	-1597.72	0.17	0.034	0.013	0.157	287 →	1.7
63	1368.86	-2061.31	0.133	0.0266	0.015	0.118	283 →	5.3
64	1556.16	-2524.91	0.116	0.023	0.02	0.096	281 →	5.3
65	1743.46	-2988.5	0.103	0.0205	0.023	0.08	280 →	5.3
66	-40.58	2761.91	0.182	0.0365	0.044	0.138	88 ←	5.3
67	146.72	2298.32	0.217	0.0435	0.027	0.19	86 ←	1.6
68	334.02	1834.72	0.3	0.06	0.021	0.28	86 ←	1.1
69	521.33	1371.13	0.48	0.097	0.021	0.46	86 ←	0.9
70	708.63	907.54	1.38	0.275	0.02	1.36	79 ←	0.6
71	895.93	443.95	2.7	0.541	0.019	2.7	29 ↙	0.8
72	1083.24	-19.64	0.6	0.119	0.018	0.58	282 →	5.3
73	1270.54	-483.24	0.34	0.068	0.017	0.32	275 →	3.8
74	1457.84	-946.83	0.237	0.047	0.015	0.22	275 →	1.3
75	1645.15	-1410.42	0.18	0.036	0.014	0.166	274 →	1.6
76	1832.45	-1874.01	0.14	0.028	0.017	0.123	272 →	5.3
77	2019.75	-2337.6	0.12	0.024	0.022	0.099	272 →	5.3
78	2207.06	-2801.19	0.106	0.0212	0.025	0.082	272 →	5.3
79	423.01	2949.21	0.196	0.039	0.062	0.133	98 ←	1.4
80	610.31	2485.62	0.23	0.046	0.049	0.18	101 ←	1.6
81	797.61	2022.03	0.277	0.055	0.025	0.253	106 ←	1.2
82	984.92	1558.44	0.39	0.079	0.024	0.37	111 ←	0.5
83	1172.22	1094.84	0.76	0.153	0.023	0.74	105 ←	1.6
84	1359.52	631.25	0.54	0.107	0.022	0.51	260 →	1.9
85	1546.83	167.66	0.5	0.1	0.02	0.48	232 ↗	3.6
86	1734.13	-295.93	0.32	0.064	0.018	0.3	249 →	1.7
87	1921.43	-759.52	0.24	0.048	0.017	0.22	255 →	5.3
88	2108.74	-1223.12	0.178	0.0355	0.015	0.162	260 →	1.6
89	2296.04	-1686.71	0.144	0.029	0.021	0.122	261 →	5.3
90	2483.34	-2150.3	0.123	0.0245	0.026	0.096	264 →	1.2
91	2670.65	-2613.89	0.108	0.0216	0.028	0.08	264 →	4.7
92	886.6	3136.51	0.21	0.042	0.088	0.124	109 ←	1.3
93	1073.9	2672.92	0.243	0.049	0.082	0.16	114 ↖	1.5

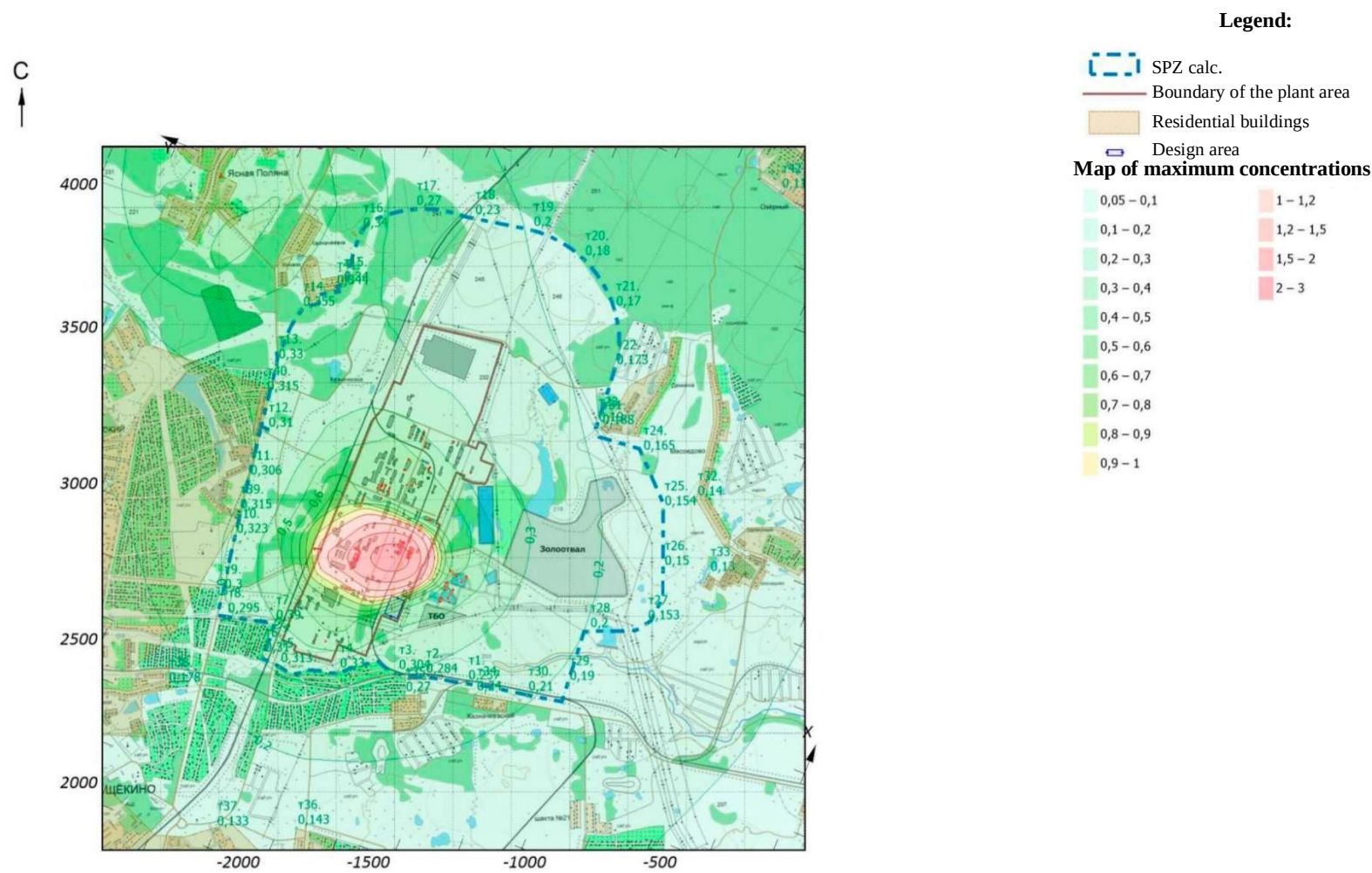
Table 1.3.1 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
94	1261.21	2209.33	0.28	0.056	0.063	0.22	122 ↖	1.4
95	1448.51	1745.74	0.32	0.064	0.032	0.29	134 ↖	1
96	1635.81	1282.15	0.46	0.093	0.028	0.44	156 ↖	0.5
97	1823.12	818.56	0.52	0.104	0.025	0.5	192 ↑	0.5
98	2010.42	354.96	0.355	0.071	0.023	0.33	222 ↗	0.5
99	2197.72	-108.63	0.267	0.053	0.02	0.247	232 ↗	1.1
100	2385.03	-572.22	0.215	0.043	0.018	0.197	242 ↗	1.3
101	2572.33	-1035.81	0.172	0.0344	0.022	0.15	248 →	1.6
102	2759.63	-1499.4	0.144	0.029	0.028	0.116	253 →	1.3
103	2946.94	-1963	0.125	0.025	0.03	0.095	254 →	5.3
104	3134.24	-2426.59	0.11	0.022	0.031	0.08	257 →	5.3
105	1350.19	3323.82	0.234	0.047	0.123	0.11	119 ↖	1.2
106	1537.49	2860.23	0.27	0.054	0.13	0.14	125 ↖	1.4
107	1724.8	2396.63	0.3	0.06	0.122	0.178	134 ↖	1.5
108	1912.1	1933.04	0.32	0.064	0.096	0.225	146 ↖	1.4
109	2099.4	1469.45	0.33	0.066	0.061	0.27	163 ↑	1.1
110	2286.71	1005.86	0.324	0.065	0.03	0.294	184 ↑	1
111	2474.01	542.27	0.29	0.059	0.026	0.267	205 ↗	1.2
112	2661.31	78.67	0.243	0.049	0.025	0.22	220 ↗	1.3
113	2848.62	-384.92	0.2	0.04	0.029	0.172	230 ↗	1.6
114	3035.92	-848.51	0.168	0.0335	0.034	0.134	238 ↗	1.5
115	3223.22	-1312.1	0.143	0.0286	0.035	0.108	242 ↗	5.3
116	3410.53	-1775.69	0.124	0.025	0.035	0.089	247 ↗	3.8
117	3597.83	-2239.28	0.11	0.022	0.034	0.075	250 →	4.9
118	1813.78	3511.12	0.27	0.054	0.17	0.098	127 ↖	1.2
119	2001.09	3047.53	0.32	0.064	0.2	0.117	134 ↖	1.3
120	2188.39	2583.94	0.35	0.071	0.21	0.14	142 ↖	1.4
121	2375.69	2120.35	0.35	0.07	0.183	0.17	154 ↖	1.6
122	2563	1656.75	0.33	0.066	0.135	0.194	167 ↑	1.6
123	2750.3	1193.16	0.3	0.06	0.092	0.207	182 ↑	1.5
124	2937.6	729.57	0.265	0.053	0.065	0.2	198 ↑	1.6
125	3124.91	265.98	0.227	0.0455	0.052	0.175	211 ↗	1.8
126	3312.21	-197.61	0.19	0.038	0.048	0.143	221 ↗	3.5
127	3499.51	-661.21	0.162	0.0324	0.046	0.117	229 ↗	1.4
128	3686.82	-1124.8	0.142	0.0284	0.041	0.1	235 ↗	5.3
129	3874.12	-1588.39	0.124	0.025	0.039	0.085	239 ↗	5.3
130	4061.42	-2051.98	0.11	0.022	0.037	0.073	243 ↗	5.3
131	2277.38	3698.42	0.32	0.064	0.23	0.087	134 ↖	5.3
132	2464.68	3234.83	0.43	0.085	0.33	0.1	140 ↖	1.2
133	2651.98	2771.24	0.51	0.102	0.394	0.114	148 ↖	1.3
134	2839.29	2307.65	0.45	0.09	0.32	0.13	158 ↑	1.4
135	3026.59	1844.06	0.36	0.072	0.216	0.142	170 ↑	1.5
136	3213.89	1380.47	0.293	0.059	0.145	0.15	182 ↑	1.5
137	3401.2	916.87	0.25	0.05	0.102	0.145	194 ↑	1.5
138	3588.5	453.28	0.214	0.043	0.076	0.137	205 ↗	3.7
139	3775.8	-10.31	0.184	0.037	0.062	0.122	214 ↗	3.8
140	3963.11	-473.9	0.16	0.032	0.053	0.108	222 ↗	5.3
141	4150.41	-937.49	0.14	0.028	0.047	0.092	228 ↗	5.3
142	4337.71	-1401.09	0.12	0.024	0.045	0.074	234 ↗	1.1
143	4525.01	-1864.68	0.109	0.0217	0.04	0.068	237 ↗	5.3
144	2740.97	3885.73	0.37	0.074	0.293	0.077	140 ↖	5.3
145	2928.27	3422.14	0.49	0.098	0.406	0.086	146 ↖	5.3
146	3115.57	2958.54	0.5	0.099	0.4	0.094	153 ↖	1.2
147	3302.88	2494.95	0.5	0.1	0.4	0.104	162 ↑	5.3
148	3490.18	2031.36	0.4	0.08	0.29	0.11	172 ↑	5.3
149	3677.48	1567.77	0.296	0.059	0.18	0.115	181 ↑	5.3
150	3864.79	1104.18	0.24	0.048	0.124	0.117	191 ↑	5.3
151	4052.09	640.58	0.205	0.041	0.091	0.114	201 ↑	5.3
152	4239.39	176.99	0.177	0.0354	0.072	0.105	209 ↗	5.3
153	4426.7	-286.6	0.154	0.031	0.06	0.094	217 ↗	5.3
154	4614	-750.19	0.135	0.027	0.053	0.082	223 ↗	5.3
155	4801.3	-1213.78	0.12	0.024	0.047	0.072	228 ↗	5.3
156	4988.61	-1677.37	0.106	0.0213	0.043	0.063	232 ↗	5.3
157	3204.56	4073.03	0.37	0.074	0.3	0.068	144 ↖	5.3
158	3391.86	3609.44	0.48	0.097	0.41	0.075	150 ↖	5.3

Table 1.3.1 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
159	3579.17	3145.85	0.49	0.098	0.41	0.08	157 ↖	1.1
160	3766.47	2682.26	0.49	0.098	0.405	0.087	165 ↑	5.3
161	3953.77	2218.66	0.394	0.079	0.3	0.092	173 ↑	5.3
162	4141.08	1755.07	0.285	0.057	0.19	0.096	181 ↑	5.3
163	4328.38	1291.48	0.23	0.046	0.133	0.096	190 ↑	5.3
164	4515.68	827.89	0.193	0.039	0.1	0.094	198 ↑	5.3
165	4702.99	364.3	0.167	0.0334	0.079	0.088	205 ↗	5.3
166	4890.29	-99.3	0.146	0.029	0.066	0.08	212 ↗	5.3
167	5077.59	-562.89	0.126	0.025	0.059	0.067	218 ↗	1.1
168	5264.9	-1026.48	0.115	0.023	0.05	0.065	223 ↗	5.3
169	5452.2	-1490.07	0.103	0.0205	0.046	0.057	227 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.3.1, scale 1:50000.



1.4 Calculation of contamination — substance 304 - Nitrogen oxide

Full name of the substance with code 304 – Nitrogen (II) oxide (Nitrogen Oxide). The maximum single allowed concentration is 0.4 mg/m³, hazard class 3.

The number of sources of atmospheric contamination to be considered in the calculation is 69 (including: 45 stationary sources, 24 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 39; 11-20 m – 3; 21-29 m – 12; 30-50 m – 10; 51-100 m – 3; above 100 m – 2.

The total emissions from the sources used in the calculations makes up 69.064 g/s and 300.744 TPA.
42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.059**, which is reached in point No. 7 at the boundary of SPZ and garden plots, X=402284.26 Y=-637058.5, at wind direction 46° and wind speed 3.9 m/s inclusive of: the input from the plant emitters — 0.059;

- in the residential area, it makes up **0.052**, which is reached in point No.39 at the boundary of Pervomayskiy, X=401977.49 Y=-636111.8, wind direction is 94°, wind velocity is 3.7 m/s inclusive of: the input from the plant emitters 0.052.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.4.1.

Table 1.4.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Calculated - concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	Yo
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.047	0.019	-	0.047	331 ↘ 4	1.14.832	0.022	45.7
										1.15.851	0.011	22.7
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.052	0.021	-	0.052	344 ↓ 4	1.14.832	0.023	43.4
										1.15.851	0.012	22.4
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.055	0.022	-	0.055	354 ↓ 4	1.14.832	0.023	41.6
										1.15.851	0.011	19.7
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.051	0.0204	-	0.051	16 ↓ 3,8	1.14.832	0.023	44.8
										1.14.831	0.008	15.4
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.054	0.0215	-	0.054	34 ↗ 3,9	1.14.832	0.023	41.9
										1.14.831	0.007	13.5
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.056	0.0225	-	0.056	41 ↗ 3.9	1.14.832	0.022	39.7
										1.14.831	0.007	12.7
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.059	0.0235	-	0.059	46 ↗ 3.9	1.14.832	0.025	42.2
										1.14.831	0.009	15.4
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.048	0.0193	-	0.048	57 ↗ 4	1.14.832	0.022	46.1
										1.14.831	0.007	14.7

Table 1.4.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.049	0.0194	-	0.049	64 ↙ 3.9	1.14.832	0.022	45.9
										1.14.831	0.007	15.1
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.05	0.02	-	0.05	83 ← 3.6	1.14.832	0.024	47.1
										1.14.831	0.009	17.7
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.055	0.022	-	0.055	110 ← 3.9	1.14.832	0.026	46.1
										1.14.831	0.01	17.5
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.052	0.021	-	0.052	132 ↖ 4	1.14.832	0.025	47
										1.15.851	0.01	18.5
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.044	0.0177	-	0.044	149 ↖ 4.5	1.14.832	0.022	49.1
										1.15.851	0.007	15
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.042	0.017	-	0.042	161 ↑ 5.3	1.14.832	0.019	45.6
										1.14.831	0.005	12.1
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.045	0.018	-	0.045	171 ↑ 5.3	1.14.832	0.018	40.4
										1.15.851	0.005	10.5
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.04	0.016	-	0.04	177 ↑ 5.3	1.14.832	0.015	38
										1.21.872	0.005	11.7
										1.12.6158	0.004	8.8
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.039	0.0156	-	0.039	187 ↑ 5.3	1.14.832	0.014	35.8
										1.21.872	0.004	10.5
										1.12.6158	0.003	8
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.04	0.016	-	0.04	197 ↑ 5.3	1.14.832	0.014	34.4
										1.21.872	0.003	8.4
										1.14.831	0.003	7.4
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.04	0.016	-	0.04	207 ↗ 5.3	1.14.832	0.013	32.4
										1.16.952	0.003	7.6
										1.16.953	0.003	7.3
										1.15.851	0.003	7
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.041	0.0163	-	0.041	217 ↗ 5.3	1.14.832	0.013	31.3
										1.16.952	0.003	8.2
										1.16.953	0.003	8
										1.15.851	0.003	6.8
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.042	0.0168	-	0.042	227 ↗ 5.3	1.14.832	0.014	32.2
										1.16.952	0.003	8
										1.16.953	0.003	7.9
										1.14.831	0.003	6.9
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.044	0.0175	-	0.044	237 ↗ 4	1.14.832	0.015	33.8
										1.14.831	0.003	7.8
										1.3.242	0.003	7.7
										1.15.851	0.003	6.9
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.043	0.0173	-	0.043	247 ↗ 3.7	1.14.832	0.017	38.9
										1.14.831	0.004	10
										1.15.851	0.003	7.2
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.035	0.014	-	0.035	256 → 3.7	1.14.832	0.015	42.5
										1.14.831	0.004	10
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.031	0.0124	-	0.031	267 → 3.9	1.14.832	0.015	47
										1.15.851	0.004	12
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.029	0.0118	-	0.029	279 → 4	1.14.832	0.014	49.2
										1.15.851	0.004	13.6
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.03	0.012	-	0.03	290 → 5.3	1.14.832	0.015	51.9
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.036	0.0144	-	0.036	296 ↘ 4.7	1.14.832	0.018	50.3
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.035	0.014	-	0.035	310 ↘ 4.8	1.14.832	0.018	49.8
										1.15.851	0.006	18.3
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.039	0.0156	-	0.039	319 ↘ 4.6	1.14.832	0.019	48.2
										1.15.851	0.008	19.8
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.042	0.017	-	0.042	248 → 3.6	1.14.832	0.016	39
										1.14.831	0.004	9.9
										1.15.851	0.003	7.5

Table 1.4.1 (continued)

Description	Type	Coordinates			Calculated - concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	Yo
1	2	3	4	5	6	7	8	9	10	11	12	13
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.029	0.0115	-	0.029	265 → 3.8	1.14.832	0.013	43.7
										1.15.851	0.003	11.5
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.026	0.0105	-	0.026	278 → 3.9	1.14.832	0.012	45.8
										1.15.851	0.003	12.9
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.045	0.0178	-	0.045	330 ↘ 4.1	1.14.832	0.021	46.6
										1.15.851	0.01	21.4
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.051	0.0205	-	0.051	352 ↓ 4.1	1.14.832	0.022	42.9
										1.15.851	0.009	18.2
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.034	0.0137	-	0.034	15 ↓ 5.3	1.14.832	0.014	41
										1.15.851	0.003	9.4
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.036	0.0143	-	0.036	28 ↙ 5.3	1.14.832	0.013	35.4
										1.16.952	0.003	9.8
										1.16.953	0.003	9.3
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.041	0.0163	-	0.041	53 ↙ 4	1.14.832	0.016	39.1
										1.14.831	0.004	9.5
										1.15.851	0.004	8.8
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.052	0.021	-	0.052	94 ← 3.7	1.14.832	0.025	47.7
										1.14.831	0.009	18.1
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.047	0.019	-	0.047	140 ↖ 4.1	1.14.832	0.023	49
										1.15.851	0.008	16.7
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.044	0.0177	-	0.044	169 ↑ 5.3	1.14.832	0.018	40.6
										1.15.851	0.005	11
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.027	0.0108	-	0.027	229 ↗ 5.3	1.14.832	0.007	25.3
										1.21.872	0.005	17.1
										1.16.952	0.003	9.6

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.4.2.

Table 1.4.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.031	0.0123	-	0.031	41 ↙	5.3
2	-2171.24	1361.8	0.033	0.0133	-	0.033	34 ↙	5.3
3	-1983.94	898.21	0.034	0.0136	-	0.034	26 ↙	5.3
4	-1796.63	434.62	0.033	0.0133	-	0.033	16 ↓	4.6
5	-1609.33	-28.98	0.033	0.013	-	0.033	8 ↓	5.3
6	-1422.03	-492.57	0.033	0.013	-	0.033	358 ↓	5.3
7	-1234.72	-956.16	0.032	0.0127	-	0.032	347 ↓	5.3
8	-1047.42	-1419.75	0.03	0.0118	-	0.03	337 ↘	5.3
9	-860.12	-1883.34	0.027	0.0108	-	0.027	328 ↘	5.3
10	-672.81	-2346.94	0.025	0.01	-	0.025	321 ↘	5.3
11	-485.51	-2810.53	0.023	0.0093	-	0.023	314 ↘	5.3
12	-298.21	-3274.12	0.022	0.0089	-	0.022	308 ↘	5.3
13	-110.9	-3737.71	0.022	0.0087	-	0.022	304 ↘	5.3
14	-1894.95	2012.7	0.033	0.0132	-	0.033	47 ↙	5.3
15	-1707.65	1549.1	0.037	0.0148	-	0.037	39 ↙	5.3
16	-1520.35	1085.51	0.039	0.0157	-	0.039	30 ↙	4.6
17	-1333.04	621.92	0.038	0.0152	-	0.038	20 ↓	4
18	-1145.74	158.33	0.036	0.0146	-	0.036	9 ↓	4
19	-958.44	-305.26	0.038	0.015	-	0.038	357 ↓	5.3
20	-771.13	-768.86	0.036	0.0145	-	0.036	344 ↓	5.3
21	-583.83	-1232.45	0.032	0.013	-	0.032	333 ↘	5.3
22	-396.53	-1696.04	0.029	0.0115	-	0.029	324 ↘	5.3

Table 1.4.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
23	-209.22	-2159.63	0.026	0.0103	-	0.026	316 ↘	5.3
24	-21.92	-2623.22	0.024	0.0094	-	0.024	309 ↘	5.3
25	165.38	-3086.82	0.022	0.0089	-	0.022	303 ↘	5.3
26	352.69	-3550.41	0.022	0.0086	-	0.022	298 ↘	5.3
27	-1431.36	2200	0.034	0.0136	-	0.034	54 ↙	5.3
28	-1244.06	1736.41	0.04	0.016	-	0.04	47 ↙	4.6
29	-1056.75	1272.81	0.046	0.0182	-	0.046	37 ↙	4.1
30	-869.45	809.22	0.044	0.0177	-	0.044	25 ↙	3.9
31	-682.15	345.63	0.042	0.017	-	0.042	12 ↓	4
32	-494.84	-117.96	0.045	0.018	-	0.045	356 ↓	4.6
33	-307.54	-581.55	0.042	0.0167	-	0.042	340 ↓	4.7
34	-120.24	-1045.14	0.037	0.0146	-	0.037	327 ↘	5.3
35	67.07	-1508.74	0.032	0.0127	-	0.032	317 ↘	5.3
36	254.37	-1972.33	0.027	0.011	-	0.027	309 ↘	5.3
37	441.67	-2435.92	0.024	0.0096	-	0.024	303 ↘	4.9
38	628.98	-2899.51	0.022	0.009	-	0.022	297 ↘	5.3
39	816.28	-3363.1	0.022	0.0086	-	0.022	292 →	5.3
40	-967.77	2387.3	0.033	0.0133	-	0.033	62 ↙	4
41	-780.46	1923.71	0.039	0.0158	-	0.039	56 ↙	3.9
42	-593.16	1460.12	0.048	0.0193	-	0.048	47 ↙	4
43	-405.86	996.53	0.053	0.021	-	0.053	33 ↙	3.9
44	-218.55	532.93	0.051	0.0202	-	0.051	16 ↓	3.9
45	-31.25	69.34	0.054	0.0217	-	0.054	355 ↓	4
46	156.05	-394.25	0.05	0.02	-	0.05	334 ↘	4
47	343.35	-857.84	0.044	0.0175	-	0.044	318 ↘	4.1
48	530.66	-1321.43	0.036	0.0143	-	0.036	308 ↘	4.8
49	717.96	-1785.03	0.03	0.0118	-	0.03	301 ↘	5.3
50	905.26	-2248.62	0.025	0.01	-	0.025	295 ↘	4
51	1092.57	-2712.21	0.023	0.0091	-	0.023	291 →	5.3
52	1279.87	-3175.8	0.022	0.0087	-	0.022	286 →	5.3
53	-504.18	2574.61	0.032	0.013	-	0.032	71 ←	4
54	-316.87	2111.01	0.039	0.0156	-	0.039	66 ↙	4
55	-129.57	1647.42	0.047	0.019	-	0.047	58 ↙	4
56	57.73	1183.83	0.057	0.023	-	0.057	47 ↙	3.9
57	245.04	720.24	0.06	0.024	-	0.06	23 ↙	3.9
58	432.34	256.65	0.06	0.024	-	0.06	352 ↓	3.3
59	619.64	-206.95	0.074	0.0296	-	0.074	320 ↘	3.9
60	806.95	-670.54	0.051	0.0205	-	0.051	303 ↘	4.1
61	994.25	-1134.13	0.04	0.0158	-	0.04	295 ↘	4.5
62	1181.55	-1597.72	0.032	0.0127	-	0.032	290 →	4.8
63	1368.86	-2061.31	0.027	0.0107	-	0.027	286 →	5.3
64	1556.16	-2524.91	0.024	0.0094	-	0.024	283 →	5.3
65	1743.46	-2988.5	0.022	0.0088	-	0.022	279 →	5.3
66	-40.58	2761.91	0.033	0.013	-	0.033	82 ←	4
67	146.72	2298.32	0.04	0.016	-	0.04	80 ←	4
68	334.02	1834.72	0.048	0.0193	-	0.048	76 ←	3.7
69	521.33	1371.13	0.054	0.0217	-	0.054	69 ←	3.7
70	708.63	907.54	0.066	0.0265	-	0.066	48 ↙	3.8
71	895.93	443.95	0.038	0.015	-	0.038	354 ↓	1.8
72	1083.24	-19.64	0.059	0.0234	-	0.059	291 →	3.3
73	1270.54	-483.24	0.051	0.0203	-	0.051	283 →	3.9
74	1457.84	-946.83	0.041	0.0163	-	0.041	279 →	4
75	1645.15	-1410.42	0.033	0.0132	-	0.033	277 →	4
76	1832.45	-1874.01	0.028	0.0112	-	0.028	276 →	3.9
77	2019.75	-2337.6	0.025	0.0099	-	0.025	274 →	3.9
78	2207.06	-2801.19	0.023	0.009	-	0.023	272 →	5.3
79	423.01	2949.21	0.032	0.0128	-	0.032	94 ←	4
80	610.31	2485.62	0.039	0.0158	-	0.039	96 ←	4
81	797.61	2022.03	0.049	0.0197	-	0.049	99 ←	3.9
82	984.92	1558.44	0.061	0.0244	-	0.061	105 ←	3.6
83	1172.22	1094.84	0.055	0.022	-	0.055	124 ↖	3.5
84	1359.52	631.25	0.3	0.12	-	0.3	331 ↘	0.7
85	1546.83	167.66	0.056	0.0223	-	0.056	255 →	3.8
86	1734.13	-295.93	0.047	0.019	-	0.047	260 →	3.8
87	1921.43	-759.52	0.041	0.0163	-	0.041	263 →	3.9

Table 1.4.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
88	2108.74	-1223.12	0.034	0.0137	-	0.034	264 →	3.9
89	2296.04	-1686.71	0.03	0.0118	-	0.03	265 →	3.8
90	2483.34	-2150.3	0.026	0.0104	-	0.026	265 →	3.8
91	2670.65	-2613.89	0.023	0.0094	-	0.023	265 →	4
92	886.6	3136.51	0.031	0.0123	-	0.031	107 ←	5.1
93	1073.9	2672.92	0.037	0.015	-	0.037	111 ←	4.1
94	1261.21	2209.33	0.047	0.0186	-	0.047	119 ↖	4
95	1448.51	1745.74	0.055	0.022	-	0.055	131 ↖	3.9
96	1635.81	1282.15	0.069	0.0274	-	0.069	106 ←	3.7
97	1823.12	818.56	0.21	0.083	-	0.21	226 ↗	0.9
98	2010.42	354.96	0.079	0.0314	-	0.079	223 ↗	3.6
99	2197.72	-108.63	0.062	0.025	-	0.062	243 ↗	2
100	2385.03	-572.22	0.045	0.018	-	0.045	248 →	3.5
101	2572.33	-1035.81	0.037	0.015	-	0.037	252 →	3.7
102	2759.63	-1499.4	0.032	0.0127	-	0.032	255 →	3.8
103	2946.94	-1963	0.027	0.011	-	0.027	257 →	3.9
104	3134.24	-2426.59	0.025	0.0098	-	0.025	257 →	5.3
105	1350.19	3323.82	0.029	0.0118	-	0.029	118 ↖	5.3
106	1537.49	2860.23	0.035	0.0138	-	0.035	124 ↖	5.3
107	1724.8	2396.63	0.041	0.0163	-	0.041	133 ↖	4.1
108	1912.1	1933.04	0.047	0.0187	-	0.047	146 ↖	4.1
109	2099.4	1469.45	0.052	0.021	-	0.052	163 ↑	4.1
110	2286.71	1005.86	0.076	0.0303	-	0.076	189 ↑	4.1
111	2474.01	542.27	0.059	0.0237	-	0.059	208 ↗	3.8
112	2661.31	78.67	0.063	0.025	-	0.063	223 ↗	3.9
113	2848.62	-384.92	0.053	0.021	-	0.053	234 ↗	3.9
114	3035.92	-848.51	0.041	0.0165	-	0.041	241 ↗	4
115	3223.22	-1312.1	0.034	0.0135	-	0.034	245 ↗	4
116	3410.53	-1775.69	0.029	0.0115	-	0.029	248 →	5.3
117	3597.83	-2239.28	0.026	0.0103	-	0.026	250 →	5.3
118	1813.78	3511.12	0.028	0.0114	-	0.028	127 ↖	5.3
119	2001.09	3047.53	0.032	0.013	-	0.032	134 ↖	5.3
120	2188.39	2583.94	0.037	0.0147	-	0.037	143 ↖	5.3
121	2375.69	2120.35	0.041	0.0165	-	0.041	154 ↖	5.3
122	2563	1656.75	0.048	0.0193	-	0.048	167 ↑	5.3
123	2750.3	1193.16	0.055	0.022	-	0.055	185 ↑	5.3
124	2937.6	729.57	0.051	0.0205	-	0.051	201 ↑	3.9
125	3124.91	265.98	0.051	0.0206	-	0.051	213 ↗	4
126	3312.21	-197.61	0.048	0.0192	-	0.048	223 ↗	4.5
127	3499.51	-661.21	0.041	0.0164	-	0.041	231 ↗	5.3
128	3686.82	-1124.8	0.034	0.0138	-	0.034	237 ↗	5.3
129	3874.12	-1588.39	0.03	0.0119	-	0.03	241 ↗	5.3
130	4061.42	-2051.98	0.026	0.0105	-	0.026	243 ↗	5.3
131	2277.38	3698.42	0.028	0.011	-	0.028	135 ↖	5.3
132	2464.68	3234.83	0.031	0.0122	-	0.031	141 ↖	5.3
133	2651.98	2771.24	0.034	0.0136	-	0.034	150 ↖	5.3
134	2839.29	2307.65	0.038	0.015	-	0.038	159 ↑	5.3
135	3026.59	1844.06	0.042	0.0168	-	0.042	171 ↑	5.3
136	3213.89	1380.47	0.045	0.018	-	0.045	184 ↑	5.3
137	3401.2	916.87	0.044	0.0176	-	0.044	197 ↑	4.1
138	3588.5	453.28	0.044	0.0174	-	0.044	207 ↗	5.3
139	3775.8	-10.31	0.042	0.0168	-	0.042	216 ↗	5.3
140	3963.11	-473.9	0.038	0.0153	-	0.038	223 ↗	5.3
141	4150.41	-937.49	0.034	0.0134	-	0.034	229 ↗	5.3
142	4337.71	-1401.09	0.03	0.0118	-	0.03	234 ↗	5.3
143	4525.01	-1864.68	0.027	0.0106	-	0.027	237 ↗	5.3
144	2740.97	3885.73	0.027	0.0108	-	0.027	141 ↖	5.3
145	2928.27	3422.14	0.029	0.0117	-	0.029	147 ↖	5.3
146	3115.57	2958.54	0.032	0.0127	-	0.032	154 ↖	5.3
147	3302.88	2494.95	0.035	0.0138	-	0.035	163 ↑	5.3
148	3490.18	2031.36	0.037	0.015	-	0.037	173 ↑	5.3
149	3677.48	1567.77	0.039	0.0155	-	0.039	183 ↑	5.3
150	3864.79	1104.18	0.039	0.0156	-	0.039	193 ↑	5.3
151	4052.09	640.58	0.039	0.0154	-	0.039	202 ↑	5.3
152	4239.39	176.99	0.037	0.015	-	0.037	210 ↗	5.3

Table 1.4.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
153	4426.7	-286.6	0.035	0.014	-	0.035	217 ↗	5.3
154	4614	-750.19	0.032	0.0127	-	0.032	223 ↗	5.3
155	4801.3	-1213.78	0.029	0.0115	-	0.029	228 ↗	5.3
156	4988.61	-1677.37	0.026	0.0105	-	0.026	232 ↗	5.3
157	3204.56	4073.03	0.026	0.0105	-	0.026	146 ↖	5.3
158	3391.86	3609.44	0.028	0.0112	-	0.028	151 ↖	5.3
159	3579.17	3145.85	0.03	0.012	-	0.03	158 ↑	5.3
160	3766.47	2682.26	0.032	0.0127	-	0.032	166 ↑	5.3
161	3953.77	2218.66	0.034	0.0134	-	0.034	174 ↑	5.3
162	4141.08	1755.07	0.035	0.0138	-	0.035	182 ↑	5.3
163	4328.38	1291.48	0.035	0.014	-	0.035	191 ↑	5.3
164	4515.68	827.89	0.035	0.0138	-	0.035	199 ↑	5.3
165	4702.99	364.3	0.034	0.0134	-	0.034	206 ↗	5.3
166	4890.29	-99.3	0.032	0.0127	-	0.032	213 ↗	5.3
167	5077.59	-562.89	0.03	0.012	-	0.03	218 ↗	5.3
168	5264.9	-1026.48	0.028	0.011	-	0.028	223 ↗	5.3
169	5452.2	-1490.07	0.025	0.0102	-	0.025	227 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on **Figure 1.4.1**, scale 1:50000.

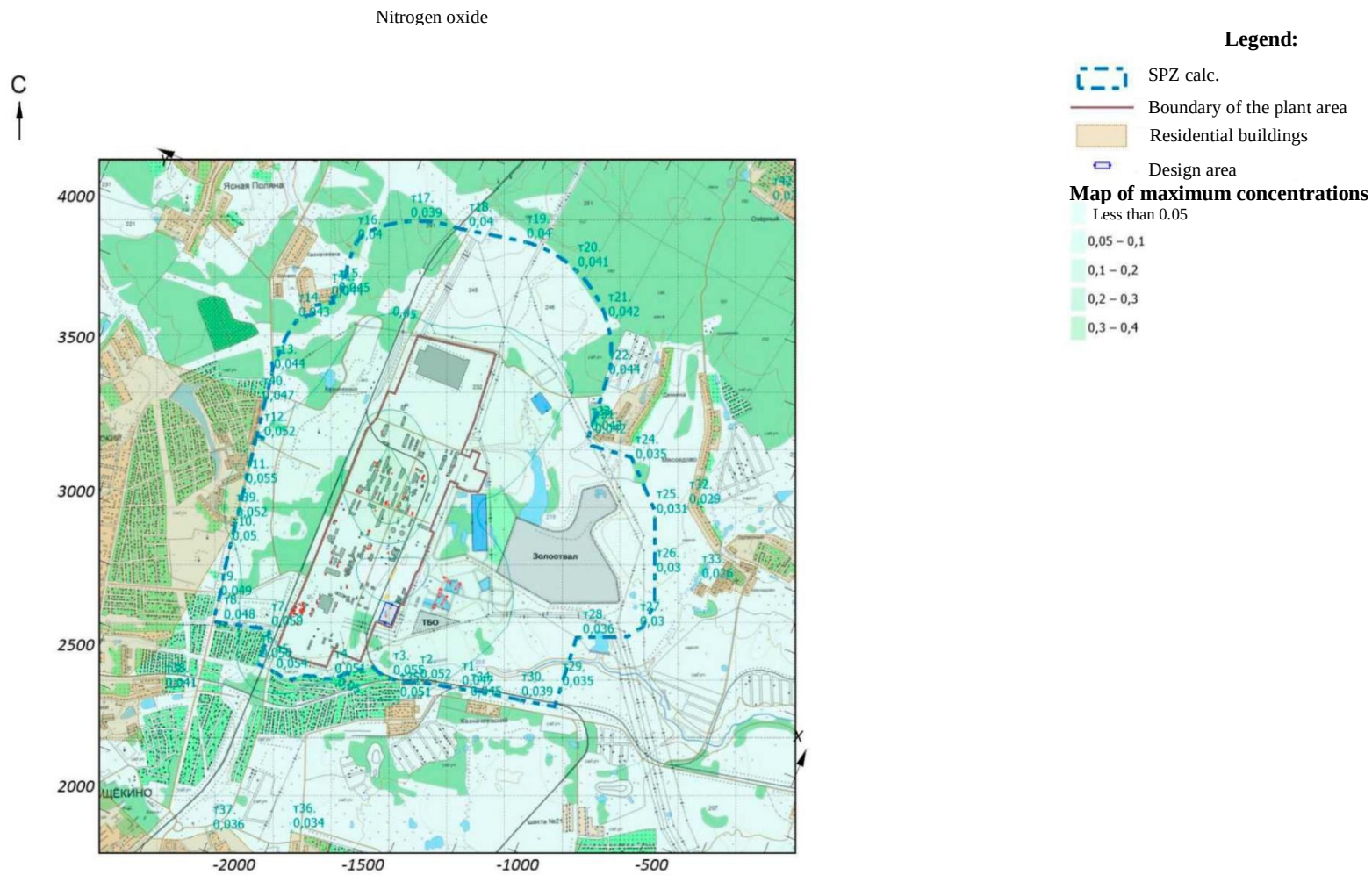


Figure 1.4.1 — Case No. 1, calculation for all enterprises and plants within the industrial site — prospects for development.Calc. site No. 1
Calculation for the entire cluster of industrial enterprises and plants within the industrial site.

Scale 1:50000

1.5 Calculation of contamination — substance 330. Sulphur dioxide

Full name of the substance with code 330 — Sulphur Dioxide (Sulphurous Anhydride). The maximum single allowed concentration is 0,5 mg/m³, hazard class 3.

The number of sources of atmospheric contamination to be considered in the calculation is 41 (including: 21 stationary sources, 20 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 24; 11-20 m – none; 21-29 m – 3; 30-50 m – 9; 51-100 m – 3; above 100 m – 2.

The total emissions from the sources used in the calculations makes up 28.33 g/s and 188.036 TPA.

The calculation included the background concentrations given in Atmospheric Contamination Checkpoint No. 1 (ACCP).

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.029**, which is reached in point No. 21 at the boundary of SPZ X=405194.75 Y=-634372.7, at wind direction 227 ° and wind speed 4 m/s inclusive of: background concentration – 0.002 (background concentration before interpolation — 0.00035), input from plant emitters — 0.028;

- in the residential area, it makes up **0.027**, which is reached in point No. 31 at the boundary of Deminka, X=405078.6 Y=-635389.1, wind direction is 256°, wind velocity is 0.8 m/s inclusive of: background concentration – 0.002 (background concentration before interpolation — 0.00032), input from plant emitters — 0.026.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.5.1.

Table 1.5.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.02	0.0102	3·10 ⁻⁴	0.02	302 ↘ 3.6	1.16.953	0.01	49.1
										1.16.952	0.01	47.8
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.02	0.01	3·10 ⁻⁴	0.02	355 ↓ 0.8	1.18.917	0.006	32.7
										1.12.6158	0.004	19.5
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.021	0.0103	3·10 ⁻⁴	0.02	3 ↓ 0.8	1.18.917	0.007	32.1
										1.12.6158	0.004	18.7
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.021	0.0106	3·10 ⁻⁴	0.021	19 ↓ 0.8	1.18.917	0.006	29.8
										1.12.6158	0.004	17.7
										1.3.801	0.002	10.4
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.025	0.0127	3·10 ⁻⁴	0.025	33 ↙ 3.3	1.16.953	0.005	21.1
										1.16.952	0.005	19.2
										1.14.831	0.004	14
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.027	0.0134	3·10 ⁻⁴	0.027	42 ↙ 3.5	1.16.953	0.006	20.7
										1.16.952	0.005	17.5
										1.14.831	0.003	12.8
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.026	0.013	3·10 ⁻⁴	0.026	45 ↙ 0.8	1.18.917	0.007	25.1
										1.12.6158	0.003	12.7
										1.3.801	0.003	10.3
										1.14.831	0.002	8.9

Table 1.5.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.019	0.0095	$3 \cdot 10^{-4}$	0.019	$54 \nwarrow 0.8$	1.18.917	0.006	29.4
										1.12.6158	0.003	17.3
										1.3.801	0.002	11.7
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.02	0.0098	$4 \cdot 10^{-4}$	0.019	$58 \nwarrow 0.8$	1.18.917	0.006	30
										1.12.6158	0.004	19.3
										1.3.801	0.002	12.1
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.023	0.0113	$4 \cdot 10^{-4}$	0.022	$71 \leftarrow 0.8$	1.18.917	0.007	30.3
										1.12.6158	0.005	20.7
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.025	0.0126	$5 \cdot 10^{-4}$	0.025	$87 \leftarrow 0.8$	1.18.917	0.007	28.4
										1.12.6158	0.007	27.9
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.028	0.0138	0.001	0.027	$105 \leftarrow 0.8$	1.12.6158	0.01	34.5
										1.18.917	0.007	26.3
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.024	0.012	0.001	0.023	$130 \nwarrow 0.8$	1.12.6158	0.008	32.4
										1.18.917	0.007	28.5
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.021	0.0106	0.001	0.02	$148 \nwarrow 0.8$	1.18.917	0.006	29
										1.12.6158	0.006	28.8
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.021	0.0105	0.001	0.02	$162 \uparrow 0.8$	1.18.917	0.006	28.6
										1.12.6158	0.006	26.3
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.02	0.0102	0.001	0.019	$184 \uparrow 3.4$	1.16.953	0.008	39.4
										1.16.952	0.008	38.1
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.022	0.011	0.001	0.021	$191 \uparrow 3.4$	1.16.953	0.008	34.3
										1.16.952	0.007	33.4
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.024	0.012	0.001	0.023	$200 \uparrow 3.4$	1.16.953	0.008	31.7
										1.16.952	0.007	31
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.025	0.0127	$5 \cdot 10^{-4}$	0.025	$208 \nearrow 3.4$	1.16.953	0.007	29
										1.16.952	0.007	28.4
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.027	0.0137	$4 \cdot 10^{-4}$	0.027	$217 \nearrow 3.9$	1.16.953	0.008	28
										1.16.952	0.008	27.5
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.029	0.0144	$4 \cdot 10^{-4}$	0.028	$227 \nearrow 4$	1.16.953	0.008	27.3
										1.16.952	0.008	26.5
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.027	0.0135	$3 \cdot 10^{-4}$	0.027	$236 \nearrow 3.3$	1.16.953	0.007	26.9
										1.16.952	0.007	25.5
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.027	0.0137	$3 \cdot 10^{-4}$	0.027	$255 \rightarrow 0.8$	1.18.917	0.006	22.6
										1.3.801	0.005	19.8
										1.1.4	0.005	16.8
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.021	0.0107	$3 \cdot 10^{-4}$	0.021	$265 \rightarrow 0.8$	1.18.917	0.005	24.1
										1.3.801	0.004	18.1
										1.12.6158	0.003	15.7
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.018	0.0092	$3 \cdot 10^{-4}$	0.018	$256 \rightarrow 4$	1.16.953	0.009	47.3
										1.16.952	0.009	46.5
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.018	0.0091	$2 \cdot 10^{-4}$	0.018	$266 \rightarrow 4$	1.16.953	0.009	48
										1.16.952	0.009	47
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.019	0.0093	$2 \cdot 10^{-4}$	0.018	$275 \rightarrow 4$	1.16.953	0.009	48.2
										1.16.952	0.009	47.7
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.02	0.01	$2 \cdot 10^{-4}$	0.02	$278 \rightarrow 3.9$	1.16.953	0.01	48.5
										1.16.952	0.009	47.6
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.02	0.01	$2 \cdot 10^{-4}$	0.02	$290 \rightarrow 3.9$	1.16.953	0.01	48.5
										1.16.952	0.01	48.1
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.021	0.0103	$2 \cdot 10^{-4}$	0.02	$296 \searrow 3.9$	1.16.953	0.01	48.6
										1.16.952	0.01	48.3
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.027	0.0134	$3 \cdot 10^{-4}$	0.026	$256 \rightarrow 0.8$	1.18.917	0.006	22.9
										1.3.801	0.005	19.5
										1.1.4	0.004	16.4
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.018	0.0088	$2 \cdot 10^{-4}$	0.017	$256 \rightarrow 4$	1.16.953	0.008	46.8
										1.16.952	0.008	45.8
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.017	0.0086	$2 \cdot 10^{-4}$	0.017	$267 \rightarrow 4.1$	1.16.953	0.008	47.7
										1.16.952	0.008	47.1
34. At the boundary of Kaznachevsky populated locality	Resident.	68.3	-635.6	2	0.021	0.0103	$2 \cdot 10^{-4}$	0.02	$303 \searrow 3.6$	1.16.953	0.01	48.6
										1.16.952	0.01	48.3

Table 1.5.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.019	0.0094	3·10 ⁻⁴	0.018	1 ↓ 0.8	1.18.917	0.006	31.9
										1.12.6158	0.004	18.9
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.024	0.012	2·10 ⁻⁴	0.024	8 ↓ 3.5	1.16.953	0.01	41
										1.16.952	0.01	40.2
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.027	0.0134	2·10 ⁻⁴	0.027	26 ↙ 3.5	1.16.953	0.009	35.4
										1.16.952	0.009	35.1
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.026	0.0131	3·10 ⁻⁴	0.026	57 ↙ 3.4	1.16.953	0.01	37
										1.16.952	0.009	34.1
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.024	0.0118	4·10 ⁻⁴	0.023	77 ← 0.8	1.18.917	0.007	29.8
										1.12.6158	0.005	23.3
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.025	0.0127	0.001	0.025	118 ↖ 0.8	1.12.6158	0.008	33.4
										1.18.917	0.007	27.5
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.021	0.0105	0.001	0.02	160 ↑ 0.8	1.18.917	0.006	28.7
										1.12.6158	0.006	26.9
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.018	0.009	3·10 ⁻⁴	0.018	230 ↗ 4.6	1.16.953	0.006	31.7
										1.16.952	0.006	30.9

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.5.2.

Table 1.5.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.024	0.012	2·10 ⁻⁴	0.024	41 ↙	4.2
2	-2171.24	1361.8	0.026	0.0129	2·10 ⁻⁴	0.025	33 ↙	3.9
3	-1983.94	898.21	0.026	0.0129	2·10 ⁻⁴	0.026	23 ↙	3.6
4	-1796.63	434.62	0.024	0.012	2·10 ⁻⁴	0.024	12 ↓	3.5
5	-1609.33	-28.98	0.022	0.011	2·10 ⁻⁴	0.022	358 ↓	3.5
6	-1422.03	-492.57	0.02	0.0102	2·10 ⁻⁴	0.02	345 ↓	3.5
7	-1234.72	-956.16	0.019	0.0097	2·10 ⁻⁴	0.019	333 ↘	3.9
8	-1047.42	-1419.75	0.019	0.0093	2·10 ⁻⁴	0.018	324 ↘	3.9
9	-860.12	-1883.34	0.018	0.0089	2·10 ⁻⁴	0.018	316 ↘	4
10	-672.81	-2346.94	0.017	0.0084	2·10 ⁻⁴	0.017	310 ↘	4.1
11	-485.51	-2810.53	0.016	0.0078	2·10 ⁻⁴	0.015	305 ↘	4.2
12	-298.21	-3274.12	0.015	0.0073	2·10 ⁻⁴	0.014	302 ↘	4.3
13	-110.9	-3737.71	0.014	0.0068	2·10 ⁻⁴	0.013	298 ↘	4.4
14	-1894.95	2012.7	0.026	0.0128	2·10 ⁻⁴	0.025	47 ↙	3.9
15	-1707.65	1549.1	0.028	0.014	2·10 ⁻⁴	0.028	39 ↙	3.9
16	-1520.35	1085.51	0.029	0.0144	2·10 ⁻⁴	0.029	29 ↙	3.6
17	-1333.04	621.92	0.026	0.013	2·10 ⁻⁴	0.026	15 ↓	3.5
18	-1145.74	158.33	0.022	0.0111	2·10 ⁻⁴	0.022	357 ↓	3.5
19	-958.44	-305.26	0.021	0.0106	2·10 ⁻⁴	0.021	340 ↓	3.6
20	-771.13	-768.86	0.02	0.0102	2·10 ⁻⁴	0.02	327 ↘	3.8
21	-583.83	-1232.45	0.02	0.0098	2·10 ⁻⁴	0.019	316 ↘	3.9
22	-396.53	-1696.04	0.019	0.0093	2·10 ⁻⁴	0.018	309 ↘	4
23	-209.22	-2159.63	0.017	0.0087	2·10 ⁻⁴	0.017	303 ↘	4.1
24	-21.92	-2623.22	0.016	0.0082	2·10 ⁻⁴	0.016	299 ↘	4.2
25	165.38	-3086.82	0.015	0.0076	2·10 ⁻⁴	0.015	295 ↘	4.1
26	352.69	-3550.41	0.014	0.007	2·10 ⁻⁴	0.014	293 ↘	4.3
27	-1431.36	2200	0.025	0.0127	2·10 ⁻⁴	0.025	56 ↙	3.5
28	-1244.06	1736.41	0.029	0.0144	3·10 ⁻⁴	0.029	48 ↙	3.6
29	-1056.75	1272.81	0.031	0.0156	3·10 ⁻⁴	0.031	37 ↙	3.6
30	-869.45	809.22	0.026	0.013	3·10 ⁻⁴	0.026	20 ↓	3.4
31	-682.15	345.63	0.019	0.0096	2·10 ⁻⁴	0.019	355 ↓	3.5
32	-494.84	-117.96	0.02	0.01	2·10 ⁻⁴	0.02	333 ↘	3.6

Table 1.5.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
33	-307.54	-581.55	0.021	0.0104	2·10 ⁻⁴	0.021	317 ↘	3.6
34	-120.24	-1045.14	0.02	0.0102	2·10 ⁻⁴	0.02	306 ↘	3.8
35	67.07	-1508.74	0.019	0.0097	2·10 ⁻⁴	0.019	299 ↘	3.9
36	254.37	-1972.33	0.018	0.009	2·10 ⁻⁴	0.018	295 ↘	4
37	441.67	-2435.92	0.017	0.0085	2·10 ⁻⁴	0.017	291 →	4.1
38	628.98	-2899.51	0.016	0.0078	2·10 ⁻⁴	0.015	288 →	4.2
39	816.28	-3363.1	0.014	0.0072	2·10 ⁻⁴	0.014	286 →	4.3
40	-967.77	2387.3	0.023	0.0116	3·10 ⁻⁴	0.023	69 ←	3.5
41	-780.46	1923.71	0.025	0.0124	3·10 ⁻⁴	0.025	62 ↙	3.4
42	-593.16	1460.12	0.027	0.0136	3·10 ⁻⁴	0.027	50 ↙	3.5
43	-405.86	996.53	0.026	0.0128	3·10 ⁻⁴	0.025	31 ↙	3.4
44	-218.55	532.93	0.021	0.0104	3·10 ⁻⁴	0.021	19 ↓	0.8
45	-31.25	69.34	0.021	0.0103	3·10 ⁻⁴	0.02	4 ↓	0.8
46	156.05	-394.25	0.019	0.0097	3·10 ⁻⁴	0.019	302 ↘	3.6
47	343.35	-857.84	0.021	0.0105	2·10 ⁻⁴	0.021	293 ↘	3.6
48	530.66	-1321.43	0.02	0.01	2·10 ⁻⁴	0.02	288 →	3.9
49	717.96	-1785.03	0.019	0.0093	2·10 ⁻⁴	0.018	285 →	4
50	905.26	-2248.62	0.017	0.0087	2·10 ⁻⁴	0.017	283 →	4.1
51	1092.57	-2712.21	0.016	0.008	2·10 ⁻⁴	0.016	281 →	4.1
52	1279.87	-3175.8	0.015	0.0074	2·10 ⁻⁴	0.015	280 →	4.3
53	-504.18	2574.61	0.022	0.0108	3·10 ⁻⁴	0.021	84 ←	3.6
54	-316.87	2111.01	0.021	0.0105	3·10 ⁻⁴	0.021	82 ←	3.6
55	-129.57	1647.42	0.019	0.0093	3·10 ⁻⁴	0.018	55 ↙	0.8
56	57.73	1183.83	0.027	0.0133	3·10 ⁻⁴	0.026	47 ↙	0.8
57	245.04	720.24	0.025	0.0127	3·10 ⁻⁴	0.025	27 ↙	0.8
58	432.34	256.65	0.027	0.0134	3·10 ⁻⁴	0.026	7 ↓	0.7
59	619.64	-206.95	0.023	0.0116	3·10 ⁻⁴	0.023	343 ↓	0.7
60	806.95	-670.54	0.021	0.0106	3·10 ⁻⁴	0.021	277 →	3.6
61	994.25	-1134.13	0.02	0.0102	3·10 ⁻⁴	0.02	275 →	3.9
62	1181.55	-1597.72	0.019	0.0095	2·10 ⁻⁴	0.019	274 →	4
63	1368.86	-2061.31	0.018	0.0088	2·10 ⁻⁴	0.017	274 →	4
64	1556.16	-2524.91	0.016	0.0082	2·10 ⁻⁴	0.016	273 →	4.2
65	1743.46	-2988.5	0.015	0.0075	2·10 ⁻⁴	0.015	273 →	4.2
66	-40.58	2761.91	0.021	0.0105	4·10 ⁻⁴	0.021	99 ←	3.8
67	146.72	2298.32	0.021	0.0103	4·10 ⁻⁴	0.02	103 ←	3.6
68	334.02	1834.72	0.02	0.0102	4·10 ⁻⁴	0.02	67 ↙	0.8
69	521.33	1371.13	0.026	0.0129	4·10 ⁻⁴	0.025	58 ↙	0.8
70	708.63	907.54	0.03	0.015	4·10 ⁻⁴	0.03	44 ↙	0.8
71	895.93	443.95	0.03	0.015	4·10 ⁻⁴	0.03	9 ↓	0.6
72	1083.24	-19.64	0.028	0.014	3·10 ⁻⁴	0.027	327 ↘	0.6
73	1270.54	-483.24	0.024	0.0118	3·10 ⁻⁴	0.023	310 ↘	0.7
74	1457.84	-946.83	0.022	0.011	3·10 ⁻⁴	0.022	301 ↘	0.8
75	1645.15	-1410.42	0.019	0.0095	3·10 ⁻⁴	0.019	263 →	3.9
76	1832.45	-1874.01	0.018	0.0089	2·10 ⁻⁴	0.017	265 →	4
77	2019.75	-2337.6	0.016	0.0082	2·10 ⁻⁴	0.016	265 →	4.1
78	2207.06	-2801.19	0.015	0.0076	2·10 ⁻⁴	0.015	266 →	4.2
79	423.01	2949.21	0.021	0.0103	4·10 ⁻⁴	0.02	113 ↖	3.8
80	610.31	2485.62	0.021	0.0105	4·10 ⁻⁴	0.021	120 ↖	3.6
81	797.61	2022.03	0.022	0.011	4·10 ⁻⁴	0.021	82 ←	0.8
82	984.92	1558.44	0.028	0.014	4·10 ⁻⁴	0.028	77 ←	0.8
83	1172.22	1094.84	0.036	0.018	4·10 ⁻⁴	0.036	44 ↙	5.3
84	1359.52	631.25	0.276	0.138	4·10 ⁻⁴	0.275	332 ↘	0.7
85	1546.83	167.66	0.049	0.0243	4·10 ⁻⁴	0.048	10 ↓	5.3
86	1734.13	-295.93	0.03	0.015	3·10 ⁻⁴	0.03	306 ↘	0.8
87	1921.43	-759.52	0.027	0.0133	3·10 ⁻⁴	0.026	283 →	0.8
88	2108.74	-1223.12	0.021	0.0105	3·10 ⁻⁴	0.021	278 →	0.8
89	2296.04	-1686.71	0.018	0.0089	3·10 ⁻⁴	0.018	256 →	4
90	2483.34	-2150.3	0.017	0.0083	2·10 ⁻⁴	0.016	258 →	4
91	2670.65	-2613.89	0.015	0.0077	2·10 ⁻⁴	0.015	260 →	4
92	886.6	3136.51	0.02	0.01	5·10 ⁻⁴	0.019	125 ↖	3.9
93	1073.9	2672.92	0.021	0.0105	0.001	0.02	133 ↖	3.8
94	1261.21	2209.33	0.022	0.0109	0.001	0.021	99 ←	0.8
95	1448.51	1745.74	0.03	0.015	0.001	0.029	101 ←	0.8
96	1635.81	1282.15	0.063	0.032	5·10 ⁻⁴	0.063	106 ←	4
97	1823.12	818.56	0.21	0.104	5·10 ⁻⁴	0.21	227 ↗	0.9

Table 1.5.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
98	2010.42	354.96	0.1	0.05	4·10 ⁻⁴	0.1	154 ↖	4.5
99	2197.72	-108.63	0.053	0.0264	4·10 ⁻⁴	0.052	253 →	0.8
100	2385.03	-572.22	0.032	0.016	3·10 ⁻⁴	0.032	260 →	0.8
101	2572.33	-1035.81	0.023	0.0116	3·10 ⁻⁴	0.023	261 →	0.8
102	2759.63	-1499.4	0.018	0.0092	3·10 ⁻⁴	0.018	261 →	0.8
103	2946.94	-1963	0.017	0.0085	2·10 ⁻⁴	0.017	252 →	3.4
104	3134.24	-2426.59	0.016	0.008	2·10 ⁻⁴	0.016	254 →	3.4
105	1350.19	3323.82	0.019	0.0096	0.001	0.019	134 ↖	4
106	1537.49	2860.23	0.02	0.01	0.001	0.019	142 ↖	3.9
107	1724.8	2396.63	0.021	0.0105	0.001	0.02	154 ↖	3.8
108	1912.1	1933.04	0.026	0.0129	0.001	0.025	124 ↖	0.8
109	2099.4	1469.45	0.033	0.0163	0.001	0.032	145 ↖	0.7
110	2286.71	1005.86	0.044	0.022	0.001	0.044	193 ↑	3.9
111	2474.01	542.27	0.03	0.0148	5·10 ⁻⁴	0.029	211 ↗	3.3
112	2661.31	78.67	0.047	0.0236	4·10 ⁻⁴	0.047	221 ↗	3.5
113	2848.62	-384.92	0.033	0.0165	4·10 ⁻⁴	0.033	234 ↗	3.3
114	3035.92	-848.51	0.024	0.012	3·10 ⁻⁴	0.024	240 ↗	3
115	3223.22	-1312.1	0.021	0.0103	3·10 ⁻⁴	0.02	243 ↗	3.3
116	3410.53	-1775.69	0.018	0.0092	3·10 ⁻⁴	0.018	246 ↗	3.3
117	3597.83	-2239.28	0.017	0.0083	2·10 ⁻⁴	0.016	249 →	3.4
118	1813.78	3511.12	0.018	0.0092	0.001	0.018	141 ↖	4.1
119	2001.09	3047.53	0.019	0.0097	0.001	0.018	149 ↖	4
120	2188.39	2583.94	0.02	0.01	0.001	0.019	159 ↑	3.9
121	2375.69	2120.35	0.021	0.0105	0.001	0.02	139 ↖	0.8
122	2563	1656.75	0.023	0.0117	0.001	0.023	156 ↖	0.8
123	2750.3	1193.16	0.027	0.0134	0.001	0.026	192 ↑	3.5
124	2937.6	729.57	0.03	0.015	0.001	0.029	205 ↗	3.5
125	3124.91	265.98	0.032	0.0158	4·10 ⁻⁴	0.031	213 ↗	3.3
126	3312.21	-197.61	0.033	0.0166	4·10 ⁻⁴	0.033	223 ↗	3.9
127	3499.51	-661.21	0.027	0.0137	3·10 ⁻⁴	0.027	231 ↗	3.8
128	3686.82	-1124.8	0.023	0.0114	3·10 ⁻⁴	0.023	236 ↗	3.4
129	3874.12	-1588.39	0.02	0.0099	3·10 ⁻⁴	0.019	240 ↗	3.5
130	4061.42	-2051.98	0.017	0.0087	2·10 ⁻⁴	0.017	243 ↗	3.9
131	2277.38	3698.42	0.018	0.0088	0.001	0.017	146 ↖	4.1
132	2464.68	3234.83	0.019	0.0093	0.001	0.017	154 ↖	4.1
133	2651.98	2771.24	0.019	0.0097	0.002	0.018	162 ↑	4
134	2839.29	2307.65	0.018	0.0091	0.001	0.017	150 ↖	0.8
135	3026.59	1844.06	0.02	0.01	0.001	0.019	181 ↑	3.5
136	3213.89	1380.47	0.023	0.0116	0.001	0.022	190 ↑	3.5
137	3401.2	916.87	0.026	0.013	0.001	0.025	200 ↑	3.5
138	3588.5	453.28	0.027	0.0136	5·10 ⁻⁴	0.027	208 ↗	3.4
139	3775.8	-10.31	0.028	0.014	4·10 ⁻⁴	0.028	216 ↗	3.5
140	3963.11	-473.9	0.026	0.013	4·10 ⁻⁴	0.026	224 ↗	4.1
141	4150.41	-937.49	0.023	0.0115	3·10 ⁻⁴	0.023	229 ↗	4.1
142	4337.71	-1401.09	0.02	0.01	3·10 ⁻⁴	0.02	234 ↗	4.1
143	4525.01	-1864.68	0.018	0.0089	2·10 ⁻⁴	0.018	238 ↗	4.2
144	2740.97	3885.73	0.017	0.0083	0.001	0.015	150 ↖	4.2
145	2928.27	3422.14	0.018	0.0088	0.002	0.016	157 ↖	4.2
146	3115.57	2958.54	0.018	0.0091	0.002	0.017	165 ↑	4.1
147	3302.88	2494.95	0.017	0.0085	0.002	0.015	157 ↖	0.8
148	3490.18	2031.36	0.019	0.0097	0.001	0.018	180 ↑	3.4
149	3677.48	1567.77	0.021	0.0106	0.001	0.02	188 ↑	3.4
150	3864.79	1104.18	0.023	0.0115	0.001	0.022	197 ↑	3.4
151	4052.09	640.58	0.024	0.012	5·10 ⁻⁴	0.023	204 ↗	3.4
152	4239.39	176.99	0.024	0.0122	4·10 ⁻⁴	0.024	212 ↗	3.9
153	4426.7	-286.6	0.024	0.0118	4·10 ⁻⁴	0.023	218 ↗	4.2
154	4614	-750.19	0.022	0.0109	3·10 ⁻⁴	0.021	224 ↗	4.3
155	4801.3	-1213.78	0.02	0.0098	3·10 ⁻⁴	0.019	229 ↗	4.3
156	4988.61	-1677.37	0.017	0.0087	2·10 ⁻⁴	0.017	232 ↗	4.6
157	3204.56	4073.03	0.016	0.0078	0.001	0.014	153 ↖	4.2
158	3391.86	3609.44	0.017	0.0085	0.002	0.015	159 ↑	4.1
159	3579.17	3145.85	0.017	0.0087	0.002	0.016	166 ↑	4
160	3766.47	2682.26	0.018	0.0089	0.002	0.016	173 ↑	3.9
161	3953.77	2218.66	0.018	0.0092	0.001	0.017	180 ↑	3.4
162	4141.08	1755.07	0.019	0.0097	0.001	0.019	187 ↑	3.4

Table 1.5.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
163	4328.38	1291.48	0.021	0.0103	0.001	0.02	194 ↑	3.4
164	4515.68	827.89	0.021	0.0107	$5 \cdot 10^{-4}$	0.021	201 ↑	3.4
165	4702.99	364.3	0.022	0.0108	$4 \cdot 10^{-4}$	0.021	208 ↗	4
166	4890.29	-99.3	0.021	0.0106	$4 \cdot 10^{-4}$	0.021	214 ↗	4.2
167	5077.59	-562.89	0.02	0.01	$3 \cdot 10^{-4}$	0.02	219 ↗	4.4
168	5264.9	-1026.48	0.018	0.0092	$3 \cdot 10^{-4}$	0.018	224 ↗	4.6
169	5452.2	-1490.07	0.017	0.0084	$2 \cdot 10^{-4}$	0.017	228 ↗	4.8

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.5.1, scale **1:50000**.

C
↑



- ### Map of maximum concentrations

0,2 – 0,3

Scale 1:50000

1.6 Calculation of contamination — substance 333. Hydrogen Sulphide

Full name of the substance with code 333 — Dihydrosulphide (Hydrogen Sulphide). The maximum single allowed concentration is 0.008 mg/m³, hazard class 2.

The number of sources of atmospheric contamination to be considered in the calculation is 14 (including: 1 stationary source, 13 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 13; 11-20 m – 1; 21-29 m – none; 30-50 m – none; 51-100 m – none; above 100 m – none.

The total emissions from the sources used in the calculations makes up 0.01637 g/s and 0.458 TPA.

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 - **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.19**, which is reached in point No. 2 at the *boundary of SPZ* X=403567.24 Y=-637517.1, at wind direction 19 ° and wind speed 0.7 m/s inclusive of: the input from the plant emitters — 0.19;

- in the residential area, it makes up **0.164**, which is reached in point No.34 at the *boundary of Kaznacheyevsky*, X=404002.9 Y=-637668.8, wind direction is 351°, wind velocity is 0.7 m/s inclusive of: the input from the plant emitters — 0.164.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.6.1.

Table 1.6.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.183	0.00146	-	0.183	355 ↓ 0.7	1.20.6205	0.133	72.9
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.19	0.0015	-	0.19	19 ↓ 0.7	1.20.6205	0.132	70.4
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.173	0.0014	-	0.173	33 ↙ 0.7	1.20.6205	0.12	69.5
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.124	0.00099	-	0.124	53 ↙ 0.8	1.20.6205	0.086	70
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.09	0.00072	-	0.09	64 ↙ 1.3	1.20.6205	0.057	63.4
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.082	0.00065	-	0.082	69 ← 1.4	1.20.6205	0.052	64
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.09	0.00072	-	0.09	77 ← 1.2	1.20.6205	0.062	68.5
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.064	0.00051	-	0.064	81 ← 1.7	1.20.6205	0.044	68

Table 1.6.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.064	0.00051	-	0.064	87 ← 1.8	1.20.6205	0.044	68.8
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.069	0.00055	-	0.069	101 ← 1.7	1.20.6205	0.046	67.2
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.068	0.00054	-	0.068	116 ↖ 1.7	1.20.6205	0.045	65.8
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.063	0.00051	-	0.063	128 ↖ 1.8	1.20.6205	0.042	66.5
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.05	0.0004	-	0.05	141 ↖ 2.3	1.20.6205	0.033	66.6
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.042	0.00034	-	0.042	151 ↖ 2.6	1.20.6205	0.028	67.1
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.041	0.000327	-	0.041	159 ↑ 2.7	1.20.6205	0.029	69.9
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.034	0.00027	-	0.034	165 ↑ 3.2	1.20.6205	0.024	70.4
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.032	0.000256	-	0.032	174 ↑ 3.3	1.20.6205	0.023	70.9
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.033	0.000265	-	0.033	183 ↑ 3.2	1.20.6205	0.024	71.9
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.034	0.00027	-	0.034	192 ↑ 3.1	1.20.6205	0.025	73.1
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.035	0.000283	-	0.035	202 ↑ 3	1.20.6205	0.026	72.5
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.041	0.000326	-	0.041	210 ↗ 2.6	1.20.6205	0.03	73.8
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.052	0.00042	-	0.052	217 ↗ 2	1.20.6205	0.039	74.1
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.076	0.00061	-	0.076	222 ↗ 1.3	1.20.6205	0.057	75.5
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.069	0.00055	-	0.069	236 ↗ 1.5	1.20.6205	0.051	74.9
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.072	0.00058	-	0.072	251 → 1.4	1.20.6205	0.054	75.1
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.08	0.00064	-	0.08	267 → 1.3	1.20.6205	0.06	75
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.087	0.0007	-	0.087	283 → 1.2	1.20.6205	0.065	74.7
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.136	0.00109	-	0.136	291 → 0.7	1.20.6205	0.101	74.6
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.123	0.00098	-	0.123	313 ↘ 0.7	1.20.6205	0.091	74.3
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.14	0.00113	-	0.14	329 ↘ 0.7	1.20.6205	0.104	73.7
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.076	0.0006	-	0.076	223 ↗ 1.3	1.20.6205	0.057	75.7
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.057	0.00046	-	0.057	251 → 1.8	1.20.6205	0.043	74.5
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.058	0.00046	-	0.058	269 → 1.8	1.20.6205	0.043	74.2
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.164	0.0013	-	0.164	351 ↓ 0.7	1.20.6205	0.118	72.2
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.15	0.0012	-	0.15	25 ↙ 0.7	1.20.6205	0.105	70
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.044	0.000354	-	0.044	33 ↙ 2.5	1.20.6205	0.031	70.7
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.036	0.000287	-	0.036	44 ↙ 3.1	1.20.6205	0.025	69.7

Table 1.6.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.044	0.00035	-	0.044	70 ← 2.6	1.20.6205	0.029	66.4
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.069	0.00055	-	0.069	107 ← 1.7	1.20.6205	0.046	66.6
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.054	0.00043	-	0.054	134 ↖ 2.1	1.20.6205	0.036	67.1
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.041	0.00033	-	0.041	158 ↑ 2.7	1.20.6205	0.028	68.9
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.022	0.000177	-	0.022	220 ↗ 5.1	1.20.6205	0.016	70.9

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.6.2.

Table 1.8.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.026	0.00021	-	0.026	53 ↙	4.3
2	-2171.24	1361.8	0.03	0.00024	-	0.03	47 ↙	3.7
3	-1983.94	898.21	0.034	0.000273	-	0.034	41 ↙	3.2
4	-1796.63	434.62	0.039	0.00031	-	0.039	34 ↙	2.8
5	-1609.33	-28.98	0.044	0.000354	-	0.044	24 ↙	2.5
6	-1422.03	-492.57	0.049	0.00039	-	0.049	13 ↓	2.2
7	-1234.72	-956.16	0.051	0.000406	-	0.051	1 ↓	2.1
8	-1047.42	-1419.75	0.049	0.000395	-	0.049	349 ↓	2.2
9	-860.12	-1883.34	0.045	0.00036	-	0.045	337 ↘	2.4
10	-672.81	-2346.94	0.04	0.00032	-	0.04	328 ↘	2.7
11	-485.51	-2810.53	0.035	0.00028	-	0.035	320 ↘	3.1
12	-298.21	-3274.12	0.031	0.000244	-	0.031	313 ↘	3.6
13	-110.9	-3737.71	0.027	0.000214	-	0.027	308 ↘	4.1
14	-1894.95	2012.7	0.029	0.000235	-	0.029	59 ↙	3.9
15	-1707.65	1549.1	0.034	0.000275	-	0.034	54 ↙	3.3
16	-1520.35	1085.51	0.041	0.000324	-	0.041	48 ↙	2.7
17	-1333.04	621.92	0.049	0.00039	-	0.049	40 ↙	2.2
18	-1145.74	158.33	0.059	0.00047	-	0.059	30 ↙	1.8
19	-958.44	-305.26	0.069	0.00055	-	0.069	17 ↓	1.6
20	-771.13	-768.86	0.074	0.00059	-	0.074	1 ↓	1.4
21	-583.83	-1232.45	0.07	0.00057	-	0.07	346 ↓	1.5
22	-396.53	-1696.04	0.061	0.00049	-	0.061	332 ↘	1.7
23	-209.22	-2159.63	0.051	0.00041	-	0.051	321 ↘	2.1
24	-21.92	-2623.22	0.041	0.00033	-	0.041	314 ↘	2.6
25	165.38	-3086.82	0.035	0.00028	-	0.035	306 ↘	3.1
26	352.69	-3550.41	0.03	0.000236	-	0.03	301 ↘	3.7
27	-1431.36	2200	0.032	0.00026	-	0.032	67 ↙	3.6
28	-1244.06	1736.41	0.039	0.000315	-	0.039	63 ↙	2.9
29	-1056.75	1272.81	0.049	0.00039	-	0.049	57 ↙	2.3
30	-869.45	809.22	0.062	0.0005	-	0.062	49 ↙	1.8
31	-682.15	345.63	0.084	0.00067	-	0.084	38 ↙	1.3
32	-494.84	-117.96	0.11	0.00087	-	0.11	22 ↓	0.9
33	-307.54	-581.55	0.12	0.00097	-	0.12	2 ↓	0.8
34	-120.24	-1045.14	0.112	0.0009	-	0.112	340 ↓	0.8
35	67.07	-1508.74	0.089	0.00071	-	0.089	324 ↘	1.1
36	254.37	-1972.33	0.066	0.00053	-	0.066	312 ↘	1.6
37	441.67	-2435.92	0.05	0.0004	-	0.05	304 ↘	2.1
38	628.98	-2899.51	0.04	0.00032	-	0.04	298 ↘	2.7
39	816.28	-3363.1	0.032	0.00026	-	0.032	294 ↘	3.4

Table 1.6.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
40	-967.77	2387.3	0.034	0.000276	-	0.034	75 ←	3.3
41	-780.46	1923.71	0.043	0.00035	-	0.043	72 ←	2.7
42	-593.16	1460.12	0.058	0.00047	-	0.058	68 ←	2
43	-405.86	996.53	0.084	0.00068	-	0.084	62 ↙	1.4
44	-218.55	532.93	0.12	0.00096	-	0.12	52 ↙	0.8
45	-31.25	69.34	0.17	0.00135	-	0.17	34 ↙	0.7
46	156.05	-394.25	0.2	0.0016	-	0.2	3 ↓	0.7
47	343.35	-857.84	0.176	0.0014	-	0.176	330 ↘	0.7
48	530.66	-1321.43	0.128	0.00103	-	0.128	310 ↘	0.7
49	717.96	-1785.03	0.086	0.00069	-	0.086	299 ↘	1.2
50	905.26	-2248.62	0.059	0.00047	-	0.059	292 →	1.8
51	1092.57	-2712.21	0.044	0.00035	-	0.044	288 →	2.5
52	1279.87	-3175.8	0.035	0.00028	-	0.035	285 →	3.3
53	-504.18	2574.61	0.036	0.000285	-	0.036	84 ←	3.2
54	-316.87	2111.01	0.045	0.00036	-	0.045	83 ←	2.5
55	-129.57	1647.42	0.061	0.00049	-	0.061	81 ←	1.8
56	57.73	1183.83	0.093	0.00074	-	0.093	78 ←	1.1
57	245.04	720.24	0.147	0.00118	-	0.147	74 ←	0.7
58	432.34	256.65	0.275	0.0022	-	0.275	64 ↙	0.7
59	619.64	-206.95	0.67	0.0054	-	0.67	16 ↓	5.3
60	806.95	-670.54	0.32	0.00254	-	0.32	306 ↘	0.7
61	994.25	-1134.13	0.166	0.00133	-	0.166	288 →	0.7
62	1181.55	-1597.72	0.103	0.00082	-	0.103	282 →	0.9
63	1368.86	-2061.31	0.066	0.00053	-	0.066	279 →	1.6
64	1556.16	-2524.91	0.047	0.000375	-	0.047	277 →	2.3
65	1743.46	-2988.5	0.036	0.00029	-	0.036	276 →	3
66	-40.58	2761.91	0.036	0.000285	-	0.036	93 ←	3.2
67	146.72	2298.32	0.046	0.000366	-	0.046	94 ←	2.5
68	334.02	1834.72	0.063	0.0005	-	0.063	95 ←	1.8
69	521.33	1371.13	0.098	0.00078	-	0.098	96 ←	1.1
70	708.63	907.54	0.16	0.0013	-	0.16	99 ←	0.7
71	895.93	443.95	0.34	0.0027	-	0.34	95 ←	0.5
72	1083.24	-19.64	1.06	0.0085	-	1.06	152 ↖	3.9
73	1270.54	-483.24	0.43	0.0034	-	0.43	246 ↗	5.3
74	1457.84	-946.83	0.173	0.0014	-	0.173	259 →	0.7
75	1645.15	-1410.42	0.105	0.00084	-	0.105	263 →	0.9
76	1832.45	-1874.01	0.066	0.00053	-	0.066	264 →	1.6
77	2019.75	-2337.6	0.047	0.00038	-	0.047	266 →	2.3
78	2207.06	-2801.19	0.036	0.00029	-	0.036	266 →	3
79	423.01	2949.21	0.035	0.00028	-	0.035	103 ←	3.3
80	610.31	2485.62	0.044	0.00035	-	0.044	105 ←	2.6
81	797.61	2022.03	0.059	0.00047	-	0.059	109 ←	1.9
82	984.92	1558.44	0.088	0.00071	-	0.088	114 ↖	1.3
83	1172.22	1094.84	0.14	0.00113	-	0.14	124 ↖	0.7
84	1359.52	631.25	0.187	0.0015	-	0.187	145 ↖	0.6
85	1546.83	167.66	0.225	0.0018	-	0.225	174 ↑	0.7
86	1734.13	-295.93	0.198	0.00158	-	0.198	212 ↗	0.7
87	1921.43	-759.52	0.137	0.0011	-	0.137	234 ↗	0.8
88	2108.74	-1223.12	0.09	0.00072	-	0.09	245 ↗	1.1
89	2296.04	-1686.71	0.06	0.00048	-	0.06	251 →	1.7
90	2483.34	-2150.3	0.045	0.00036	-	0.045	254 →	2.4
91	2670.65	-2613.89	0.035	0.00028	-	0.035	257 →	3.1
92	886.6	3136.51	0.033	0.000263	-	0.033	111 ←	3.5
93	1073.9	2672.92	0.04	0.000323	-	0.04	115 ↖	2.9
94	1261.21	2209.33	0.052	0.000415	-	0.052	120 ↖	2.2
95	1448.51	1745.74	0.07	0.00056	-	0.07	128 ↖	1.6
96	1635.81	1282.15	0.096	0.00077	-	0.096	140 ↖	1.1
97	1823.12	818.56	0.12	0.00097	-	0.12	157 ↖	0.8
98	2010.42	354.96	0.13	0.00104	-	0.13	178 ↑	0.7
99	2197.72	-108.63	0.122	0.00097	-	0.122	201 ↑	0.7
100	2385.03	-572.22	0.097	0.00077	-	0.097	219 ↗	1
101	2572.33	-1035.81	0.07	0.00056	-	0.07	231 ↗	1.5
102	2759.63	-1499.4	0.052	0.000415	-	0.052	239 ↗	2
103	2946.94	-1963	0.04	0.000324	-	0.04	244 ↗	2.7
104	3134.24	-2426.59	0.033	0.000263	-	0.033	248 →	3.3

Table 1.6.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
105	1350.19	3323.82	0.03	0.00024	-	0.03	119 ↖	3.8
106	1537.49	2860.23	0.036	0.00029	-	0.036	124 ↖	3.2
107	1724.8	2396.63	0.044	0.00035	-	0.044	130 ↖	2.6
108	1912.1	1933.04	0.054	0.00043	-	0.054	138 ↖	2.1
109	2099.4	1469.45	0.067	0.00053	-	0.067	149 ↖	1.7
110	2286.71	1005.86	0.076	0.0006	-	0.076	163 ↑	1.4
111	2474.01	542.27	0.08	0.00064	-	0.08	179 ↑	1.2
112	2661.31	78.67	0.077	0.00061	-	0.077	195 ↑	1.3
113	2848.62	-384.92	0.065	0.00052	-	0.065	210 ↗	1.6
114	3035.92	-848.51	0.053	0.00043	-	0.053	221 ↗	2
115	3223.22	-1312.1	0.043	0.000346	-	0.043	229 ↗	2.5
116	3410.53	-1775.69	0.036	0.000285	-	0.036	236 ↗	3
117	3597.83	-2239.28	0.03	0.00024	-	0.03	240 ↗	3.7
118	1813.78	3511.12	0.027	0.00022	-	0.027	126 ↖	4.2
119	2001.09	3047.53	0.032	0.000254	-	0.032	131 ↖	3.6
120	2188.39	2583.94	0.037	0.000295	-	0.037	137 ↖	3.1
121	2375.69	2120.35	0.043	0.00034	-	0.043	145 ↖	2.7
122	2563	1656.75	0.048	0.00039	-	0.048	155 ↖	2.3
123	2750.3	1193.16	0.052	0.000416	-	0.052	167 ↑	2
124	2937.6	729.57	0.054	0.00043	-	0.054	179 ↑	1.9
125	3124.91	265.98	0.052	0.00042	-	0.052	192 ↑	2
126	3312.21	-197.61	0.048	0.00038	-	0.048	204 ↗	2.2
127	3499.51	-661.21	0.042	0.000335	-	0.042	214 ↗	2.5
128	3686.82	-1124.8	0.036	0.00029	-	0.036	222 ↗	3
129	3874.12	-1588.39	0.031	0.00025	-	0.031	228 ↗	3.4
130	4061.42	-2051.98	0.027	0.000216	-	0.027	234 ↗	4.2
131	2277.38	3698.42	0.025	0.000198	-	0.025	132 ↖	4.6
132	2464.68	3234.83	0.028	0.00022	-	0.028	137 ↖	4.2
133	2651.98	2771.24	0.031	0.00025	-	0.031	143 ↖	3.6
134	2839.29	2307.65	0.035	0.000277	-	0.035	151 ↖	3.2
135	3026.59	1844.06	0.037	0.0003	-	0.037	159 ↑	2.9
136	3213.89	1380.47	0.039	0.000316	-	0.039	169 ↑	2.7
137	3401.2	916.87	0.04	0.00032	-	0.04	179 ↑	2.6
138	3588.5	453.28	0.039	0.000315	-	0.039	190 ↑	2.7
139	3775.8	-10.31	0.037	0.000296	-	0.037	200 ↑	2.8
140	3963.11	-473.9	0.034	0.00027	-	0.034	209 ↗	3.1
141	4150.41	-937.49	0.03	0.000244	-	0.03	216 ↗	3.5
142	4337.71	-1401.09	0.027	0.000217	-	0.027	223 ↗	4
143	4525.01	-1864.68	0.024	0.000195	-	0.024	228 ↗	4.6
144	2740.97	3885.73	0.022	0.00018	-	0.022	137 ↖	5.1
145	2928.27	3422.14	0.025	0.000196	-	0.025	142 ↖	4.6
146	3115.57	2958.54	0.027	0.000214	-	0.027	148 ↖	4.2
147	3302.88	2494.95	0.029	0.00023	-	0.029	155 ↖	3.9
148	3490.18	2031.36	0.03	0.000244	-	0.03	162 ↑	3.6
149	3677.48	1567.77	0.032	0.000253	-	0.032	171 ↑	3.4
150	3864.79	1104.18	0.032	0.000256	-	0.032	180 ↑	3.3
151	4052.09	640.58	0.031	0.00025	-	0.031	188 ↑	3.4
152	4239.39	176.99	0.03	0.00024	-	0.03	197 ↑	3.5
153	4426.7	-286.6	0.028	0.000226	-	0.028	205 ↗	3.7
154	4614	-750.19	0.026	0.00021	-	0.026	212 ↗	4.1
155	4801.3	-1213.78	0.024	0.00019	-	0.024	218 ↗	4.6
156	4988.61	-1677.37	0.022	0.000176	-	0.022	223 ↗	5.2
157	3204.56	4073.03	0.02	0.000157	-	0.02	141 ↖	5.3
158	3391.86	3609.44	0.022	0.000174	-	0.022	146 ↖	5.2
159	3579.17	3145.85	0.023	0.000186	-	0.023	151 ↖	4.8
160	3766.47	2682.26	0.025	0.000197	-	0.025	158 ↑	4.5
161	3953.77	2218.66	0.026	0.000205	-	0.026	165 ↑	4.2
162	4141.08	1755.07	0.026	0.00021	-	0.026	172 ↑	4.1
163	4328.38	1291.48	0.027	0.000212	-	0.027	180 ↑	4
164	4515.68	827.89	0.026	0.00021	-	0.026	187 ↑	4.1
165	4702.99	364.3	0.025	0.000203	-	0.025	195 ↑	4.2
166	4890.29	-99.3	0.024	0.000194	-	0.024	202 ↑	4.4
167	5077.59	-562.89	0.023	0.000182	-	0.023	208 ↗	4.7
168	5264.9	-1026.48	0.021	0.00017	-	0.021	214 ↗	5.3
169	5452.2	-1490.07	0.02	0.000156	-	0.02	219 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. **1** — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.6.1, scale **1:50000**.

333. Hydrogen sulphide

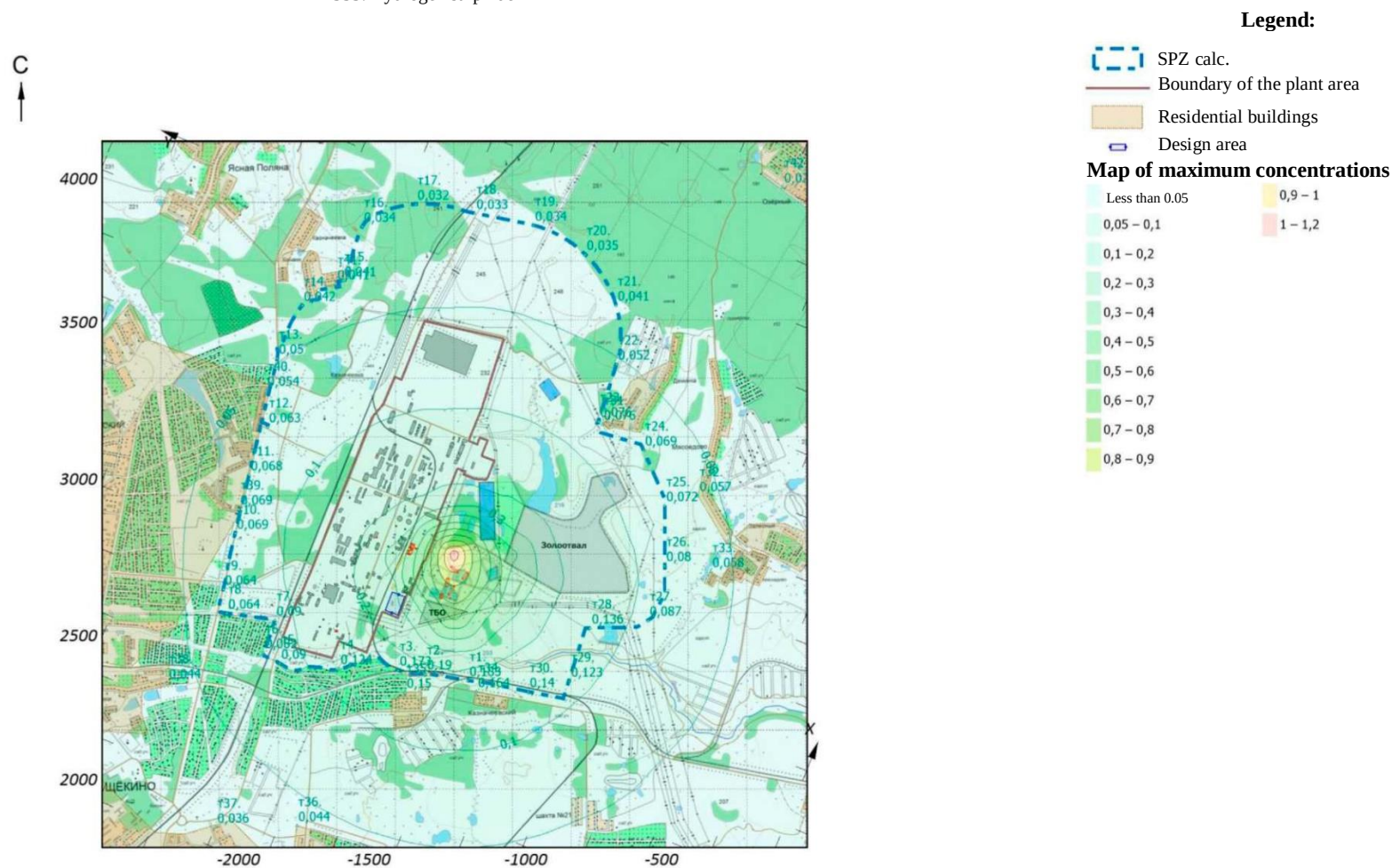


Figure 1.6.1 — Case No. 1, calculation for all enterprises and plants within the industrial site — prospects for development.
 Site No. 1 — calculation for the entire cluster of industrial enterprises and plants within the industrial site.

Scale 1:50000

1.7 Calculation of contamination — substance 337. Carbon Oxide

Full name of the substance with code 337 — Carbon Oxide The maximum single allowed concentration is 5 mg/m³, hazard class 4.

The number of sources of atmospheric contamination to be considered in the calculation is 111 (including: 82 stationary sources, 29 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 52; 11-20 m – 16; 21-29 m – 24; 30-50 m – 12; 51-100 m – 5; above 100 m – 2.

The total emissions from the sources used in the calculations make up 369.024 g/s and 1811.405 TPA.

The calculation included the background concentrations given in Atmospheric Contamination Checkpoint No. 1 (ACCP).

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.307**, which is reached in point No. 14 at the *boundary of SPZ* X=402516.92 Y=-634375.3, at wind direction 160 ° and wind speed 5.3 m/s inclusive of: background concentration – 0.243 (background concentration before interpolation — 0.2004), input from plant emitters — 0.106;

- in the residential area it is **0.46**, which is reached at point No. 1.146 «*Calculation for the entire cluster of industrial enterprises and plants within the industrial site*, X=401812 Y=-633497, wind direction 153°, wind speed 5.3 m/s inclusive of: background concentration – 0.42 (background concentration before interpolation — 0.392), input from plant emitters — 0.069.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.7.1.

Table 1.7.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.153	0.764	0.014	0.14	331 ↗ 4.6	1.14.832	0.09	59.1
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.165	0.827	0.014	0.15	344 ↓ 4.1	1.14.832	0.094	56.6
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.164	0.821	0.014	0.15	354 ↓ 3.9	1.14.832	0.093	56.6
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.162	0.811	0.016	0.146	17 ↓ 3.8	1.14.832	0.088	54.4
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.166	0.831	0.018	0.15	36 ↙ 4.1	1.14.832	0.089	53.3
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.18	0.901	0.016	0.164	41 ↙ 4.5	1.14.832	0.094	52
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.205	1.026	0.017	0.19	48 ↙ 3.9	1.14.832	0.094	45.6
										1.7.6022	0.026	12.9

Table 1.7.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.17	0.849	0.031	0.14	58 ↙ 4.1	1.14.832	0.093	54.6
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.173	0.867	0.037	0.137	66 ↙ 4.1	1.14.832	0.095	54.9
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.185	0.926	0.052	0.133	85 ← 4	1.14.832	0.103	55.9
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.21	1.057	0.067	0.144	111 ← 4.1	1.14.832	0.104	48.9
										1.15.851	0.037	17.3
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.235	1.174	0.088	0.147	131 ↖ 4.6	1.14.832	0.105	44.5
										1.15.851	0.039	16.5
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.27	1.341	0.146	0.122	148 ↖ 4.9	1.14.832	0.09	33.5
										1.15.851	0.028	10.5
										1.14.831	0.002	0.62
										1.1.500	5·10 ⁻⁴	0.17
										1.2.6020	3·10 ⁻⁴	0.12
										1.2.266	3·10 ⁻⁴	0.115
										1.8.269	3·10 ⁻⁴	0.11
										1.18.6804	2·10 ⁻⁴	0.085
										1.14.804	2·10 ⁻⁴	0.071
										1.15.850	1·10 ⁻⁴	0.048
										1.21.871	1·10 ⁻⁴	0.044
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.307	1.534	0.2	0.106	160 ↑ 5.3	1.14.832	0.078	25.5
										1.15.851	0.022	7.1
										1.14.831	0.001	0.42
										1.8.269	0.001	0.335
										1.2.266	0.001	0.316
										1.1.500	5·10 ⁻⁴	0.158
										1.18.6804	4·10 ⁻⁴	0.118
										1.12.6158	3·10 ⁻⁴	0.114
										1.2.6020	3·10 ⁻⁴	0.1
										1.21.871	2·10 ⁻⁴	0.062
										1.14.804	2·10 ⁻⁴	0.052
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.295	1.475	0.19	0.103	171 ↑ 5.3	1.15.850	1·10 ⁻⁴	0.047
										1.18.919	1·10 ⁻⁴	0.046
										1.14.832	0.074	25.1
										1.15.851	0.019	6.5
										1.8.269	0.002	0.62
										1.2.266	0.002	0.57
										1.14.831	0.001	0.4
										1.12.6158	0.001	0.28
										1.9.930	0.001	0.255
										1.1.500	0.001	0.172
										1.18.6804	4·10 ⁻⁴	0.15
										1.18.919	3·10 ⁻⁴	0.093
										1.2.6020	3·10 ⁻⁴	0.092
										1.21.871	2·10 ⁻⁴	0.071
										1.15.850	2·10 ⁻⁴	0.054
										1.14.804	1·10 ⁻⁴	0.051
										1.2.916	1·10 ⁻⁴	0.05
										1.19.6806	1·10 ⁻⁴	0.035

Table 1.7.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.306	1.529	0.216	0.09	176 ↑ 5.3	1.14.832	0.061	19.9
										1.15.851	0.015	4.8
										1.2.266	0.002	0.8
										1.8.269	0.002	0.76
										1.9.930	0.002	0.58
										1.14.831	0.001	0.28
										1.12.6158	0.001	0.212
										1.1.919	5·10 ⁻⁴	0.162
										1.1.344	5·10 ⁻⁴	0.15
										1.1.345	4·10 ⁻⁴	0.14
										1.18.919	4·10 ⁻⁴	0.139
										1.18.6804	4·10 ⁻⁴	0.134
										1.1.500	4·10 ⁻⁴	0.132
										1.1.36	2·10 ⁻⁴	0.071
										1.2.6020	2·10 ⁻⁴	0.07
										1.2.916	2·10 ⁻⁴	0.07
										1.21.871	2·10 ⁻⁴	0.056
										1.15.850	1·10 ⁻⁴	0.048
										1.19.6806	1·10 ⁻⁴	0.044
										1.14.804	1·10 ⁻⁴	0.039
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.246	1.229	0.16	0.087	186 ↑ 5.3	1.14.832	0.056	22.9
										1.15.851	0.013	5.2
										1.8.269	0.003	1.2
										1.2.266	0.003	1.18
										1.9.930	0.002	0.84
										1.1.919	0.001	0.46
										1.1.344	0.001	0.45
										1.1.345	0.001	0.435
										1.14.831	0.001	0.31
										1.18.919	0.001	0.22
										1.12.6158	0.001	0.214
										1.1.36	0.001	0.205
										1.18.6804	4·10 ⁻⁴	0.162
										1.1.500	4·10 ⁻⁴	0.15
										1.3.242	4·10 ⁻⁴	0.147
										1.2.916	3·10 ⁻⁴	0.104
										1.7.6022	2·10 ⁻⁴	0.072
										1.16.953	2·10 ⁻⁴	0.07
										1.2.6020	2·10 ⁻⁴	0.068
										1.16.952	2·10 ⁻⁴	0.067
										1.19.6806	2·10 ⁻⁴	0.064
										1.15.850	1·10 ⁻⁴	0.06
										1.21.871	1·10 ⁻⁴	0.058
										1.15.844	1·10 ⁻⁴	0.044
										1.14.804	1·10 ⁻⁴	0.044
										1.1.928	1·10 ⁻⁴	0.041
										1.1.927	1·10 ⁻⁴	0.041

Table 1.7.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.203	1.016	0.113	0.09	196 ↑ 5.3	1.14.832	0.054	26.5
										1.15.851	0.013	6.4
										1.2.266	0.004	1.9
										1.8.269	0.003	1.58
										1.1.344	0.002	1.19
										1.1.345	0.002	1.18
										1.1.919	0.002	1.16
										1.3.242	0.001	0.68
										1.9.930	0.001	0.59
										1.1.36	0.001	0.53
										1.18.919	0.001	0.36
										1.14.831	0.001	0.355
										1.18.6804	4·10 ⁻⁴	0.198
										1.1.500	4·10 ⁻⁴	0.185
										1.12.6158	3·10 ⁻⁴	0.167
										1.2.916	3·10 ⁻⁴	0.166
										1.7.6022	3·10 ⁻⁴	0.14
										1.16.953	2·10 ⁻⁴	0.114
										1.16.952	2·10 ⁻⁴	0.112
										1.19.6806	2·10 ⁻⁴	0.08
										1.15.850	1·10 ⁻⁴	0.073
										1.2.6020	1·10 ⁻⁴	0.07
										1.3.801	1·10 ⁻⁴	0.065
										1.8.6175	1·10 ⁻⁴	0.061
										1.21.871	1·10 ⁻⁴	0.06
										1.15.844	1·10 ⁻⁴	0.056
										1.1.19	1·10 ⁻⁴	0.051
										1.14.804	1·10 ⁻⁴	0.051
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.177	0.887	0.083	0.095	206 ↗ 5.3	1.14.832	0.051	28.6
										1.15.851	0.012	7
										1.3.242	0.004	2.37
										1.2.266	0.004	2.35
										1.1.345	0.004	2.07
										1.1.344	0.004	2.06
										1.1.919	0.003	1.97
										1.8.269	0.003	1.92
										1.1.36	0.002	0.91
										1.18.919	0.001	0.44
										1.3.801	0.001	0.4
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.163	0.813	0.062	0.1	217 ↗ 5.3	1.14.832	0.052	32.2
										1.15.851	0.011	7
										1.3.242	0.007	4.4
										1.2.266	0.004	2.56
										1.1.345	0.004	2.5
										1.1.344	0.004	2.5
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.157	0.783	0.048	0.108	227 ↗ 5.3	1.14.832	0.055	35.4
										1.15.851	0.012	7.6
										1.3.242	0.011	7
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.157	0.785	0.04	0.117	237 ↗ 5.3	1.14.832	0.064	40.9
										1.3.242	0.013	8.2
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.154	0.77	0.038	0.116	247 ↗ 3.9	1.15.851	0.011	7.3
										1.14.832	0.07	45.8
										1.15.851	0.012	8.1
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.132	0.66	0.038	0.094	256 → 4	1.14.832	0.063	47.6
										1.15.851	0.013	9.7
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.12	0.599	0.035	0.085	267 → 4.1	1.14.832	0.06	50.5
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.115	0.576	0.03	0.085	278 → 5.3	1.14.832	0.062	53.8
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.113	0.567	0.027	0.086	290 → 5.3	1.14.832	0.063	55.9
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.128	0.638	0.023	0.104	296 ↘ 4.4	1.14.832	0.073	57.4

Table 1.7.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.124	0.618	0.021	0.103	310 ↘ 5.3	1.14.832	0.073	58.8
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.131	0.657	0.018	0.114	318 ↘ 5.1	1.14.832	0.078	59.6
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.15	0.757	0.038	0.113	248 → 3.9	1.14.832	0.07	46.2
										1.15.851	0.013	8.3
32. At the boundary of Myasotodovo populated locality	Resident.	2326	-1762.6	2	0.113	0.567	0.035	0.079	266 → 5.3	1.14.832	0.056	49.8
										1.15.851	0.012	10.5
33. At the boundary of Myasotodovo populated locality	Resident.	1766.8	-2105.5	2	0.104	0.522	0.031	0.073	278 → 5.3	1.14.832	0.053	50.8
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.144	0.722	0.014	0.13	330 ↘ 4.7	1.14.832	0.087	60.2
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.154	0.769	0.014	0.14	353 ↓ 4	1.14.832	0.085	55.4
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.113	0.564	0.021	0.091	16 ↓ 5.3	1.14.832	0.056	49.8
										1.15.851	0.015	13.2
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.11	0.549	0.024	0.086	29 ↙ 5.3	1.14.832	0.05	46
										1.15.851	0.012	11.1
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.14	0.705	0.03	0.11	53 ↙ 5.3	1.14.832	0.068	48.6
										1.15.851	0.014	9.7
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.194	0.972	0.058	0.136	96 ← 4.1	1.14.832	0.103	52.8
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.25	1.247	0.117	0.132	140 ↖ 4.8	1.14.832	0.096	38.6
										1.15.851	0.032	12.9
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.3	1.495	0.196	0.103	170 ↑ 5.3	1.14.832	0.076	25.4
										1.15.851	0.019	6.2
										1.8.269	0.002	0.67
										1.2.266	0.001	0.41
										1.14.831	0.001	0.41
										1.12.6158	0.001	0.227
										1.1.500	5·10 ⁻⁴	0.155
										1.9.930	4·10 ⁻⁴	0.132
										1.18.6804	4·10 ⁻⁴	0.13
										1.2.6020	3·10 ⁻⁴	0.089
										1.21.871	2·10 ⁻⁴	0.07
										1.18.919	2·10 ⁻⁴	0.064
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.1	0.503	0.046	0.054	230 ↗ 5.3	1.14.832	0.029	28.8
										1.15.851	0.006	5.6
										1.3.242	0.005	4.7
										1.8.269	0.002	2.4
										1.1.345	0.002	1.8
										1.1.344	0.002	1.8
										1.1.919	0.002	1.76
										1.2.266	0.002	1.6
										1.1.36	0.001	0.79
										1.3.801	0.001	0.64
										1.7.6022	4·10 ⁻⁴	0.42

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.7.2.

Table 1.7.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, %	Input from the	Wind	
	X	Y	% MAC	mg/m³	MAC	plant, % MAC	direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.096	0.48	0.029	0.067	41 ↙	5.3
2	-2171.24	1361.8	0.101	0.507	0.026	0.075	34 ↙	5.3
3	-1983.94	898.21	0.105	0.525	0.024	0.081	27 ↙	5.3
4	-1796.63	434.62	0.107	0.535	0.022	0.085	18 ↓	5.3
5	-1609.33	-28.98	0.107	0.534	0.022	0.085	8 ↓	5.3
6	-1422.03	-492.57	0.105	0.523	0.021	0.083	358 ↓	5.3
7	-1234.72	-956.16	0.1	0.504	0.022	0.079	348 ↓	5.3
8	-1047.42	-1419.75	0.096	0.479	0.023	0.073	338 ↓	5.3
9	-860.12	-1883.34	0.09	0.45	0.024	0.066	330 ↘	5.3
10	-672.81	-2346.94	0.084	0.42	0.025	0.059	323 ↘	5.3
11	-485.51	-2810.53	0.078	0.39	0.025	0.053	317 ↘	5.3
12	-298.21	-3274.12	0.073	0.363	0.026	0.047	312 ↘	5.3
13	-110.9	-3737.71	0.068	0.338	0.026	0.041	308 ↘	5.3
14	-1894.95	2012.7	0.107	0.534	0.03	0.077	46 ↙	5.3
15	-1707.65	1549.1	0.114	0.572	0.026	0.088	40 ↙	5.3
16	-1520.35	1085.51	0.12	0.601	0.023	0.097	31 ↙	5.3
17	-1333.04	621.92	0.123	0.614	0.021	0.102	22 ↓	5.3
18	-1145.74	158.33	0.122	0.612	0.02	0.103	10 ↓	5.3
19	-958.44	-305.26	0.12	0.599	0.019	0.1	357 ↓	5.3
20	-771.13	-768.86	0.115	0.576	0.02	0.096	345 ↓	5.3
21	-583.83	-1232.45	0.108	0.541	0.021	0.087	334 ↘	5.3
22	-396.53	-1696.04	0.1	0.501	0.023	0.077	324 ↘	5.3
23	-209.22	-2159.63	0.092	0.461	0.024	0.068	317 ↘	5.3
24	-21.92	-2623.22	0.085	0.424	0.026	0.059	311 ↘	5.3
25	165.38	-3086.82	0.078	0.39	0.027	0.051	306 ↘	5.3
26	352.69	-3550.41	0.072	0.36	0.027	0.045	302 ↘	5.3
27	-1431.36	2200	0.118	0.589	0.033	0.085	53 ↙	5.3
28	-1244.06	1736.41	0.13	0.644	0.027	0.102	47 ↙	5.3
29	-1056.75	1272.81	0.139	0.693	0.021	0.117	38 ↙	5.3
30	-869.45	809.22	0.14	0.707	0.019	0.122	27 ↙	5.3
31	-682.15	345.63	0.14	0.703	0.018	0.123	13 ↓	4.1
32	-494.84	-117.96	0.138	0.692	0.016	0.122	357 ↓	4.1
33	-307.54	-581.55	0.133	0.665	0.016	0.117	341 ↓	4.4
34	-120.24	-1045.14	0.124	0.618	0.019	0.105	327 ↘	5.3
35	67.07	-1508.74	0.112	0.562	0.022	0.09	317 ↘	5.3
36	254.37	-1972.33	0.101	0.506	0.024	0.077	310 ↘	5.3
37	441.67	-2435.92	0.092	0.459	0.026	0.066	304 ↘	5.3
38	628.98	-2899.51	0.083	0.417	0.027	0.056	300 ↘	5.3
39	816.28	-3363.1	0.076	0.382	0.028	0.049	296 ↘	5.3
40	-967.77	2387.3	0.128	0.642	0.038	0.09	61 ↙	5.3
41	-780.46	1923.71	0.141	0.707	0.032	0.11	56 ↙	5.3
42	-593.16	1460.12	0.158	0.79	0.022	0.136	47 ↙	5.3
43	-405.86	996.53	0.163	0.813	0.018	0.145	35 ↙	4.1
44	-218.55	532.93	0.162	0.809	0.016	0.146	18 ↓	3.8
45	-31.25	69.34	0.163	0.816	0.014	0.15	356 ↓	3.9
46	156.05	-394.25	0.162	0.812	0.014	0.15	334 ↘	4.1
47	343.35	-857.84	0.142	0.712	0.015	0.128	318 ↘	4.8
48	530.66	-1321.43	0.125	0.626	0.021	0.104	308 ↘	5.3
49	717.96	-1785.03	0.11	0.553	0.025	0.086	301 ↘	5.3
50	905.26	-2248.62	0.099	0.493	0.027	0.071	296 ↘	5.3
51	1092.57	-2712.21	0.089	0.445	0.028	0.06	292 →	5.3
52	1279.87	-3175.8	0.08	0.404	0.029	0.052	290 →	5.3
53	-504.18	2574.61	0.14	0.695	0.046	0.093	71 ←	5.3
54	-316.87	2111.01	0.153	0.763	0.041	0.112	67 ↙	5.3
55	-129.57	1647.42	0.168	0.839	0.032	0.136	60 ↙	4.1
56	57.73	1183.83	0.193	0.965	0.017	0.176	49 ↙	3.8
57	245.04	720.24	0.174	0.868	0.024	0.15	25 ↙	3.9
58	432.34	256.65	0.176	0.88	0.017	0.16	355 ↓	3
59	619.64	-206.95	0.206	1.028	0.015	0.19	320 ↘	4.1
60	806.95	-670.54	0.162	0.81	0.014	0.147	303 ↘	4.1
61	994.25	-1134.13	0.137	0.683	0.022	0.115	295 ↘	4.8
62	1181.55	-1597.72	0.12	0.595	0.026	0.093	289 →	5.3
63	1368.86	-2061.31	0.105	0.526	0.029	0.076	286 →	5.3

Table 1.7.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
64	1556.16	-2524.91	0.094	0.471	0.03	0.064	284 →	5.3
65	1743.46	-2988.5	0.085	0.425	0.03	0.055	282 →	5.3
66	-40.58	2761.91	0.15	0.751	0.058	0.092	83 ←	5.3
67	146.72	2298.32	0.164	0.822	0.054	0.11	81 ←	4.1
68	334.02	1834.72	0.178	0.89	0.047	0.13	78 ←	4
69	521.33	1371.13	0.187	0.933	0.04	0.147	70 ←	4
70	708.63	907.54	0.197	0.983	0.028	0.17	48 ↙	4.1
71	895.93	443.95	0.138	0.69	0.059	0.079	10 ↓	1.6
72	1083.24	-19.64	0.175	0.874	0.025	0.15	288 →	3.1
73	1270.54	-483.24	0.164	0.82	0.023	0.14	282 →	3.9
74	1457.84	-946.83	0.143	0.717	0.027	0.116	279 →	4.1
75	1645.15	-1410.42	0.125	0.627	0.03	0.095	277 →	5.3
76	1832.45	-1874.01	0.11	0.554	0.032	0.079	276 →	5.3
77	2019.75	-2337.6	0.099	0.494	0.032	0.067	275 →	5.3
78	2207.06	-2801.19	0.089	0.445	0.032	0.057	275 →	5.3
79	423.01	2949.21	0.164	0.819	0.075	0.09	95 ←	5.3
80	610.31	2485.62	0.18	0.898	0.073	0.107	97 ←	4.7
81	797.61	2022.03	0.195	0.977	0.066	0.13	100 ←	4.1
82	984.92	1558.44	0.21	1.041	0.054	0.154	106 ←	4
83	1172.22	1094.84	0.2	1.007	0.05	0.15	126 ↖	3.5
84	1359.52	631.25	0.31	1.553	0.021	0.29	57 ↙	0.7
85	1546.83	167.66	0.173	0.864	0.044	0.13	1 ↓	0.6
86	1734.13	-295.93	0.162	0.81	0.038	0.124	258 →	3.9
87	1921.43	-759.52	0.148	0.738	0.035	0.113	261 →	4
88	2108.74	-1223.12	0.13	0.652	0.035	0.095	264 →	5.3
89	2296.04	-1686.71	0.116	0.578	0.035	0.081	265 →	5.3
90	2483.34	-2150.3	0.103	0.516	0.034	0.069	266 →	5.3
91	2670.65	-2613.89	0.093	0.463	0.034	0.059	267 →	5.3
92	886.6	3136.51	0.18	0.909	0.097	0.085	107 ←	5.3
93	1073.9	2672.92	0.2	1.005	0.099	0.102	112 ←	5.3
94	1261.21	2209.33	0.22	1.093	0.093	0.125	119 ↖	4.7
95	1448.51	1745.74	0.234	1.17	0.078	0.156	131 ↖	4.4
96	1635.81	1282.15	0.24	1.192	0.06	0.178	154 ↖	4.1
97	1823.12	818.56	0.204	1.018	0.065	0.14	192 ↑	4
98	2010.42	354.96	0.23	1.148	0.027	0.203	222 ↗	3.8
99	2197.72	-108.63	0.19	0.958	0.034	0.158	241 ↗	3.4
100	2385.03	-572.22	0.16	0.794	0.039	0.12	248 →	3.8
101	2572.33	-1035.81	0.138	0.692	0.038	0.1	253 →	3.9
102	2759.63	-1499.4	0.122	0.608	0.037	0.084	256 →	5.3
103	2946.94	-1963	0.108	0.539	0.036	0.072	258 →	5.3
104	3134.24	-2426.59	0.096	0.48	0.035	0.061	260 →	5.3
105	1350.19	3323.82	0.206	1.032	0.128	0.078	117 ↖	5.3
106	1537.49	2860.23	0.232	1.162	0.14	0.093	124 ↖	5.3
107	1724.8	2396.63	0.25	1.254	0.14	0.112	132 ↖	5.2
108	1912.1	1933.04	0.256	1.279	0.125	0.13	145 ↖	4.5
109	2099.4	1469.45	0.246	1.228	0.104	0.14	164 ↑	4.4
110	2286.71	1005.86	0.23	1.155	0.081	0.15	186 ↑	4
111	2474.01	542.27	0.213	1.063	0.062	0.15	206 ↗	3.9
112	2661.31	78.67	0.21	1.056	0.037	0.174	222 ↗	4
113	2848.62	-384.92	0.18	0.899	0.037	0.143	234 ↗	4.1
114	3035.92	-848.51	0.15	0.747	0.039	0.11	241 ↗	5.3
115	3223.22	-1312.1	0.128	0.641	0.039	0.089	246 ↗	5.3
116	3410.53	-1775.69	0.112	0.558	0.038	0.073	250 →	5.3
117	3597.83	-2239.28	0.098	0.492	0.037	0.061	252 →	5.3
118	1813.78	3511.12	0.243	1.213	0.17	0.071	126 ↖	5.3
119	2001.09	3047.53	0.287	1.434	0.204	0.083	133 ↖	5.3
120	2188.39	2583.94	0.313	1.566	0.218	0.096	142 ↖	5.3
121	2375.69	2120.35	0.304	1.519	0.196	0.108	154 ↖	5.3
122	2563	1656.75	0.27	1.361	0.156	0.116	168 ↑	4.8
123	2750.3	1193.16	0.24	1.207	0.117	0.124	184 ↑	4.5
124	2937.6	729.57	0.213	1.064	0.089	0.124	199 ↑	4.1
125	3124.91	265.98	0.196	0.981	0.064	0.132	212 ↗	4.1
126	3312.21	-197.61	0.177	0.885	0.05	0.128	223 ↗	5.3
127	3499.51	-661.21	0.152	0.76	0.045	0.107	231 ↗	5.3
128	3686.82	-1124.8	0.13	0.652	0.043	0.087	237 ↗	5.3

Table 1.7.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
129	3874.12	-1588.39	0.113	0.566	0.041	0.072	242 ↗	5.3
130	4061.42	-2051.98	0.1	0.497	0.039	0.06	245 ↗	5.3
131	2277.38	3698.42	0.29	1.464	0.23	0.063	133 ↖	5.3
132	2464.68	3234.83	0.39	1.967	0.32	0.072	140 ↖	5.3
133	2651.98	2771.24	0.47	2.343	0.39	0.081	149 ↖	5.3
134	2839.29	2307.65	0.41	2.056	0.32	0.09	159 ↑	5.3
135	3026.59	1844.06	0.32	1.592	0.22	0.096	171 ↑	5.3
136	3213.89	1380.47	0.256	1.282	0.154	0.103	183 ↑	5.3
137	3401.2	916.87	0.216	1.079	0.111	0.104	195 ↑	5.3
138	3588.5	453.28	0.19	0.947	0.083	0.107	206 ↗	5.3
139	3775.8	-10.31	0.168	0.841	0.064	0.104	215 ↗	5.3
140	3963.11	-473.9	0.147	0.737	0.054	0.093	224 ↗	5.3
141	4150.41	-937.49	0.128	0.641	0.048	0.08	230 ↗	5.3
142	4337.71	-1401.09	0.112	0.56	0.045	0.067	235 ↗	5.3
143	4525.01	-1864.68	0.099	0.494	0.042	0.057	239 ↗	5.3
144	2740.97	3885.73	0.34	1.715	0.287	0.056	139 ↖	5.3
145	2928.27	3422.14	0.46	2.287	0.395	0.062	145 ↖	5.3
146	3115.57	2958.54	0.46	2.308	0.39	0.069	153 ↖	5.3
147	3302.88	2494.95	0.465	2.326	0.39	0.075	162 ↑	5.3
148	3490.18	2031.36	0.37	1.841	0.287	0.081	172 ↑	5.3
149	3677.48	1567.77	0.27	1.337	0.182	0.085	182 ↑	5.3
150	3864.79	1104.18	0.215	1.076	0.128	0.087	192 ↑	5.3
151	4052.09	640.58	0.183	0.916	0.095	0.088	202 ↑	5.3
152	4239.39	176.99	0.16	0.802	0.075	0.086	210 ↗	5.3
153	4426.7	-286.6	0.14	0.703	0.062	0.079	218 ↗	5.3
154	4614	-750.19	0.124	0.619	0.054	0.07	224 ↗	5.3
155	4801.3	-1213.78	0.11	0.546	0.048	0.061	229 ↗	5.3
156	4988.61	-1677.37	0.097	0.484	0.044	0.052	233 ↗	5.3
157	3204.56	4073.03	0.34	1.712	0.293	0.05	143 ↖	5.3
158	3391.86	3609.44	0.45	2.263	0.4	0.054	150 ↖	5.3
159	3579.17	3145.85	0.46	2.278	0.396	0.06	157 ↖	5.3
160	3766.47	2682.26	0.46	2.292	0.394	0.064	165 ↑	5.3
161	3953.77	2218.66	0.364	1.821	0.296	0.068	173 ↑	5.3
162	4141.08	1755.07	0.26	1.3	0.19	0.071	182 ↑	5.3
163	4328.38	1291.48	0.207	1.036	0.134	0.073	190 ↑	5.3
164	4515.68	827.89	0.175	0.873	0.102	0.073	198 ↑	5.3
165	4702.99	364.3	0.152	0.759	0.08	0.071	206 ↗	5.3
166	4890.29	-99.3	0.133	0.667	0.067	0.067	213 ↗	5.3
167	5077.59	-562.89	0.118	0.591	0.057	0.061	219 ↗	5.3
168	5264.9	-1026.48	0.105	0.525	0.051	0.054	224 ↗	5.3
169	5452.2	-1490.07	0.094	0.469	0.046	0.047	228 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.7.1, scale 1:50000.

337. Carbon oxide

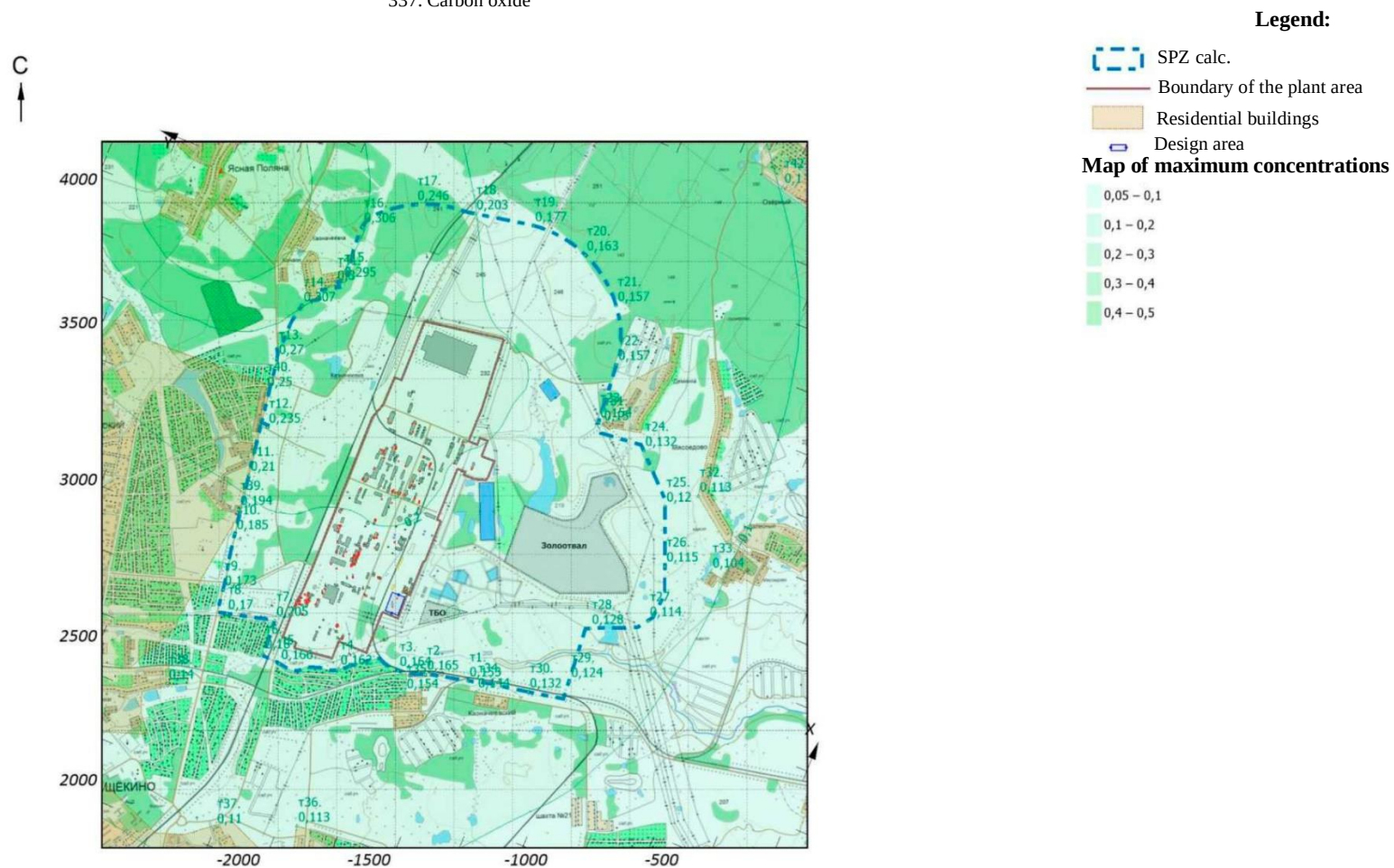


Figure 1.7.1 — Case No. 1, calculation for all enterprises and plants within the industrial site — prospects for development.
Site No. 1 — calculation for the entire cluster of industrial enterprises and plants within the industrial site.

Scale 1:50000

1.8 Calculation of contamination — substance 1325. Formaldehyde

Full name of the substance with code 1325- Formaldehyde. The maximum single allowed concentration is 0.05 mg/m³, hazard class 2.

The number of sources of atmospheric contamination to be considered in the calculation is 8 (including: 7 stationary sources, 1 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 4; 11-20 m – 2; 21-29 m – none; 30-50 m – 2; 51-100 m – none; above 100 m – none.

The total emissions from the sources used in the calculations make up 0.107 g/s and 0.423 TPA.

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.044**, which is reached in point No. 12 at the *boundary of SPZ and Pervomayskiy residential area*, X=402220,07 Y=-635410,9 at wind direction 93° and wind speed 3.9 m/s inclusive of: the input from the plant emitters — 0.044;

- in the residential area, it makes up **0.042**, which is reached in point No.40 at the *boundary of Pervomayskiy*, X=402208.23 Y=-635099.9, wind direction is 106°, wind velocity is 5.3 m/s inclusive of: the input from the plant emitters — 0.042.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.8.1.

Table 1.8.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.017	0.00087	-	0.017	355 ↓ 1.7	1.1.6001	0.012	69.2
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.018	0.0009	-	0.018	6 ↓ 1.7	1.1.6001	0.013	71.9
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.018	0.00088	-	0.018	12 ↓ 1.7	1.1.6001	0.012	70.6
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.016	0.00079	-	0.016	25 ↙ 1.9	1.1.6001	0.011	68.8
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.014	0.00071	-	0.014	36 ↙ 2.3	1.1.6001	0.009	65.5
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.014	0.00071	-	0.014	39 ↙ 2.3	1.1.6001	0.009	62
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.017	0.00085	-	0.017	42 ↙ 1.9	1.1.6001	0.011	62.2
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.015	0.00076	-	0.015	50 ↙ 2.3	1.1.6001	0.009	58.7

Table 1.8.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.017	0.00083	-	0.017	54 ↙ 2.2	1.1.6001	0.009	56.3
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.022	0.00111	-	0.022	63 ↙ 1.8	1.1.6001	0.011	50.9
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.032	0.0016	-	0.032	77 ← 1.4	1.12.157	0.015	47.2
										1.1.6001	0.015	45.8
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.044	0.0022	-	0.044	93 ← 3.9	1.12.157	0.027	61.1
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.037	0.00187	-	0.037	118 ↖ 1.3	1.12.157	0.018	49.3
										1.1.6001	0.016	43.4
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.029	0.00146	-	0.029	136 ↖ 1.3	1.1.6001	0.014	49.4
										1.12.157	0.012	42.4
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.028	0.00138	-	0.028	151 ↖ 1	1.1.6001	0.014	51.4
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.019	0.00095	-	0.019	162 ↑ 1	1.1.6001	0.01	51.1
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.018	0.00088	-	0.018	173 ↑ 1.7	1.1.6001	0.012	68.8
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.019	0.00093	-	0.019	187 ↑ 1.6	1.1.6001	0.013	71.7
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.019	0.00094	-	0.019	202 ↑ 1.6	1.1.6001	0.013	71.3
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.02	0.00098	-	0.02	217 ↗ 1.5	1.1.6001	0.014	69.1
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.023	0.00115	-	0.023	232 ↗ 1.3	1.1.6001	0.016	67.4
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.031	0.00156	-	0.031	246 ↗ 1	1.1.6001	0.021	67.3
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.042	0.0021	-	0.042	263 → 0.8	1.1.6001	0.028	65.8
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.03	0.0015	-	0.03	273 → 1.1	1.1.6001	0.019	65.3
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.023	0.00117	-	0.023	287 → 1.5	1.1.6001	0.015	64.4
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.019	0.00097	-	0.019	300 ↘ 1.8	1.1.6001	0.012	64.2
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.017	0.00085	-	0.017	312 ↘ 2	1.1.6001	0.011	64.9
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.02	0.001	-	0.02	323 ↘ 1.6	1.1.6001	0.013	66.6
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.016	0.00079	-	0.016	333 ↘ 2	1.1.6001	0.011	66.6
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.016	0.0008	-	0.016	342 ↓ 2	1.1.6001	0.011	67.9
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.041	0.00206	-	0.041	264 → 0.8	1.1.6001	0.027	65.9
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.019	0.00097	-	0.019	283 → 5.3	1.1.6001	0.01	53.3
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.016	0.00078	-	0.016	296 ↘ 5.3	1.1.6001	0.008	53.7
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.016	0.00082	-	0.016	354 ↓ 1.9	1.1.6001	0.012	70.8
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.016	0.00078	-	0.016	9 ↓ 1.9	1.1.6001	0.011	69
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.008	0.00042	-	0.008	21 ↓ 3.8	1.1.6001	0.006	65.7
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.008	0.00039	-	0.008	30 ↙ 4.3	1.1.6001	0.005	62.4

Table 1.8.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.01	0.00052	-	0.01	48 ↙ 3.4	1.1.6001	0.006	60
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.026	0.00128	-	0.026	69 ← 1.6	1.1.6001	0.013	49.9
										1.12.157	0.011	42.5
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.042	0.0021	-	0.042	106 ← 5.3	1.12.157	0.026	61.3
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.028	0.00138	-	0.028	149 ↖ 1.1	1.1.6001	0.014	50.8
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.009	0.00045	-	0.009	233 ↗ 3.8	1.1.6001	0.006	65

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.8.2.

Table 1.8.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.007	0.00033	-	0.007	39 ↙	5.3
2	-2171.24	1361.8	0.007	0.00035	-	0.007	34 ↙	5.3
3	-1983.94	898.21	0.007	0.00037	-	0.007	28 ↙	4.5
4	-1796.63	434.62	0.008	0.00039	-	0.008	22 ↓	4.2
5	-1609.33	-28.98	0.008	0.00041	-	0.008	15 ↓	3.9
6	-1422.03	-492.57	0.008	0.00042	-	0.008	7 ↓	3.8
7	-1234.72	-956.16	0.009	0.00043	-	0.009	359 ↓	3.7
8	-1047.42	-1419.75	0.009	0.00043	-	0.009	351 ↓	3.8
9	-860.12	-1883.34	0.008	0.00042	-	0.008	343 ↓	3.9
10	-672.81	-2346.94	0.008	0.000404	-	0.008	336 ↘	4.1
11	-485.51	-2810.53	0.008	0.00038	-	0.008	329 ↘	4.4
12	-298.21	-3274.12	0.007	0.00036	-	0.007	323 ↘	5.3
13	-110.9	-3737.71	0.007	0.000334	-	0.007	318 ↘	5.3
14	-1894.95	2012.7	0.007	0.000366	-	0.007	44 ↙	5.3
15	-1707.65	1549.1	0.008	0.000395	-	0.008	38 ↙	4.3
16	-1520.35	1085.51	0.009	0.00043	-	0.009	32 ↙	3.9
17	-1333.04	621.92	0.009	0.00046	-	0.009	25 ↙	3.5
18	-1145.74	158.33	0.01	0.00049	-	0.01	17 ↓	3.3
19	-958.44	-305.26	0.01	0.00051	-	0.01	8 ↓	3.1
20	-771.13	-768.86	0.01	0.00052	-	0.01	359 ↓	3
21	-583.83	-1232.45	0.01	0.00052	-	0.01	349 ↓	3.1
22	-396.53	-1696.04	0.01	0.0005	-	0.01	340 ↓	3.2
23	-209.22	-2159.63	0.01	0.00048	-	0.01	332 ↘	3.5
24	-21.92	-2623.22	0.009	0.00044	-	0.009	325 ↘	3.9
25	165.38	-3086.82	0.008	0.00041	-	0.008	319 ↘	4.3
26	352.69	-3550.41	0.007	0.00037	-	0.007	314 ↘	5.3
27	-1431.36	2200	0.008	0.00041	-	0.008	49 ↙	4.3
28	-1244.06	1736.41	0.009	0.00045	-	0.009	44 ↙	3.8
29	-1056.75	1272.81	0.01	0.0005	-	0.01	37 ↙	3.3
30	-869.45	809.22	0.011	0.00055	-	0.011	29 ↙	2.9
31	-682.15	345.63	0.012	0.0006	-	0.012	20 ↓	2.6
32	-494.84	-117.96	0.013	0.00064	-	0.013	10 ↓	2.4
33	-307.54	-581.55	0.013	0.00066	-	0.013	359 ↓	2.3
34	-120.24	-1045.14	0.013	0.00066	-	0.013	347 ↓	2.4
35	67.07	-1508.74	0.013	0.00063	-	0.013	337 ↘	2.6
36	254.37	-1972.33	0.012	0.00058	-	0.012	328 ↘	2.9
37	441.67	-2435.92	0.01	0.00052	-	0.01	320 ↘	3.3
38	628.98	-2899.51	0.009	0.00047	-	0.009	314 ↘	5.3
39	816.28	-3363.1	0.008	0.00042	-	0.008	309 ↘	5.3

Table 1.8.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
40	-967.77	2387.3	0.009	0.00047	-	0.009	55 ↙	3.9
41	-780.46	1923.71	0.011	0.00053	-	0.011	50 ↙	3.4
42	-593.16	1460.12	0.012	0.0006	-	0.012	43 ↙	2.8
43	-405.86	996.53	0.014	0.00068	-	0.014	35 ↙	2.4
44	-218.55	532.93	0.016	0.00078	-	0.016	25 ↙	2
45	-31.25	69.34	0.017	0.00087	-	0.017	12 ↓	1.7
46	156.05	-394.25	0.018	0.00092	-	0.018	358 ↓	1.6
47	343.35	-857.84	0.018	0.00091	-	0.018	344 ↓	1.7
48	530.66	-1321.43	0.017	0.00083	-	0.017	332 ↘	1.9
49	717.96	-1785.03	0.015	0.00073	-	0.015	322 ↘	2.3
50	905.26	-2248.62	0.012	0.00062	-	0.012	314 ↘	2.8
51	1092.57	-2712.21	0.011	0.00053	-	0.011	308 ↘	3.3
52	1279.87	-3175.8	0.009	0.00046	-	0.009	303 ↘	3.9
53	-504.18	2574.61	0.011	0.00054	-	0.011	62 ↙	5.3
54	-316.87	2111.01	0.012	0.00062	-	0.012	57 ↙	3
55	-129.57	1647.42	0.015	0.00074	-	0.015	51 ↙	2.4
56	57.73	1183.83	0.018	0.00089	-	0.018	42 ↙	1.8
57	245.04	720.24	0.022	0.0011	-	0.022	29 ↙	1
58	432.34	256.65	0.027	0.00133	-	0.027	16 ↓	1
59	619.64	-206.95	0.03	0.00148	-	0.03	358 ↓	0.9
60	806.95	-670.54	0.028	0.00142	-	0.028	339 ↓	1
61	994.25	-1134.13	0.024	0.00119	-	0.024	324 ↘	1.3
62	1181.55	-1597.72	0.019	0.00094	-	0.019	313 ↘	1.8
63	1368.86	-2061.31	0.015	0.00075	-	0.015	306 ↘	2.3
64	1556.16	-2524.91	0.012	0.00062	-	0.012	300 ↘	5.3
65	1743.46	-2988.5	0.01	0.00051	-	0.01	296 ↘	3.5
66	-40.58	2761.91	0.012	0.0006	-	0.012	70 ←	4.1
67	146.72	2298.32	0.015	0.00074	-	0.015	66 ↙	2.7
68	334.02	1834.72	0.019	0.00094	-	0.019	61 ↙	2
69	521.33	1371.13	0.025	0.00125	-	0.025	52 ↙	1.4
70	708.63	907.54	0.034	0.0017	-	0.034	39 ↙	0.8
71	895.93	443.95	0.041	0.00204	-	0.041	23 ↙	0.6
72	1083.24	-19.64	0.047	0.00237	-	0.047	0 ↓	0.7
73	1270.54	-483.24	0.046	0.0023	-	0.046	331 ↘	0.7
74	1457.84	-946.83	0.036	0.0018	-	0.036	313 ↘	0.8
75	1645.15	-1410.42	0.025	0.00124	-	0.025	302 ↘	1.3
76	1832.45	-1874.01	0.018	0.0009	-	0.018	295 ↘	2
77	2019.75	-2337.6	0.014	0.00069	-	0.014	291 →	2.6
78	2207.06	-2801.19	0.011	0.00056	-	0.011	288 →	3.2
79	423.01	2949.21	0.014	0.0007	-	0.014	80 ←	5.3
80	610.31	2485.62	0.018	0.00091	-	0.018	77 ←	5.3
81	797.61	2022.03	0.024	0.0012	-	0.024	74 ←	1.8
82	984.92	1558.44	0.037	0.00184	-	0.037	67 ↙	1.1
83	1172.22	1094.84	0.056	0.0028	-	0.056	53 ↙	0.6
84	1359.52	631.25	0.073	0.00364	-	0.073	359 ↓	1.2
85	1546.83	167.66	0.11	0.0055	-	0.11	5 ↓	5.3
86	1734.13	-295.93	0.084	0.0042	-	0.084	313 ↘	0.8
87	1921.43	-759.52	0.049	0.00246	-	0.049	295 ↘	0.8
88	2108.74	-1223.12	0.031	0.00155	-	0.031	287 →	1
89	2296.04	-1686.71	0.02	0.00102	-	0.02	283 →	5.3
90	2483.34	-2150.3	0.015	0.00076	-	0.015	281 →	5.3
91	2670.65	-2613.89	0.012	0.00059	-	0.012	279 →	3.1
92	886.6	3136.51	0.015	0.00076	-	0.015	90 ←	5.3
93	1073.9	2672.92	0.021	0.00103	-	0.021	90 ←	5.3
94	1261.21	2209.33	0.03	0.0015	-	0.03	89 ←	5.3
95	1448.51	1745.74	0.048	0.0024	-	0.048	89 ←	1.1
96	1635.81	1282.15	0.123	0.0061	-	0.123	86 ←	0.9
97	1823.12	818.56	0.5	0.025	-	0.5	347 ↓	0.5
98	2010.42	354.96	2.43	0.121	-	2.43	121 ↖	0.6
99	2197.72	-108.63	0.13	0.0065	-	0.13	266 →	0.8
100	2385.03	-572.22	0.055	0.0028	-	0.055	269 →	0.8
101	2572.33	-1035.81	0.033	0.00166	-	0.033	269 →	0.9
102	2759.63	-1499.4	0.021	0.00106	-	0.021	270 →	1.6
103	2946.94	-1963	0.015	0.00077	-	0.015	270 →	5.3
104	3134.24	-2426.59	0.012	0.0006	-	0.012	270 →	5.3

Table 1.8.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
105	1350.19	3323.82	0.015	0.00075	-	0.015	100 ←	5.3
106	1537.49	2860.23	0.02	0.00102	-	0.02	102 ←	5.3
107	1724.8	2396.63	0.029	0.00146	-	0.029	106 ←	5.3
108	1912.1	1933.04	0.043	0.00213	-	0.043	112 ←	1.2
109	2099.4	1469.45	0.076	0.0038	-	0.076	127 ↖	0.9
110	2286.71	1005.86	0.105	0.0052	-	0.105	182 ↑	1
111	2474.01	542.27	0.092	0.0046	-	0.092	175 ↑	5.3
112	2661.31	78.67	0.069	0.00344	-	0.069	223 ↗	0.7
113	2848.62	-384.92	0.045	0.00227	-	0.045	243 ↗	0.7
114	3035.92	-848.51	0.03	0.00148	-	0.03	252 →	1.1
115	3223.22	-1312.1	0.02	0.00099	-	0.02	256 →	1.7
116	3410.53	-1775.69	0.015	0.00073	-	0.015	259 →	2.4
117	3597.83	-2239.28	0.011	0.00057	-	0.011	261 →	3.1
118	1813.78	3511.12	0.014	0.00069	-	0.014	110 ←	5.3
119	2001.09	3047.53	0.018	0.00089	-	0.018	114 ↖	5.3
120	2188.39	2583.94	0.023	0.00113	-	0.023	120 ↖	5.3
121	2375.69	2120.35	0.029	0.00144	-	0.029	128 ↖	1.5
122	2563	1656.75	0.039	0.00193	-	0.039	143 ↖	0.9
123	2750.3	1193.16	0.042	0.0021	-	0.042	162 ↑	0.6
124	2937.6	729.57	0.043	0.00213	-	0.043	182 ↑	0.6
125	3124.91	265.98	0.041	0.00203	-	0.041	208 ↗	0.7
126	3312.21	-197.61	0.033	0.00163	-	0.033	226 ↗	0.9
127	3499.51	-661.21	0.023	0.00115	-	0.023	237 ↗	1.4
128	3686.82	-1124.8	0.017	0.00085	-	0.017	244 ↗	2
129	3874.12	-1588.39	0.013	0.00066	-	0.013	249 →	2.6
130	4061.42	-2051.98	0.011	0.00054	-	0.011	252 →	3.3
131	2277.38	3698.42	0.012	0.0006	-	0.012	118 ↖	5.3
132	2464.68	3234.83	0.014	0.00072	-	0.014	123 ↖	5.3
133	2651.98	2771.24	0.017	0.00084	-	0.017	131 ↖	5.3
134	2839.29	2307.65	0.02	0.001	-	0.02	139 ↖	1.9
135	3026.59	1844.06	0.023	0.00116	-	0.023	152 ↖	1.2
136	3213.89	1380.47	0.026	0.0013	-	0.026	166 ↑	1
137	3401.2	916.87	0.027	0.00137	-	0.027	183 ↑	1
138	3588.5	453.28	0.026	0.0013	-	0.026	200 ↑	1.1
139	3775.8	-10.31	0.022	0.00108	-	0.022	215 ↗	1.4
140	3963.11	-473.9	0.017	0.00087	-	0.017	226 ↗	1.8
141	4150.41	-937.49	0.014	0.0007	-	0.014	234 ↗	2.4
142	4337.71	-1401.09	0.012	0.00058	-	0.012	240 ↗	2.9
143	4525.01	-1864.68	0.01	0.00049	-	0.01	244 ↗	3.5
144	2740.97	3885.73	0.01	0.00052	-	0.01	126 ↖	5.3
145	2928.27	3422.14	0.012	0.0006	-	0.012	131 ↖	5.3
146	3115.57	2958.54	0.013	0.00066	-	0.013	138 ↖	2.9
147	3302.88	2494.95	0.015	0.00074	-	0.015	146 ↖	2.4
148	3490.18	2031.36	0.016	0.0008	-	0.016	157 ↖	2
149	3677.48	1567.77	0.017	0.00086	-	0.017	169 ↑	1.8
150	3864.79	1104.18	0.018	0.00088	-	0.018	182 ↑	1.7
151	4052.09	640.58	0.017	0.00084	-	0.017	195 ↑	1.8
152	4239.39	176.99	0.015	0.00077	-	0.015	208 ↗	2
153	4426.7	-286.6	0.013	0.00067	-	0.013	218 ↗	2.4
154	4614	-750.19	0.012	0.00058	-	0.012	226 ↗	2.8
155	4801.3	-1213.78	0.01	0.0005	-	0.01	232 ↗	3.3
156	4988.61	-1677.37	0.009	0.00044	-	0.009	237 ↗	3.9
157	3204.56	4073.03	0.009	0.00045	-	0.009	132 ↖	5.3
158	3391.86	3609.44	0.01	0.0005	-	0.01	137 ↖	5.3
159	3579.17	3145.85	0.011	0.00054	-	0.011	144 ↖	3.4
160	3766.47	2682.26	0.012	0.00058	-	0.012	152 ↖	3
161	3953.77	2218.66	0.012	0.00061	-	0.012	161 ↑	2.7
162	4141.08	1755.07	0.013	0.00063	-	0.013	171 ↑	2.5
163	4328.38	1291.48	0.013	0.00064	-	0.013	182 ↑	2.4
164	4515.68	827.89	0.012	0.00062	-	0.012	193 ↑	2.5
165	4702.99	364.3	0.012	0.00059	-	0.012	203 ↗	2.6
166	4890.29	-99.3	0.011	0.00054	-	0.011	212 ↗	2.9
167	5077.59	-562.89	0.01	0.00049	-	0.01	220 ↗	3.3
168	5264.9	-1026.48	0.009	0.00044	-	0.009	226 ↗	3.8
169	5452.2	-1490.07	0.008	0.00039	-	0.008	231 ↗	4.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.8.1, scale **1:50000**.

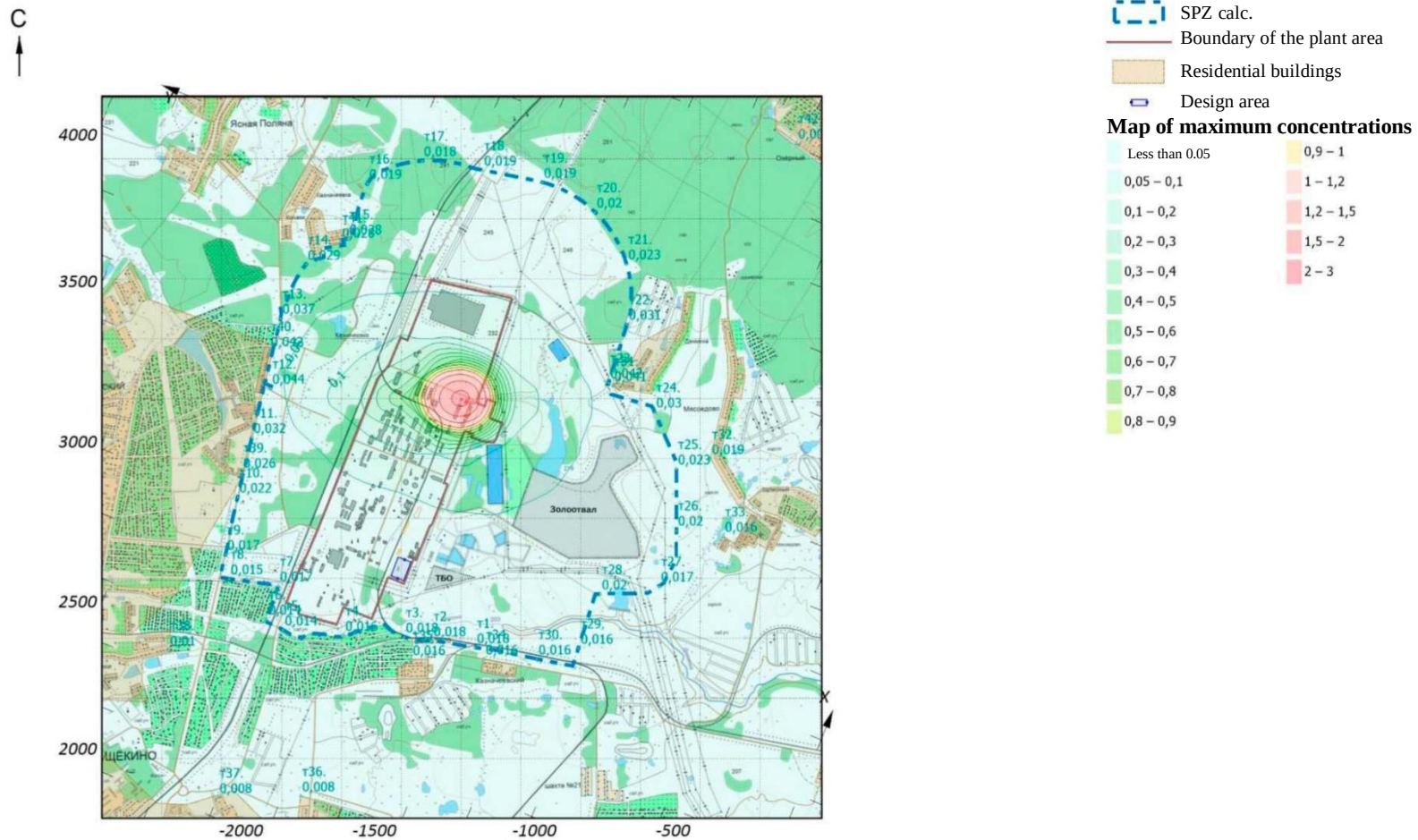


Figure 1.8.1 — Case No. 1, calculation for all enterprises and plants within the industrial site — prospects for development.
 Site No. 1 — calculation for the entire cluster of industrial enterprises and plants within the industrial site.

Scale 1:50000

1.9 Calculation of contamination — substance 2909. Inorganic dust: SiO₂<20%»

Full name of the substance with code 2909 — inorganic dust with silica dioxide below 20% (dolomite, dust from cement production — limestone, chalk, ashes, feedstock mixtures, dust from rotating heaters, bauxite, etc.) The maximum single allowed concentration is 0,5 mg/m³, hazard class 3.

The number of sources of atmospheric contamination to be considered in the calculation is 19 (including: 14 stationary sources, 5 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 8; 11-20 m – 11; 21-29 m – none; 30-50 m – none; 51-100 m – none; above 100 m – none.

The total emissions from the sources used in the calculations makes up 6.575 g/s and 3.138 TPA.

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.6**, which is reached in point No. 4 at the *boundary of SPZ and garden plots*, X=402830.45 Y=-637471.2, at wind direction 22° and wind speed 5.3 m/s inclusive of: the input from the plant emitters — 0.06;

- in the residential area, it makes up **0.4**, which is reached in point No.35 at the *boundary of workers camp of Mine No. 20*, X=403394.34 Y=-637674, wind direction is 342°, wind velocity is 5.3 m/s inclusive of: the input from the plant emitters — 0.04.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.9.1.

Table 1.9.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m ³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.3	0.149	-	0.3	314 ↘ 5.3	1.16.6209	0.25	83.4
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.44	0.22	-	0.44	328 ↘ 5.3	1.16.6209	0.39	88.8
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.57	0.283	-	0.57	343 ↓ 5.3	1.16.6209	0.52	92.1
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.6	0.299	-	0.6	22 ↓ 5.3	1.16.6209	0.53	88.9
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.38	0.189	-	0.38	50 ↙ 5.3	1.16.6209	0.306	80.8
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.36	0.179	-	0.36	58 ↙ 5.3	1.16.6209	0.274	76.5
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.52	0.258	-	0.52	71 ← 5.3	1.16.6209	0.385	74.6

Table 1.9.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.324	0.162	-	0.324	80 ← 5.3	1.16.6209	0.21	64.8
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.32	0.159	-	0.32	90 ← 5.3	1.16.6209	0.204	64.2
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.28	0.139	-	0.28	112 ← 5.3	1.16.6209	0.207	74.5
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.214	0.107	-	0.214	133 ↖ 5.3	1.16.6209	0.17	79.3
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.17	0.084	-	0.17	147 ↖ 5.3	1.16.6209	0.136	80.8
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.11	0.055	-	0.11	158 ↑ 5.3	1.16.6209	0.087	78
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.08	0.04	-	0.08	167 ↑ 5.3	1.16.6209	0.062	78.3
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.07	0.035	-	0.07	175 ↑ 5.3	1.16.6209	0.055	79.4
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.049	0.0245	-	0.049	179 ↑ 5.3	1.16.6209	0.038	78
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.042	0.021	-	0.042	187 ↑ 5.3	1.16.6209	0.033	77.5
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.042	0.021	-	0.042	196 ↑ 5.3	1.16.6209	0.032	77.1
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.04	0.02	-	0.04	204 ↗ 5.3	1.16.6209	0.031	77.5
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.041	0.0203	-	0.041	213 ↗ 5.3	1.16.6209	0.031	76.8
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.046	0.023	-	0.046	221 ↗ 5.3	1.16.6209	0.036	77.2
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.061	0.0305	-	0.061	228 ↗ 5.3	1.16.6209	0.047	77.4
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.09	0.045	-	0.09	234 ↗ 5.3	1.16.6209	0.07	77.7
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.074	0.037	-	0.074	243 ↗ 5.3	1.16.6209	0.057	77.3
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.075	0.037	-	0.075	255 → 5.3	1.16.6209	0.057	76.6
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.081	0.0405	-	0.081	266 → 5.3	1.16.6209	0.062	76.7
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.091	0.046	-	0.091	277 → 5.3	1.16.6209	0.07	76.9
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.142	0.071	-	0.142	280 → 5.3	1.16.6209	0.105	73.8
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.144	0.072	-	0.144	295 ↘ 5.3	1.16.6209	0.108	75.1
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.18	0.091	-	0.18	303 ↘ 5.3	1.16.6209	0.138	76.3
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.088	0.044	-	0.088	235 ↗ 5.3	1.16.6209	0.069	77.6
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.058	0.029	-	0.058	254 → 5.3	1.16.6209	0.045	76.6
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.058	0.029	-	0.058	267 → 5.3	1.16.6209	0.044	76.3
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.257	0.129	-	0.257	315 ↘ 5.3	1.16.6209	0.21	82.4
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.4	0.198	-	0.4	342 ↓ 5.3	1.16.6209	0.35	87.8
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.111	0.056	-	0.11	17 ↓ 5.3	1.16.6209	0.085	76.7

Table 1.9.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	mg/m³					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.086	0.043	-	0.086	32 ↙ 5.3	1.16.6209	0.064	73.8
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.15	0.076	-	0.15	64 ↙ 5.3	1.16.6209	0.1	66.6
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.25	0.124	-	0.25	121 ↖ 5.3	1.16.6209	0.19	77.3
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.132	0.066	-	0.132	152 ↖ 5.3	1.16.6209	0.104	79
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.071	0.0355	-	0.071	174 ↑ 5.3	1.16.6209	0.056	78.8
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.018	0.009	-	0.018	226 ↗ 5.3	1.16.6209	0.013	72.4

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.9.2.

Table 1.9.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.047	0.0236	-	0.047	45 ↙	5.3
2	-2171.24	1361.8	0.06	0.03	-	0.06	38 ↙	5.3
3	-1983.94	898.21	0.076	0.038	-	0.076	30 ↙	5.3
4	-1796.63	434.62	0.091	0.046	-	0.091	19 ↓	5.3
5	-1609.33	-28.98	0.1	0.05	-	0.1	7 ↓	5.3
6	-1422.03	-492.57	0.1	0.05	-	0.1	354 ↓	5.3
7	-1234.72	-956.16	0.091	0.046	-	0.091	342 ↓	5.3
8	-1047.42	-1419.75	0.076	0.038	-	0.076	331 ↘	5.3
9	-860.12	-1883.34	0.061	0.0303	-	0.061	322 ↘	5.3
10	-672.81	-2346.94	0.048	0.0238	-	0.048	315 ↘	5.3
11	-485.51	-2810.53	0.037	0.0186	-	0.037	309 ↘	5.3
12	-298.21	-3274.12	0.029	0.0147	-	0.029	304 ↘	5.3
13	-110.9	-3737.71	0.024	0.0118	-	0.024	301 ↘	5.3
14	-1894.95	2012.7	0.061	0.031	-	0.061	53 ↙	5.3
15	-1707.65	1549.1	0.085	0.043	-	0.085	46 ↙	5.3
16	-1520.35	1085.51	0.114	0.057	-	0.114	36 ↙	5.3
17	-1333.04	621.92	0.137	0.068	-	0.137	24 ↙	5.3
18	-1145.74	158.33	0.153	0.076	-	0.153	9 ↓	5.3
19	-958.44	-305.26	0.154	0.077	-	0.154	353 ↓	5.3
20	-771.13	-768.86	0.137	0.069	-	0.137	337 ↘	5.3
21	-583.83	-1232.45	0.112	0.056	-	0.112	325 ↘	5.3
22	-396.53	-1696.04	0.085	0.042	-	0.085	315 ↘	5.3
23	-209.22	-2159.63	0.061	0.0306	-	0.061	308 ↘	5.3
24	-21.92	-2623.22	0.045	0.0227	-	0.045	302 ↘	5.3
25	165.38	-3086.82	0.034	0.0172	-	0.034	298 ↘	5.3
26	352.69	-3550.41	0.027	0.0133	-	0.027	295 ↘	5.3
27	-1431.36	2200	0.08	0.04	-	0.08	62 ↙	5.3
28	-1244.06	1736.41	0.12	0.059	-	0.12	55 ↙	5.3
29	-1056.75	1272.81	0.16	0.08	-	0.16	46 ↙	5.3
30	-869.45	809.22	0.21	0.106	-	0.21	33 ↙	5.3
31	-682.15	345.63	0.26	0.131	-	0.26	14 ↓	5.3
32	-494.84	-117.96	0.263	0.131	-	0.263	350 ↓	5.3
33	-307.54	-581.55	0.215	0.107	-	0.215	330 ↘	5.3
34	-120.24	-1045.14	0.16	0.08	-	0.16	315 ↘	5.3
35	67.07	-1508.74	0.114	0.057	-	0.114	305 ↘	5.3
36	254.37	-1972.33	0.078	0.039	-	0.078	299 ↘	5.3
37	441.67	-2435.92	0.054	0.027	-	0.054	294 ↘	5.3

Table 1.9.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
38	628.98	-2899.51	0.039	0.0196	-	0.039	291 →	5.3
39	816.28	-3363.1	0.03	0.0148	-	0.03	288 →	5.3
40	-967.77	2387.3	0.099	0.049	-	0.099	72 ←	5.3
41	-780.46	1923.71	0.15	0.075	-	0.15	68 ←	5.3
42	-593.16	1460.12	0.23	0.115	-	0.23	60 ↙	5.3
43	-405.86	996.53	0.35	0.174	-	0.35	48 ↙	5.3
44	-218.55	532.93	0.56	0.281	-	0.56	23 ↙	5.3
45	-31.25	69.34	0.56	0.281	-	0.56	345 ↓	5.3
46	156.05	-394.25	0.36	0.179	-	0.36	315 ↘	5.3
47	343.35	-857.84	0.227	0.113	-	0.227	300 ↘	5.3
48	530.66	-1321.43	0.147	0.073	-	0.147	293 ↘	5.3
49	717.96	-1785.03	0.096	0.048	-	0.096	288 →	5.3
50	905.26	-2248.62	0.062	0.031	-	0.062	285 →	5.3
51	1092.57	-2712.21	0.043	0.0217	-	0.043	283 →	5.3
52	1279.87	-3175.8	0.032	0.016	-	0.032	281 →	5.3
53	-504.18	2574.61	0.11	0.055	-	0.11	85 ←	5.3
54	-316.87	2111.01	0.175	0.087	-	0.175	83 ←	5.3
55	-129.57	1647.42	0.3	0.151	-	0.3	80 ←	5.3
56	57.73	1183.83	0.57	0.285	-	0.57	74 ←	5.3
57	245.04	720.24	1.62	0.809	-	1.62	55 ↙	5.3
58	432.34	256.65	1.92	0.96	-	1.92	317 ↘	0.8
59	619.64	-206.95	0.59	0.296	-	0.59	287 →	5.3
60	806.95	-670.54	0.296	0.148	-	0.296	280 →	5.3
61	994.25	-1134.13	0.17	0.085	-	0.17	277 →	5.3
62	1181.55	-1597.72	0.106	0.053	-	0.106	276 →	5.3
63	1368.86	-2061.31	0.067	0.0336	-	0.067	275 →	5.3
64	1556.16	-2524.91	0.046	0.023	-	0.046	274 →	5.3
65	1743.46	-2988.5	0.033	0.0166	-	0.033	273 →	5.3
66	-40.58	2761.91	0.108	0.054	-	0.108	97 ←	5.3
67	146.72	2298.32	0.167	0.084	-	0.167	99 ←	5.3
68	334.02	1834.72	0.275	0.137	-	0.275	103 ←	5.3
69	521.33	1371.13	0.46	0.232	-	0.46	110 ←	5.3
70	708.63	907.54	1.14	0.572	-	1.14	133 ↖	0.9
71	895.93	443.95	2.3	1.156	-	2.3	215 ↗	5.3
72	1083.24	-19.64	0.63	0.314	-	0.63	249 →	5.3
73	1270.54	-483.24	0.3	0.15	-	0.3	257 →	5.3
74	1457.84	-946.83	0.17	0.086	-	0.17	261 →	5.3
75	1645.15	-1410.42	0.106	0.053	-	0.106	263 →	5.3
76	1832.45	-1874.01	0.067	0.0336	-	0.067	264 →	5.3
77	2019.75	-2337.6	0.046	0.023	-	0.046	265 →	5.3
78	2207.06	-2801.19	0.033	0.0166	-	0.033	266 →	5.3
79	423.01	2949.21	0.094	0.047	-	0.094	109 ←	5.3
80	610.31	2485.62	0.14	0.07	-	0.14	114 ↖	5.3
81	797.61	2022.03	0.2	0.101	-	0.2	122 ↖	5.3
82	984.92	1558.44	0.3	0.149	-	0.3	134 ↖	5.3
83	1172.22	1094.84	0.42	0.211	-	0.42	159 ↑	3.2
84	1359.52	631.25	0.54	0.271	-	0.54	194 ↑	5.3
85	1546.83	167.66	0.37	0.186	-	0.37	222 ↗	5.3
86	1734.13	-295.93	0.23	0.116	-	0.23	238 ↗	5.3
87	1921.43	-759.52	0.147	0.074	-	0.147	246 ↗	5.3
88	2108.74	-1223.12	0.095	0.048	-	0.095	251 →	5.3
89	2296.04	-1686.71	0.062	0.031	-	0.062	254 →	5.3
90	2483.34	-2150.3	0.043	0.0216	-	0.043	256 →	5.3
91	2670.65	-2613.89	0.032	0.016	-	0.032	258 →	5.3
92	886.6	3136.51	0.075	0.037	-	0.075	120 ↖	5.3
93	1073.9	2672.92	0.11	0.055	-	0.11	126 ↖	5.3
94	1261.21	2209.33	0.145	0.072	-	0.145	135 ↖	5.3
95	1448.51	1745.74	0.19	0.095	-	0.19	148 ↖	5.3
96	1635.81	1282.15	0.24	0.119	-	0.24	167 ↑	5.3
97	1823.12	818.56	0.25	0.125	-	0.25	189 ↑	5.3
98	2010.42	354.96	0.213	0.107	-	0.213	209 ↗	5.3
99	2197.72	-108.63	0.16	0.08	-	0.16	224 ↗	5.3
100	2385.03	-572.22	0.114	0.057	-	0.114	233 ↗	5.3
101	2572.33	-1035.81	0.078	0.039	-	0.078	240 ↗	5.3
102	2759.63	-1499.4	0.054	0.027	-	0.054	245 ↗	5.3

Table 1.9.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
103	2946.94	-1963	0.039	0.0196	-	0.039	248 →	5.3
104	3134.24	-2426.59	0.03	0.0148	-	0.03	251 →	5.3
105	1350.19	3323.82	0.058	0.029	-	0.058	128 ↖	5.3
106	1537.49	2860.23	0.079	0.039	-	0.079	135 ↖	5.3
107	1724.8	2396.63	0.104	0.052	-	0.104	145 ↖	5.3
108	1912.1	1933.04	0.126	0.063	-	0.126	156 ↖	5.3
109	2099.4	1469.45	0.143	0.072	-	0.143	171 ↑	5.3
110	2286.71	1005.86	0.147	0.073	-	0.147	187 ↑	5.3
111	2474.01	542.27	0.134	0.067	-	0.134	202 ↑	5.3
112	2661.31	78.67	0.11	0.055	-	0.11	214 ↗	5.3
113	2848.62	-384.92	0.083	0.042	-	0.083	224 ↗	5.3
114	3035.92	-848.51	0.061	0.0303	-	0.061	231 ↗	5.3
115	3223.22	-1312.1	0.045	0.0225	-	0.045	237 ↗	5.3
116	3410.53	-1775.69	0.034	0.017	-	0.034	241 ↗	5.3
117	3597.83	-2239.28	0.026	0.0132	-	0.026	244 ↗	5.3
118	1813.78	3511.12	0.045	0.0224	-	0.045	135 ↖	5.3
119	2001.09	3047.53	0.057	0.0283	-	0.057	142 ↖	5.3
120	2188.39	2583.94	0.07	0.035	-	0.07	151 ↖	5.3
121	2375.69	2120.35	0.085	0.042	-	0.085	161 ↑	5.3
122	2563	1656.75	0.094	0.047	-	0.094	173 ↑	5.3
123	2750.3	1193.16	0.095	0.047	-	0.095	185 ↑	5.3
124	2937.6	729.57	0.087	0.044	-	0.087	198 ↑	5.3
125	3124.91	265.98	0.074	0.037	-	0.074	208 ↗	5.3
126	3312.21	-197.61	0.06	0.03	-	0.06	217 ↗	5.3
127	3499.51	-661.21	0.047	0.0234	-	0.047	224 ↗	5.3
128	3686.82	-1124.8	0.037	0.0184	-	0.037	230 ↗	5.3
129	3874.12	-1588.39	0.029	0.0146	-	0.029	235 ↗	5.3
130	4061.42	-2051.98	0.023	0.0117	-	0.023	239 ↗	5.3
131	2277.38	3698.42	0.035	0.0176	-	0.035	141 ↖	5.3
132	2464.68	3234.83	0.042	0.021	-	0.042	148 ↖	5.3
133	2651.98	2771.24	0.049	0.0247	-	0.049	155 ↖	5.3
134	2839.29	2307.65	0.056	0.028	-	0.056	164 ↑	5.3
135	3026.59	1844.06	0.06	0.03	-	0.06	174 ↑	5.3
136	3213.89	1380.47	0.061	0.0304	-	0.061	185 ↑	5.3
137	3401.2	916.87	0.057	0.0287	-	0.057	195 ↑	5.3
138	3588.5	453.28	0.051	0.0256	-	0.051	204 ↗	5.3
139	3775.8	-10.31	0.044	0.022	-	0.044	212 ↗	5.3
140	3963.11	-473.9	0.036	0.018	-	0.036	219 ↗	5.3
141	4150.41	-937.49	0.03	0.015	-	0.03	224 ↗	5.3
142	4337.71	-1401.09	0.025	0.0123	-	0.025	229 ↗	5.3
143	4525.01	-1864.68	0.02	0.0102	-	0.02	233 ↗	5.3
144	2740.97	3885.73	0.028	0.014	-	0.028	145 ↖	5.3
145	2928.27	3422.14	0.032	0.016	-	0.032	152 ↖	5.3
146	3115.57	2958.54	0.036	0.0182	-	0.036	159 ↑	5.3
147	3302.88	2494.95	0.04	0.02	-	0.04	167 ↑	5.3
148	3490.18	2031.36	0.042	0.021	-	0.042	175 ↑	5.3
149	3677.48	1567.77	0.042	0.021	-	0.042	184 ↑	5.3
150	3864.79	1104.18	0.04	0.0202	-	0.04	192 ↑	5.3
151	4052.09	640.58	0.037	0.0186	-	0.037	201 ↑	5.3
152	4239.39	176.99	0.033	0.0165	-	0.033	208 ↗	5.3
153	4426.7	-286.6	0.029	0.0143	-	0.029	214 ↗	5.3
154	4614	-750.19	0.024	0.0122	-	0.024	220 ↗	5.3
155	4801.3	-1213.78	0.021	0.0104	-	0.021	225 ↗	5.3
156	4988.61	-1677.37	0.018	0.0088	-	0.018	229 ↗	5.3
157	3204.56	4073.03	0.022	0.0112	-	0.022	149 ↖	5.3
158	3391.86	3609.44	0.025	0.0126	-	0.025	155 ↖	5.3
159	3579.17	3145.85	0.028	0.0138	-	0.028	162 ↑	5.3
160	3766.47	2682.26	0.03	0.0148	-	0.03	169 ↑	5.3
161	3953.77	2218.66	0.031	0.0155	-	0.031	176 ↑	5.3
162	4141.08	1755.07	0.031	0.0155	-	0.031	184 ↑	5.3
163	4328.38	1291.48	0.03	0.015	-	0.03	191 ↑	5.3
164	4515.68	827.89	0.028	0.014	-	0.028	198 ↑	5.3
165	4702.99	364.3	0.026	0.0128	-	0.026	205 ↗	5.3
166	4890.29	-99.3	0.023	0.0114	-	0.023	211 ↗	5.3
167	5077.59	-562.89	0.02	0.01	-	0.02	216 ↗	5.3

Table 1.9.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	mg/m ³			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
168	5264.9	-1026.48	0.017	0.0087	-	0.017	221 ↗	5.3
169	5452.2	-1490.07	0.015	0.0076	-	0.015	225 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. **1** — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.9.1, scale **1:50000**.

2909. Inorganic dust: $\text{SiO}_2 < 20\%$

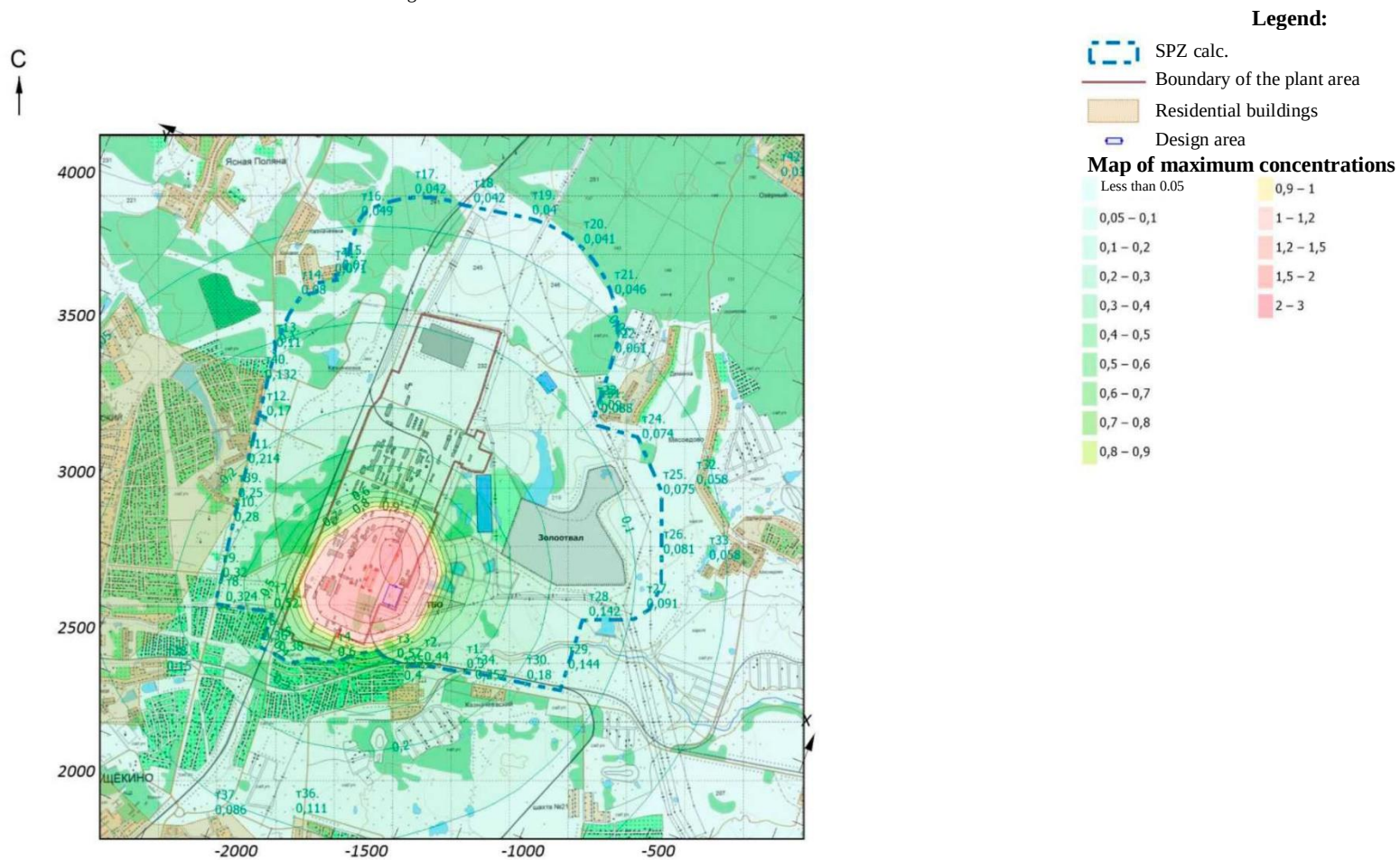


Figure 1.9.1 — Case No. 1, calculation for all enterprises and plants within the industrial site — prospects for development.
Site No. 1 — calculation for the entire cluster of industrial enterprises and plants within the industrial site.

Scale 1:50000

1.10 Calculation of contamination for summation group 6003. Ammonia, Hydrogen Sulphide

The summation effect is observed in 6003. Ammonia, Hydrogen Sulphide.

The number of sources of atmospheric contamination to be considered in the calculation is 95 (including: 70 stationary sources, 25 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 50; 11-20 m – 11; 21-29 m – 23; 30-50 m – 10; 51-100 m – 1; above 100 m – none.

The total emissions from the sources used in the calculations makes up 8.25 g/s and 136.629 TPA.

The calculation included the background concentrations given in Atmospheric Contamination Checkpoint No. 1 (ACCP).

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.41**, which is reached in point No. 7 at the *boundary of SPZ and garden plots*, X=402284.26 Y=-637058.5, at wind direction 54° and wind speed 0.9 m/s inclusive of: background concentration – 0.088 (background concentration before interpolation — 0.01768), input from plant emitters — 0.4;

- in the residential area it is **0.52**, which is reached in point No. 1.146 -*Calculation for the entire cluster of industrial enterprises and plants within the industrial site*, X=401812 Y=-633497, wind direction 151°, wind speed 4.2 m/s inclusive of: background concentration – 0.44 (background concentration before interpolation — 0.404), input from plant emitters — 0.113.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.10.1.

Table 1.10.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.34	6003	0.014	0.326	341 ↓ 0.7	1.20.6205	0.073	21.6
										1.15.6199	0.065	19.2
										1.20.6207	0.031	9.1
										1.15.851	0.026	7.6
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.32	6003	0.015	0.3	353 ↓ 0.5	1.15.6199	0.078	24.4
										1.20.6205	0.032	10.1
										1.20.6207	0.02	6.2
										1.15.851	0.019	6
										1.4.240	0.018	5.6
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.32	6003	0.015	0.304	354 ↓ 0.6	1.15.6199	0.079	24.7
										1.15.851	0.024	7.5
										1.4.240	0.019	6
										1.13.6143	0.013	4
										1.15.6200	0.01	3.1
										1.15.867	0.009	2.9
										1.15.865	0.009	2.83

Table 1.10.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.35	6003	0.016	0.334	16 ↓ 0.8	1.15.6199	0.062	17.6
										1.15.851	0.031	8.9
										1.4.240	0.016	4.65
										1.15.866	0.013	3.8
										1.15.867	0.013	3.8
										1.15.862	0.013	3.7
										1.15.863	0.013	3.7
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.333	6003	0.016	0.32	41 ↘ 1	1.15.6199	0.058	17.5
										1.15.851	0.046	13.7
										1.15.866	0.011	3.34
										1.15.867	0.011	3.2
										1.15.862	0.011	3.2
										1.15.863	0.011	3.15
										1.4.240	0.01	3.1
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.33	6003	0.017	0.31	47 ↘ 1	1.15.6199	0.056	17
										1.15.851	0.045	13.7
										1.15.866	0.011	3.46
										1.15.867	0.011	3.3
										1.15.862	0.011	3.3
										1.15.863	0.011	3.26
										1.20.6205	0.011	3.24
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.41	6003	0.018	0.4	54 ↘ 0.9	1.4.240	0.011	3.2
										1.15.6199	0.07	16.9
										1.15.851	0.041	9.9
										1.15.866	0.017	4.2
										1.15.862	0.017	4
										1.15.867	0.017	4
										1.15.863	0.016	3.96
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.324	6003	0.018	0.306	66 ↘ 1.2	1.15.864	0.016	3.8
										1.15.865	0.015	3.74
										1.15.851	0.052	16.1
										1.15.6199	0.052	16.1
										1.20.6205	0.017	5.4
										1.15.866	0.011	3.3
										1.15.867	0.01	3.2
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.34	6003	0.019	0.32	75 ← 1.2	1.15.862	0.01	3.15
										1.15.863	0.01	3.1
										1.15.6199	0.054	16
										1.15.851	0.053	15.7
										1.20.6205	0.024	7
										1.15.866	0.011	3.3
										1.15.867	0.011	3.2
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.38	6003	0.022	0.36	95 ← 1.1	1.15.862	0.011	3.2
										1.15.863	0.011	3.14
										1.15.6199	0.061	16.1
										1.15.851	0.051	13.4
										1.20.6205	0.037	9.6
										1.15.868	0.013	3.35
										1.15.865	0.012	3.2
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.365	6003	0.026	0.34	116 ↖ 1.1	1.15.864	0.012	3.2
										1.15.867	0.012	3.2
										1.15.6199	0.061	16.7
										1.15.851	0.051	14
										1.20.6205	0.038	10.5
										1.4.240	0.025	6.8
										1.13.6143	0.01	2.8

Table 1.10.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, ° ↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.365	6003	0.049	0.316	132 ↖ 1.2	1.15.6199	0.056	15.5
										1.15.851	0.054	14.8
										1.4.240	0.038	10.4
										1.20.6205	0.033	9.1
										1.4.380	0.014	3.75
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.36	6003	0.124	0.24	146 ↖ 1.5	1.15.851	0.051	14
										1.15.6199	0.041	11.3
										1.4.240	0.023	6.5
										1.20.6205	0.023	6.3
										1.4.380	0.009	2.4
										1.2.78	0.009	2.36
										1.13.6143	0.006	1.78
										1.15.6200	0.005	1.5
										1.15.6201	0.005	1.4
										1.20.6207	0.005	1.4
										1.2.42	0.004	1.07

Table 1.10.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.38	6003	0.19	0.193	158 ↑ 1.6	1.15.851	0.044	11.6
										1.15.6199	0.03	7.8
										1.4.240	0.016	4.25
										1.20.6205	0.016	4.16
										1.2.78	0.008	2.04
										1.4.380	0.006	1.6
										1.13.6143	0.005	1.25
										1.15.6200	0.004	1.04
										1.20.6207	0.004	1
										1.15.6201	0.004	0.99
										1.2.42	0.003	0.88
										1.15.868	0.003	0.73
										1.15.865	0.003	0.67
										1.15.867	0.003	0.67
										1.15.864	0.003	0.66
										1.15.863	0.002	0.63
										1.15.866	0.002	0.62
										1.15.862	0.002	0.62
										1.15.855	0.002	0.59
										1.15.854	0.002	0.59
										1.15.853	0.002	0.58
										1.15.852	0.002	0.57
										1.1.32	0.002	0.49
										1.20.6206	0.002	0.42
										1.15.6189	0.001	0.35
										1.15.6204	0.001	0.3
										1.15.6198	0.001	0.29
										1.2.76	0.001	0.25
										1.1.919	0.001	0.22
										1.21.871	0.001	0.216
										1.2.38	0.001	0.216
										1.1.344	0.001	0.215
										1.13.6146	0.001	0.213
										1.1.34	0.001	0.21
										1.1.345	0.001	0.205
										1.1.33	0.001	0.183
										1.15.861	0.001	0.18
										1.12.6222	0.001	0.18
										1.4.316	0.001	0.17
										1.2.45	0.001	0.166
										1.20.6209	0.001	0.166
										1.1.36	0.001	0.157
										1.4.213	0.001	0.134
										1.1.35	5·10 ⁻⁴	0.13
										1.2.39	5·10 ⁻⁴	0.124
										1.15.859	5·10 ⁻⁴	0.123
										1.15.869	4·10 ⁻⁴	0.115
										1.2.129	4·10 ⁻⁴	0.107
										1.15.858	4·10 ⁻⁴	0.107
										1.15.6203	4·10 ⁻⁴	0.106
										1.15.6190	4·10 ⁻⁴	0.098
										1.20.870	4·10 ⁻⁴	0.094
										1.18.917	4·10 ⁻⁴	0.092
										1.20.6208	3·10 ⁻⁴	0.09
										1.15.845	3·10 ⁻⁴	0.085
										1.13.6149	3·10 ⁻⁴	0.082
										1.16.6207	2·10 ⁻⁴	0.061
										1.4.245	2·10 ⁻⁴	0.058
										1.13.6141	2·10 ⁻⁴	0.058

15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.36	6003	0.182	0.18	168 ↑ 1.5	1.15.851	0.042	11.7
										1.15.6199	0.026	7.3
										1.20.6205	0.014	3.8
										1.4.240	0.013	3.55
										1.2.78	0.007	2.03
										1.4.380	0.005	1.33
										1.13.6143	0.004	1.18
										1.15.6200	0.004	0.98
										1.15.6201	0.003	0.94
										1.20.6207	0.003	0.91
										1.2.42	0.003	0.86
										1.1.32	0.003	0.7
										1.15.868	0.003	0.7
										1.15.867	0.002	0.65
										1.15.865	0.002	0.65
										1.15.864	0.002	0.64
										1.15.863	0.002	0.62
										1.15.866	0.002	0.62
										1.15.862	0.002	0.61
										1.15.855	0.002	0.6
										1.15.854	0.002	0.6
										1.15.853	0.002	0.58
										1.15.852	0.002	0.58
										1.1.344	0.001	0.41
										1.1.919	0.001	0.4
										1.1.345	0.001	0.396
										1.20.6206	0.001	0.39
										1.15.6189	0.001	0.34
										1.1.33	0.001	0.32
										1.1.34	0.001	0.3
										1.1.36	0.001	0.29
										1.15.6204	0.001	0.275
										1.15.6198	0.001	0.27
										1.2.76	0.001	0.24
										1.21.871	0.001	0.23
										1.1.35	0.001	0.227
										1.13.6146	0.001	0.216
										1.2.38	0.001	0.202
										1.12.6222	0.001	0.196
										1.4.316	0.001	0.195
										1.15.861	0.001	0.18
										1.2.45	0.001	0.17
										1.4.213	0.001	0.152
										1.20.6209	0.001	0.15
										1.15.859	$5 \cdot 10^{-4}$	0.128
										1.18.917	$5 \cdot 10^{-4}$	0.125
										1.2.39	$4 \cdot 10^{-4}$	0.122
										1.2.129	$4 \cdot 10^{-4}$	0.12
										1.15.869	$4 \cdot 10^{-4}$	0.113
										1.15.858	$4 \cdot 10^{-4}$	0.113
										1.15.6203	$4 \cdot 10^{-4}$	0.097
										1.15.6190	$3 \cdot 10^{-4}$	0.095
										1.20.870	$3 \cdot 10^{-4}$	0.088
										1.16.6207	$3 \cdot 10^{-4}$	0.086
										1.20.6208	$3 \cdot 10^{-4}$	0.082
										1.15.845	$3 \cdot 10^{-4}$	0.08
										1.13.6149	$3 \cdot 10^{-4}$	0.077
										1.4.245	$2 \cdot 10^{-4}$	0.066
										1.2.513	$2 \cdot 10^{-4}$	0.062
										1.8.976	$2 \cdot 10^{-4}$	0.057
										1.13.6141	$2 \cdot 10^{-4}$	0.055
										1.2.44	$2 \cdot 10^{-4}$	0.052
										1.8.975	$2 \cdot 10^{-4}$	0.042
										1.15.6197	$1 \cdot 10^{-4}$	0.04
										1.2.40	$1 \cdot 10^{-4}$	0.032
										1.13.6142	$1 \cdot 10^{-4}$	0.032
										1.2.79	$1 \cdot 10^{-4}$	0.031
										1.7.6172	$1 \cdot 10^{-4}$	0.031
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.356	6003	0.216	0.14	173 ↑ 1.4	1.15.851	0.036	10
										1.15.6199	0.017	4.8

Table 1.10.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
										1.20.6205	0.011	3.1
										1.4.240	0.009	2.64
										1.2.78	0.005	1.35
										1.4.380	0.004	1
										1.13.6143	0.003	0.8
										1.20.6207	0.002	0.67
										1.15.6200	0.002	0.65
										1.15.6201	0.002	0.64
										1.1.32	0.002	0.6
										1.1.344	0.002	0.59
										1.1.345	0.002	0.58
										1.2.42	0.002	0.57
										1.1.919	0.002	0.56
										1.15.868	0.002	0.54
										1.15.855	0.002	0.53
										1.15.854	0.002	0.53
										1.15.853	0.002	0.52
										1.15.867	0.002	0.52
										1.15.852	0.002	0.52
										1.15.865	0.002	0.51
										1.15.864	0.002	0.51
										1.15.866	0.002	0.5
										1.15.863	0.002	0.5
										1.15.862	0.002	0.49
										1.1.36	0.001	0.365
										1.20.6206	0.001	0.31
										1.1.33	0.001	0.3
										1.15.6189	0.001	0.25
										1.1.34	0.001	0.24
										1.21.871	0.001	0.21
										1.1.35	0.001	0.203
										1.15.6198	0.001	0.198
										1.15.6204	0.001	0.183
										1.4.316	0.001	0.18
										1.2.76	0.001	0.156
										1.15.861	0.001	0.156
										1.13.6146	0.001	0.154
										1.4.213	0.001	0.142
										1.12.6222	5·10 ⁻⁴	0.132
										1.2.38	5·10 ⁻⁴	0.132
										1.18.917	4·10 ⁻⁴	0.124
										1.2.45	4·10 ⁻⁴	0.124
										1.15.859	4·10 ⁻⁴	0.116
										1.20.6209	4·10 ⁻⁴	0.114
										1.15.858	4·10 ⁻⁴	0.109
										1.15.869	3·10 ⁻⁴	0.088
										1.16.6207	3·10 ⁻⁴	0.081
										1.2.129	3·10 ⁻⁴	0.08
										1.2.39	3·10 ⁻⁴	0.079
										1.20.870	3·10 ⁻⁴	0.076
										1.2.513	3·10 ⁻⁴	0.071
										1.15.6190	3·10 ⁻⁴	0.071
										1.15.6203	2·10 ⁻⁴	0.064
										1.15.845	2·10 ⁻⁴	0.062
										1.20.6208	2·10 ⁻⁴	0.062
										1.4.245	2·10 ⁻⁴	0.06
										1.8.976	2·10 ⁻⁴	0.057
										1.13.6149	2·10 ⁻⁴	0.053
										1.8.975	1·10 ⁻⁴	0.04
										1.2.44	1·10 ⁻⁴	0.039
										1.13.6141	1·10 ⁻⁴	0.038
										1.15.6197	1·10 ⁻⁴	0.029

17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.287	6003	0.16	0.128	182 ↑ 3	1.15.851	0.028	9.6
										1.15.6199	0.022	7.6
										1.20.6205	0.01	3.4
										1.4.240	0.006	2
										1.2.78	0.004	1.45
										1.13.6143	0.004	1.3
										1.15.6200	0.003	1
										1.15.6201	0.003	0.99
										1.1.344	0.003	0.97
										1.1.345	0.003	0.96
										1.20.6207	0.003	0.95
										1.1.919	0.003	0.93
										1.1.32	0.002	0.72
										1.4.380	0.002	0.71
										1.1.36	0.002	0.62
										1.2.42	0.002	0.58
										1.15.868	0.002	0.53
										1.15.867	0.001	0.51
										1.15.865	0.001	0.51
										1.15.864	0.001	0.5
										1.15.863	0.001	0.5
										1.15.866	0.001	0.49
										1.15.862	0.001	0.49
										1.15.855	0.001	0.41
										1.15.854	0.001	0.405
										1.15.853	0.001	0.39
										1.20.6206	0.001	0.39
										1.15.852	0.001	0.386
										1.1.33	0.001	0.38
										1.21.871	0.001	0.33
										1.15.6189	0.001	0.295
										1.15.6204	0.001	0.295
										1.1.34	0.001	0.29
										1.1.35	0.001	0.26
										1.15.6198	0.001	0.236
										1.13.6146	0.001	0.23
										1.4.316	0.001	0.197
										1.2.76	$5 \cdot 10^{-4}$	0.163
										1.20.6209	$4 \cdot 10^{-4}$	0.147
										1.2.38	$3 \cdot 10^{-4}$	0.12
										1.15.861	$3 \cdot 10^{-4}$	0.12
										1.2.45	$3 \cdot 10^{-4}$	0.115
										1.15.858	$3 \cdot 10^{-4}$	0.113
										1.4.213	$3 \cdot 10^{-4}$	0.112
										1.16.6207	$3 \cdot 10^{-4}$	0.106
										1.15.869	$3 \cdot 10^{-4}$	0.103
										1.18.917	$3 \cdot 10^{-4}$	0.103
										1.15.6203	$3 \cdot 10^{-4}$	0.097
										1.2.129	$3 \cdot 10^{-4}$	0.092
										1.15.859	$3 \cdot 10^{-4}$	0.092
										1.12.6222	$3 \cdot 10^{-4}$	0.091
										1.13.6149	$2 \cdot 10^{-4}$	0.084
										1.20.6208	$2 \cdot 10^{-4}$	0.084
										1.15.6190	$2 \cdot 10^{-4}$	0.084
										1.2.39	$2 \cdot 10^{-4}$	0.08
										1.20.870	$2 \cdot 10^{-4}$	0.07
										1.2.513	$2 \cdot 10^{-4}$	0.07
										1.4.245	$2 \cdot 10^{-4}$	0.067
										1.13.6141	$2 \cdot 10^{-4}$	0.061
										1.15.845	$2 \cdot 10^{-4}$	0.06
										1.8.976	$1 \cdot 10^{-4}$	0.048
										1.8.425	$1 \cdot 10^{-4}$	0.042
										1.8.975	$1 \cdot 10^{-4}$	0.036
										1.13.6142	$1 \cdot 10^{-4}$	0.035
										1.15.6197	$1 \cdot 10^{-4}$	0.035
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.24	6003	0.11	0.128	193 ↑ 1.3	1.15.851	0.034	14.1
										1.15.6199	0.015	6.1
										1.20.6205	0.009	3.94
										1.4.240	0.007	3.1
										1.2.78	0.004	1.5

Table 1.10.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
										1.4.380	0.003	1.18
										1.1.345	0.003	1.15
										1.1.344	0.003	1.15
										1.1.919	0.003	1.06
										1.13.6143	0.002	1.03
										1.1.32	0.002	0.83
										1.15.6201	0.002	0.83
										1.15.6200	0.002	0.82
										1.20.6207	0.002	0.81
										1.15.855	0.002	0.78
										1.15.854	0.002	0.78
										1.15.853	0.002	0.77
										1.15.852	0.002	0.77
										1.15.868	0.002	0.74
										1.15.867	0.002	0.73
										1.15.865	0.002	0.71
										1.15.866	0.002	0.71
										1.15.864	0.002	0.7
										1.15.863	0.002	0.7
										1.1.36	0.002	0.7
										1.15.862	0.002	0.69
										1.2.42	0.002	0.64
										1.1.33	0.001	0.43
										1.20.6206	0.001	0.405
										1.15.6189	0.001	0.335
										1.1.34	0.001	0.32
										1.1.35	0.001	0.29
										1.21.871	0.001	0.285
										1.4.316	0.001	0.28
										1.15.6198	0.001	0.26
										1.15.6204	0.001	0.23
										1.4.213	0.001	0.228
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.207	6003	0.083	0.123	203 ↗ 1.3	1.15.851	0.033	15.9
										1.15.6199	0.014	6.8
										1.20.6205	0.009	4.5
										1.4.240	0.007	3.26
										1.2.78	0.003	1.5
										1.1.345	0.003	1.36
										1.1.344	0.003	1.36
										1.1.919	0.003	1.26
										1.4.380	0.003	1.24
										1.13.6143	0.002	1.16
										1.15.6201	0.002	0.92
										1.15.6200	0.002	0.92
										1.20.6207	0.002	0.9
										1.15.855	0.002	0.9
										1.15.854	0.002	0.89
										1.15.853	0.002	0.88
										1.15.852	0.002	0.88
										1.1.32	0.002	0.84
										1.15.868	0.002	0.83
										1.15.867	0.002	0.82
										1.1.36	0.002	0.81
										1.15.866	0.002	0.8
										1.15.865	0.002	0.8
										1.15.864	0.002	0.8

Table 1.10.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.187	6003	0.065	0.123	213 ↗ 1.2	1.15.851	0.033	17.8
										1.15.6199	0.014	7.3
										1.20.6205	0.01	5.3
										1.4.240	0.006	3.5
										1.2.78	0.003	1.48
										1.1.345	0.003	1.4
										1.1.344	0.003	1.4
										1.4.380	0.002	1.3
										1.1.919	0.002	1.28
										1.13.6143	0.002	1.28
										1.15.855	0.002	1.03
										1.15.854	0.002	1.03
										1.15.853	0.002	1.02
										1.15.852	0.002	1.01
										1.15.6201	0.002	1.01
										1.15.6200	0.002	1
										1.20.6207	0.002	0.98
										1.15.868	0.002	0.93
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.182	6003	0.05	0.132	223 ↗ 1.2	1.15.851	0.035	19.5
										1.15.6199	0.016	8.8
										1.20.6205	0.011	6.1
										1.4.240	0.007	3.7
										1.13.6143	0.003	1.53
										1.2.78	0.003	1.5
										1.4.380	0.003	1.38
										1.1.344	0.002	1.33
										1.1.345	0.002	1.33
										1.1.919	0.002	1.23
										1.15.6201	0.002	1.22
										1.15.6200	0.002	1.2
										1.15.855	0.002	1.15
										1.15.854	0.002	1.15
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.193	6003	0.04	0.153	230 ↗ 1.2	1.15.851	0.04	20.6
										1.15.6199	0.022	11.4
										1.20.6205	0.016	8.2
										1.4.240	0.006	3.35
										1.13.6143	0.004	2.05
										1.15.6201	0.003	1.6
										1.15.6200	0.003	1.55
										1.20.6207	0.003	1.34
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.217	6003	0.032	0.186	235 ↗ 1.2	1.15.851	0.043	19.6
										1.15.6199	0.033	15.1
										1.20.6205	0.028	13.1
										1.13.6143	0.006	2.9
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.2	6003	0.03	0.17	245 ↗ 1.3	1.15.851	0.039	19.6
										1.20.6205	0.034	17.1
										1.15.6199	0.025	12.6
										1.13.6143	0.005	2.5
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.204	6003	0.024	0.18	258 → 1.4	1.20.6205	0.045	21.8
										1.15.851	0.039	19
										1.15.6199	0.024	12
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.217	6003	0.018	0.2	271 → 1.3	1.20.6205	0.057	26.5
										1.15.851	0.04	18.2
										1.15.6199	0.024	11.1
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.234	6003	0.013	0.22	286 → 1.3	1.20.6205	0.064	27.2
										1.15.851	0.043	18.2
										1.15.6199	0.027	11.4
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.32	6003	0.014	0.31	293 ↘ 1.2	1.20.6205	0.096	29.9
										1.15.851	0.048	15.1
										1.15.6199	0.043	13.5
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.294	6003	0.013	0.28	310 ↘ 1.2	1.20.6205	0.079	26.8
										1.15.851	0.047	16
										1.15.6199	0.039	13.2

Table 1.10.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.314	6003	0.013	0.3	322 ↘ 1.1	1.20.6205	0.076	24.2
										1.15.6199	0.048	15.2
										1.15.851	0.045	14.4
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.216	6003	0.032	0.185	236 ↗ 1.2	1.15.851	0.042	19.5
										1.15.6199	0.032	14.8
										1.20.6205	0.03	13.7
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.177	6003	0.028	0.15	258 → 1.6	1.13.6143	0.006	2.9
										1.15.851	0.034	18.9
										1.20.6205	0.033	18.7
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.178	6003	0.022	0.155	273 → 1.8	1.15.6199	0.02	11.2
										1.20.6205	0.04	22.7
										1.15.851	0.031	17.3
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.32	6003	0.014	0.306	338 ↓ 0.8	1.15.6199	0.005	2.95
										1.20.6205	0.04	22.7
										1.15.851	0.031	17.3
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.29	6003	0.014	0.276	356 ↓ 0.7	1.15.6199	0.02	11
										1.20.6205	0.04	22.7
										1.15.851	0.031	17.3
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.16	6003	0.012	0.147	18 ↓ 1.3	1.15.6199	0.073	25
										1.15.851	0.031	10.5
										1.13.6143	0.013	4.45
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.144	6003	0.017	0.127	32 ↙ 1.2	1.4.240	0.013	4.45
										1.20.6205	0.01	3.37
										1.15.6200	0.009	3.14
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.195	6003	0.016	0.18	57 ↙ 1.4	1.15.6199	0.038	23.9
										1.15.851	0.038	23.9
										1.15.6199	0.018	11.5
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.375	6003	0.024	0.35	104 ← 1.1	1.20.6205	0.009	5.6
										1.4.240	0.008	4.75
										1.13.6143	0.003	2
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.36	6003	0.089	0.27	139 ↖ 1.4	1.4.380	0.003	1.8
										1.15.866	0.003	1.8
										1.15.867	0.002	1.7
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.375	6003	0.024	0.35	104 ← 1.1	1.4.380	0.002	1.7
										1.13.6143	0.002	1.67
										1.15.851	0.034	23.8
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.36	6003	0.089	0.27	139 ↖ 1.4	1.15.6199	0.014	9.5
										1.20.6205	0.009	6.2
										1.4.240	0.006	4.5
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.375	6003	0.024	0.35	104 ← 1.1	1.15.866	0.002	1.7
										1.15.867	0.002	1.7
										1.4.380	0.002	1.7
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.36	6003	0.089	0.27	139 ↖ 1.4	1.13.6143	0.002	1.67
										1.15.851	0.042	21.7
										1.15.6199	0.024	12.3
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.375	6003	0.024	0.35	104 ← 1.1	1.20.6205	0.011	5.5
										1.4.240	0.008	4.2
										1.15.866	0.005	2.37
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.36	6003	0.089	0.27	139 ↖ 1.4	1.15.867	0.005	2.3
										1.15.862	0.004	2.26
										1.15.6199	0.061	16.3
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.375	6003	0.024	0.35	104 ← 1.1	1.15.851	0.051	13.6
										1.20.6205	0.039	10.3
										1.4.240	0.014	3.7
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.36	6003	0.089	0.27	139 ↖ 1.4	1.15.868	0.012	3.2
										1.15.865	0.011	2.97
										1.15.851	0.054	15.2
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.375	6003	0.024	0.35	104 ← 1.1	1.15.6199	0.047	13
										1.4.240	0.03	8.3
										1.20.6205	0.027	7.5
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.36	6003	0.089	0.27	139 ↖ 1.4	1.4.380	0.011	3.1
										1.13.6143	0.008	2.1
										1.2.78	0.007	1.97

At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.37	6003	0.186	0.18	166 ↑ 1.6	1.15.851	0.042	11.4
										1.15.6199	0.028	7.5
										1.20.6205	0.014	3.9
										1.4.240	0.013	3.5
										1.2.78	0.008	2.08
										1.4.380	0.005	1.31
										1.13.6143	0.004	1.21
										1.15.6200	0.004	1
										1.15.6201	0.004	0.97
										1.20.6207	0.003	0.95
										1.2.42	0.003	0.87
										1.1.32	0.002	0.68
										1.15.868	0.002	0.66
										1.15.867	0.002	0.62
										1.15.865	0.002	0.62
										1.15.864	0.002	0.61
										1.15.863	0.002	0.59
										1.15.866	0.002	0.58
										1.15.862	0.002	0.58
										1.15.855	0.002	0.56
										1.15.854	0.002	0.55
										1.15.853	0.002	0.54
										1.15.852	0.002	0.53
										1.20.6206	0.001	0.41
										1.1.344	0.001	0.38
										1.1.919	0.001	0.38
										1.1.345	0.001	0.37
										1.15.6189	0.001	0.323
										1.1.33	0.001	0.3
										1.1.34	0.001	0.29
										1.15.6204	0.001	0.28
										1.1.36	0.001	0.27
										1.15.6198	0.001	0.26
										1.2.76	0.001	0.24
										1.21.871	0.001	0.234
										1.13.6146	0.001	0.22
										1.1.35	0.001	0.215
										1.2.38	0.001	0.203
										1.12.6222	0.001	0.193
										1.4.316	0.001	0.19
										1.2.45	0.001	0.17
										1.15.861	0.001	0.167
										1.20.6209	0.001	0.156
										1.4.213	$5 \cdot 10^{-4}$	0.134
										1.2.39	$4 \cdot 10^{-4}$	0.122
										1.2.129	$4 \cdot 10^{-4}$	0.12
										1.15.859	$4 \cdot 10^{-4}$	0.118
										1.18.917	$4 \cdot 10^{-4}$	0.117
										1.15.869	$4 \cdot 10^{-4}$	0.112
										1.15.858	$4 \cdot 10^{-4}$	0.11
										1.15.6203	$4 \cdot 10^{-4}$	0.1
										1.15.6190	$3 \cdot 10^{-4}$	0.09
										1.20.870	$3 \cdot 10^{-4}$	0.089
										1.20.6208	$3 \cdot 10^{-4}$	0.086
										1.13.6149	$3 \cdot 10^{-4}$	0.08
										1.15.845	$3 \cdot 10^{-4}$	0.078
										1.16.6207	$3 \cdot 10^{-4}$	0.076
										1.4.245	$2 \cdot 10^{-4}$	0.065
										1.13.6141	$2 \cdot 10^{-4}$	0.057
										1.2.44	$2 \cdot 10^{-4}$	0.051
										1.2.513	$2 \cdot 10^{-4}$	0.051
										1.8.976	$2 \cdot 10^{-4}$	0.051
										1.15.6197	$1 \cdot 10^{-4}$	0.039
										1.8.975	$1 \cdot 10^{-4}$	0.037
										1.13.6142	$1 \cdot 10^{-4}$	0.033
										1.2.40	$1 \cdot 10^{-4}$	0.032
										1.2.79	$1 \cdot 10^{-4}$	0.031
										1.7.6172	$1 \cdot 10^{-4}$	0.029
										1.2.81	$1 \cdot 10^{-4}$	0.028

Table 1.10.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.12	6003	0.047	0.073	227 ↗ 5.3	1.15.851	0.016	13.5
										1.15.6199	0.012	10.3
										1.20.6205	0.006	5.4
										1.4.240	0.003	2.2
										1.13.6143	0.002	1.8
										1.15.6200	0.002	1.37
										1.15.6201	0.002	1.35
										1.1.344	0.001	1.13
										1.1.345	0.001	1.12
										1.1.919	0.001	1.1
										1.20.6207	0.001	1.05
										1.15.867	0.001	1
										1.15.866	0.001	1
										1.15.868	0.001	0.99
										1.15.863	0.001	0.99
										1.15.865	0.001	0.99
										1.15.862	0.001	0.99
										1.15.864	0.001	0.99
										1.2.78	0.001	0.93
										1.15.855	0.001	0.79
										1.15.854	0.001	0.78
										1.15.853	0.001	0.77

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.10.2.

Table 1.10.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.12	-	0.025	0.096	44 ↙	4.1
2	-2171.24	1361.8	0.128	-	0.022	0.107	38 ↙	3.5
3	-1983.94	898.21	0.137	-	0.018	0.12	30 ↙	1.2
4	-1796.63	434.62	0.145	-	0.014	0.13	21 ↓	1.2
5	-1609.33	-28.98	0.15	-	0.012	0.14	11 ↓	1.2
6	-1422.03	-492.57	0.155	-	0.011	0.143	0 ↓	1.2
7	-1234.72	-956.16	0.155	-	0.011	0.143	350 ↓	1.3
8	-1047.42	-1419.75	0.15	-	0.014	0.137	342 ↓	1.4
9	-860.12	-1883.34	0.142	-	0.015	0.127	332 ↘	1.5
10	-672.81	-2346.94	0.136	-	0.018	0.117	325 ↘	3.4
11	-485.51	-2810.53	0.126	-	0.019	0.107	318 ↘	3.8
12	-298.21	-3274.12	0.116	-	0.02	0.096	312 ↘	4.4
13	-110.9	-3737.71	0.107	-	0.02	0.087	307 ↘	5.3
14	-1894.95	2012.7	0.135	-	0.025	0.11	50 ↙	3.5
15	-1707.65	1549.1	0.146	-	0.021	0.126	44 ↙	1.2
16	-1520.35	1085.51	0.16	-	0.013	0.148	34 ↙	1.3
17	-1333.04	621.92	0.18	-	0.013	0.168	24 ↙	1.3
18	-1145.74	158.33	0.192	-	0.013	0.18	12 ↓	1.3
19	-958.44	-305.26	0.198	-	0.012	0.185	1 ↓	1.2
20	-771.13	-768.86	0.2	-	0.012	0.19	349 ↓	1.2
21	-583.83	-1232.45	0.197	-	0.012	0.185	337 ↘	1.4
22	-396.53	-1696.04	0.18	-	0.013	0.166	328 ↘	1.7
23	-209.22	-2159.63	0.16	-	0.017	0.142	319 ↘	2.1
24	-21.92	-2623.22	0.142	-	0.017	0.125	311 ↘	3.4
25	165.38	-3086.82	0.128	-	0.02	0.108	306 ↘	3.9
26	352.69	-3550.41	0.115	-	0.021	0.094	301 ↘	4.5
27	-1431.36	2200	0.15	-	0.027	0.123	58 ↙	3.2
28	-1244.06	1736.41	0.17	-	0.018	0.15	51 ↙	1.3

Table 1.10.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
29	-1056.75	1272.81	0.202	-	0.014	0.188	42 ↙	1.4
30	-869.45	809.22	0.24	-	0.014	0.226	29 ↙	1.5
31	-682.15	345.63	0.253	-	0.014	0.24	14 ↓	1.2
32	-494.84	-117.96	0.25	-	0.014	0.24	359 ↓	1.1
33	-307.54	-581.55	0.26	-	0.013	0.245	347 ↓	1
34	-120.24	-1045.14	0.26	-	0.013	0.25	332 ↘	1
35	67.07	-1508.74	0.236	-	0.012	0.224	319 ↘	1.2
36	254.37	-1972.33	0.194	-	0.012	0.182	310 ↘	1.6
37	441.67	-2435.92	0.16	-	0.018	0.142	303 ↘	2.1
38	628.98	-2899.51	0.14	-	0.019	0.12	298 ↘	3.5
39	816.28	-3363.1	0.123	-	0.022	0.1	294 ↘	4.2
40	-967.77	2387.3	0.17	-	0.03	0.14	67 ↙	3.2
41	-780.46	1923.71	0.196	-	0.016	0.18	60 ↙	1.5
42	-593.16	1460.12	0.254	-	0.016	0.24	52 ↙	1.5
43	-405.86	996.53	0.32	-	0.016	0.304	39 ↙	1
44	-218.55	532.93	0.344	-	0.016	0.33	17 ↓	0.8
45	-31.25	69.34	0.32	-	0.015	0.3	356 ↓	0.6
46	156.05	-394.25	0.35	-	0.015	0.33	345 ↓	0.6
47	343.35	-857.84	0.366	-	0.014	0.35	323 ↘	0.9
48	530.66	-1321.43	0.305	-	0.013	0.29	308 ↘	1.2
49	717.96	-1785.03	0.235	-	0.012	0.22	299 ↘	1.3
50	905.26	-2248.62	0.18	-	0.017	0.164	293 ↘	1.8
51	1092.57	-2712.21	0.15	-	0.02	0.13	289 →	3.3
52	1279.87	-3175.8	0.13	-	0.023	0.107	287 →	3.9
53	-504.18	2574.61	0.19	-	0.037	0.152	78 ←	3.2
54	-316.87	2111.01	0.225	-	0.018	0.207	73 ←	1.6
55	-129.57	1647.42	0.31	-	0.018	0.293	67 ↙	1.2
56	57.73	1183.83	0.44	-	0.018	0.42	56 ↙	0.9
57	245.04	720.24	0.6	-	0.018	0.58	24 ↙	0.6
58	432.34	256.65	0.45	-	0.017	0.43	345 ↓	0.5
59	619.64	-206.95	0.67	333	0	0.67	16 ↓	5.3
60	806.95	-670.54	0.59	-	0.015	0.58	304 ↘	0.7
61	994.25	-1134.13	0.375	-	0.014	0.36	290 →	1.1
62	1181.55	-1597.72	0.26	-	0.013	0.246	285 →	1.2
63	1368.86	-2061.31	0.194	-	0.017	0.177	282 →	1.6
64	1556.16	-2524.91	0.154	-	0.022	0.132	280 →	3
65	1743.46	-2988.5	0.133	-	0.025	0.108	278 →	3.7
66	-40.58	2761.91	0.21	-	0.047	0.162	89 ←	3.2
67	146.72	2298.32	0.25	-	0.028	0.22	88 ←	1.7
68	334.02	1834.72	0.345	-	0.021	0.324	87 ←	1.2
69	521.33	1371.13	0.56	-	0.021	0.54	88 ←	0.9
70	708.63	907.54	1.47	-	0.02	1.45	81 ←	0.6
71	895.93	443.95	2.7	-	0.019	2.7	29 ↙	0.8
72	1083.24	-19.64	1.06	333	0	1.06	152 ↖	3.9
73	1270.54	-483.24	0.43	333	0	0.43	246 ↗	5.3
74	1457.84	-946.83	0.346	-	0.015	0.33	268 →	0.9
75	1645.15	-1410.42	0.25	-	0.014	0.237	269 →	1.1
76	1832.45	-1874.01	0.194	-	0.021	0.173	269 →	1.5
77	2019.75	-2337.6	0.155	-	0.028	0.127	269 →	2.3
78	2207.06	-2801.19	0.133	-	0.027	0.106	270 →	3.6
79	423.01	2949.21	0.226	-	0.064	0.162	100 ←	3.3
80	610.31	2485.62	0.265	-	0.049	0.216	102 ←	1.8
81	797.61	2022.03	0.33	-	0.025	0.304	106 ←	1.2
82	984.92	1558.44	0.46	-	0.024	0.43	115 ↖	0.7
83	1172.22	1094.84	0.8	-	0.023	0.77	107 ←	1.2
84	1359.52	631.25	0.54	-	0.022	0.52	173 ↑	5.3
85	1546.83	167.66	0.52	-	0.02	0.5	232 ↗	0.8
86	1734.13	-295.93	0.335	-	0.018	0.316	249 →	1.2
87	1921.43	-759.52	0.28	-	0.032	0.25	243 ↗	0.7
88	2108.74	-1223.12	0.23	-	0.026	0.203	252 →	1.1
89	2296.04	-1686.71	0.184	-	0.028	0.156	257 →	1.6
90	2483.34	-2150.3	0.15	-	0.028	0.122	261 →	1.4
91	2670.65	-2613.89	0.131	-	0.032	0.1	261 →	3.6
92	886.6	3136.51	0.24	-	0.09	0.153	111 ←	3.5
93	1073.9	2672.92	0.276	-	0.083	0.194	115 ↖	2

Table 1.10.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
94	1261.21	2209.33	0.325	-	0.064	0.26	121 ↖	1.5
95	1448.51	1745.74	0.38	-	0.036	0.344	131 ↖	1.5
96	1635.81	1282.15	0.52	-	0.028	0.49	153 ↖	0.5
97	1823.12	818.56	0.55	-	0.025	0.52	188 ↑	0.5
98	2010.42	354.96	0.37	-	0.023	0.346	219 ↗	0.5
99	2197.72	-108.63	0.28	-	0.02	0.26	229 ↗	0.8
100	2385.03	-572.22	0.24	-	0.037	0.203	231 ↗	0.9
101	2572.33	-1035.81	0.204	-	0.032	0.172	241 ↗	1.3
102	2759.63	-1499.4	0.17	-	0.031	0.14	248 →	1.3
103	2946.94	-1963	0.145	-	0.032	0.113	252 →	1.2
104	3134.24	-2426.59	0.128	-	0.036	0.093	253 →	3.7
105	1350.19	3323.82	0.26	-	0.124	0.14	119 ↖	3.8
106	1537.49	2860.23	0.3	-	0.132	0.168	125 ↖	3.2
107	1724.8	2396.63	0.334	-	0.123	0.21	132 ↖	1.8
108	1912.1	1933.04	0.36	-	0.097	0.265	144 ↖	1.4
109	2099.4	1469.45	0.37	-	0.065	0.31	159 ↑	1.1
110	2286.71	1005.86	0.36	-	0.034	0.32	180 ↑	0.9
111	2474.01	542.27	0.31	-	0.026	0.283	203 ↗	1
112	2661.31	78.67	0.26	-	0.029	0.23	216 ↗	1.2
113	2848.62	-384.92	0.22	-	0.035	0.185	226 ↗	1.2
114	3035.92	-848.51	0.19	-	0.038	0.15	233 ↗	1.2
115	3223.22	-1312.1	0.162	-	0.038	0.124	239 ↗	1.2
116	3410.53	-1775.69	0.14	-	0.037	0.104	244 ↗	1.2
117	3597.83	-2239.28	0.125	-	0.039	0.086	246 ↗	3.9
118	1813.78	3511.12	0.295	-	0.17	0.124	127 ↖	4.2
119	2001.09	3047.53	0.35	-	0.203	0.144	133 ↖	3.6
120	2188.39	2583.94	0.38	-	0.215	0.166	141 ↖	3.1
121	2375.69	2120.35	0.38	-	0.185	0.196	151 ↖	1.9
122	2563	1656.75	0.36	-	0.137	0.22	164 ↑	1.6
123	2750.3	1193.16	0.32	-	0.095	0.227	179 ↑	1.4
124	2937.6	729.57	0.283	-	0.067	0.216	195 ↑	1.5
125	3124.91	265.98	0.24	-	0.056	0.187	208 ↗	1.4
126	3312.21	-197.61	0.207	-	0.051	0.156	218 ↗	1.3
127	3499.51	-661.21	0.18	-	0.047	0.13	226 ↗	1.2
128	3686.82	-1124.8	0.155	-	0.044	0.11	232 ↗	1.2
129	3874.12	-1588.39	0.136	-	0.042	0.094	237 ↗	1.2
130	4061.42	-2051.98	0.122	-	0.041	0.081	240 ↗	4.3
131	2277.38	3698.42	0.34	-	0.233	0.11	133 ↖	4.6
132	2464.68	3234.83	0.45	-	0.33	0.122	139 ↖	4.1
133	2651.98	2771.24	0.53	-	0.396	0.136	147 ↖	3.6
134	2839.29	2307.65	0.47	-	0.326	0.148	156 ↖	3.2
135	3026.59	1844.06	0.38	-	0.218	0.16	167 ↑	1.5
136	3213.89	1380.47	0.31	-	0.146	0.166	179 ↑	1.4
137	3401.2	916.87	0.265	-	0.104	0.16	191 ↑	1.4
138	3588.5	453.28	0.226	-	0.08	0.146	202 ↑	1.3
139	3775.8	-10.31	0.195	-	0.066	0.13	212 ↗	1.3
140	3963.11	-473.9	0.17	-	0.057	0.113	220 ↗	1.2
141	4150.41	-937.49	0.148	-	0.05	0.098	226 ↗	1.2
142	4337.71	-1401.09	0.13	-	0.048	0.084	230 ↗	4.1
143	4525.01	-1864.68	0.119	-	0.044	0.075	234 ↗	4.7
144	2740.97	3885.73	0.39	-	0.294	0.097	138 ↖	5.3
145	2928.27	3422.14	0.51	-	0.41	0.105	144 ↖	4.6
146	3115.57	2958.54	0.52	-	0.4	0.113	151 ↖	4.2
147	3302.88	2494.95	0.52	-	0.4	0.12	160 ↑	3.7
148	3490.18	2031.36	0.42	-	0.29	0.126	169 ↑	3.5
149	3677.48	1567.77	0.31	-	0.182	0.128	179 ↑	3
150	3864.79	1104.18	0.25	-	0.127	0.126	189 ↑	3.1
151	4052.09	640.58	0.214	-	0.094	0.12	199 ↑	3.2
152	4239.39	176.99	0.185	-	0.075	0.11	207 ↗	3.4
153	4426.7	-286.6	0.16	-	0.064	0.097	214 ↗	3.7
154	4614	-750.19	0.142	-	0.056	0.086	220 ↗	4.1
155	4801.3	-1213.78	0.128	-	0.048	0.08	226 ↗	5.3
156	4988.61	-1677.37	0.116	-	0.044	0.072	230 ↗	5.3
157	3204.56	4073.03	0.39	-	0.3	0.086	143 ↖	5.3
158	3391.86	3609.44	0.5	-	0.41	0.092	148 ↖	5.3

Table 1.10.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
159	3579.17	3145.85	0.51	-	0.41	0.098	155 ↖	5.3
160	3766.47	2682.26	0.51	-	0.41	0.1	162 ↑	4.4
161	3953.77	2218.66	0.41	-	0.304	0.104	170 ↑	4.2
162	4141.08	1755.07	0.3	-	0.19	0.106	179 ↑	3.7
163	4328.38	1291.48	0.24	-	0.136	0.104	187 ↑	3.7
164	4515.68	827.89	0.2	-	0.102	0.1	196 ↑	3.8
165	4702.99	364.3	0.175	-	0.082	0.093	203 ↗	4.1
166	4890.29	-99.3	0.154	-	0.068	0.086	210 ↗	4.3
167	5077.59	-562.89	0.137	-	0.058	0.08	216 ↗	5.3
168	5264.9	-1026.48	0.124	-	0.051	0.072	221 ↗	5.3
169	5452.2	-1490.07	0.112	-	0.047	0.065	225 ↗	5.3

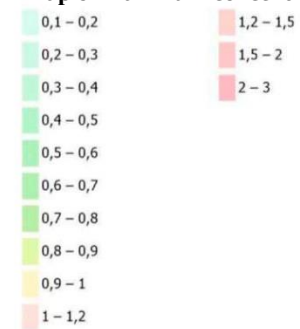
The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.10.1, scale 1:50000.

C



-
-  SPZ calc.
 Boundary of the plant area
 Residential buildings
 Design area

Map of maximum concentrations



Scale 1:50000

1.11 Calculation of contamination for summation group 6004. Ammonia, hydrogen sulphide, formaldehyde.

The summation effect is observed in 6004. Ammonia, hydrogen sulphide, formaldehyde.

The number of sources of atmospheric contamination to be considered in the calculation is 102 (including: 76 stationary sources, 26 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 53; 11-20 m – 13; 21-29 m – 23; 30-50 m – 12; 51-100 m – 1; above 100 m – none.

The total emissions from the sources used in the calculations make up 8.357 g/s and 137.052 TPA.

The calculation included the background concentrations given in Atmospheric Contamination Checkpoint No. 1 (ACCP).

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (Cm) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.425**, which is reached in point No. 7 at the *boundary of SPZ and garden plots*, X=402284.26 Y=-637058.5, at wind direction 54° and wind speed 0.9 m/s inclusive of: background concentration – 0.088 (background concentration before interpolation — 0.01768), input from plant emitters — 0.41.

- in the residential area it is **0.52**, which is reached in point No. 1.146 — *Calculation for the entire cluster of industrial enterprises and plants within the industrial site*, X=401812 Y=-633497, wind direction 151°, wind speed 4.1 m/s inclusive of: background concentration – 0.44 (background concentration before interpolation — 0.404), input from plant emitters — 0.116.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.11.1.

Table 1.11.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.35	6004	0.014	0.34	341 ↓ 0.7	1.20.6205	0.073	20.8
										1.15.6199	0.065	18.5
										1.20.6207	0.031	8.8
										1.15.851	0.026	7.3
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.33	6004	0.015	0.316	354 ↓ 0.5	1.15.6199	0.077	23.2
										1.20.6205	0.036	10.9
										1.20.6207	0.021	6.3
										1.15.851	0.019	5.7
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.33	6004	0.015	0.32	355 ↓ 0.6	1.4.240	0.017	5.2
										1.15.6199	0.081	24.4
										1.15.851	0.024	7.4
										1.4.240	0.019	5.7
										1.13.6143	0.013	4
										1.15.6200	0.01	3.05
										1.15.6201	0.009	2.66
										1.15.867	0.009	2.64
										1.15.865	0.009	2.6

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.364	6004	0.016	0.35	17 ↓ 0.8	1.15.6199	0.064	17.7
										1.15.851	0.032	8.8
										1.4.240	0.016	4.3
										1.15.866	0.013	3.56
										1.15.867	0.013	3.54
										1.15.862	0.013	3.5
										1.15.863	0.013	3.46
										1.15.864	0.012	3.34
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.345	6004	0.016	0.33	40 ↘ 1	1.15.6199	0.057	16.4
										1.15.851	0.045	13
										1.15.866	0.011	3.3
										1.4.240	0.011	3.3
										1.15.867	0.011	3.2
										1.15.862	0.011	3.16
										1.15.863	0.011	3.1
										1.15.864	0.01	3
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.34	6004	0.017	0.324	47 ↘ 1	1.15.6199	0.056	16.5
										1.15.851	0.045	13.3
										1.15.866	0.011	3.35
										1.15.867	0.011	3.2
										1.15.862	0.011	3.2
										1.15.863	0.011	3.15
										1.20.6205	0.011	3.14
										1.4.240	0.011	3.1
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.425	6004	0.018	0.41	54 ↘ 0.9	1.15.6199	0.07	16.5
										1.15.851	0.041	9.6
										1.15.866	0.017	4.1
										1.15.862	0.017	3.9
										1.15.867	0.017	3.9
										1.15.863	0.016	3.86
										1.15.864	0.016	3.7
										1.15.865	0.015	3.64
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.33	6004	0.018	0.31	66 ↘ 1.2	1.15.6199	0.052	15.9
										1.15.851	0.052	15.9
										1.20.6205	0.017	5.3
										1.15.866	0.011	3.23
										1.15.867	0.01	3.1
										1.15.862	0.01	3.1
										1.15.863	0.01	3.05
										1.15.864	0.01	3
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.34	6004	0.019	0.32	75 ← 1.2	1.15.6199	0.054	15.8
										1.15.851	0.053	15.5
										1.20.6205	0.024	6.9
										1.15.866	0.011	3.3
										1.15.867	0.011	3.2
										1.15.862	0.011	3.14
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.38	6004	0.022	0.36	95 ← 1.1	1.15.6199	0.061	16
										1.15.851	0.051	13.3
										1.20.6205	0.037	9.6
										1.15.868	0.013	3.35
										1.15.865	0.012	3.2
										1.15.864	0.012	3.2
										1.15.867	0.012	3.17

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, ° ↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.366	6004	0.026	0.34	116 ↖ 1	1.15.6199	0.062	17.1
										1.15.851	0.047	12.8
										1.20.6205	0.037	10.1
										1.4.240	0.025	6.8
										1.13.6143	0.01	2.8
										1.15.868	0.01	2.7
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.365	6004	0.049	0.316	132 ↖ 1.2	1.15.6199	0.056	15.5
										1.15.851	0.054	14.8
										1.4.240	0.038	10.4
										1.20.6205	0.033	9.1
										1.4.380	0.014	3.75
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.364	6004	0.124	0.24	146 ↖ 1.5	1.15.851	0.051	14
										1.15.6199	0.041	11.2
										1.4.240	0.023	6.4
										1.20.6205	0.023	6.3
										1.4.380	0.009	2.4
										1.2.78	0.009	2.36
										1.13.6143	0.006	1.77
										1.15.6200	0.005	1.5
										1.15.6201	0.005	1.4
										1.20.6207	0.005	1.4
										1.2.42	0.004	1.07
										1.15.868	0.003	0.93

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, ° ↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.39	6004	0.19	0.2	156 ↖ 1.5	1.15.851	0.043	11.1
										1.15.6199	0.029	7.5
										1.20.6205	0.018	4.7
										1.4.240	0.014	3.7
										1.2.78	0.008	2.1
										1.12.157	0.008	2.07
										1.4.380	0.005	1.4
										1.13.6143	0.005	1.22
										1.15.6200	0.004	1
										1.20.6207	0.004	1
										1.15.6201	0.004	0.98
										1.2.42	0.003	0.88
										1.15.868	0.002	0.61
										1.1.32	0.002	0.59
										1.15.865	0.002	0.56
										1.15.867	0.002	0.56
										1.15.864	0.002	0.55
										1.15.863	0.002	0.53
										1.15.866	0.002	0.51
										1.15.862	0.002	0.51
										1.15.855	0.002	0.5
										1.15.854	0.002	0.5
										1.15.853	0.002	0.49
										1.15.852	0.002	0.48
										1.20.6206	0.002	0.46
										1.1.344	0.001	0.31
										1.1.919	0.001	0.31
										1.1.345	0.001	0.3
										1.15.6189	0.001	0.283
										1.15.6204	0.001	0.28
										1.1.34	0.001	0.25
										1.2.76	0.001	0.246
										1.1.33	0.001	0.24
										1.15.6198	0.001	0.234
										1.13.6146	0.001	0.226
										1.1.36	0.001	0.22
										1.2.38	0.001	0.21
										1.4.316	0.001	0.2
										1.12.6222	0.001	0.19
										1.21.871	0.001	0.18
										1.20.6209	0.001	0.172
										1.2.45	0.001	0.17
										1.1.35	0.001	0.168
										1.1.6001	0.001	0.157
										1.15.861	0.001	0.152
										1.2.39	5·10 ⁻⁴	0.125
										1.2.129	4·10 ⁻⁴	0.115
										1.18.917	4·10 ⁻⁴	0.11
										1.15.869	4·10 ⁻⁴	0.11
										1.4.213	4·10 ⁻⁴	0.104
										1.15.859	4·10 ⁻⁴	0.102
										1.20.870	4·10 ⁻⁴	0.099
										1.15.6203	4·10 ⁻⁴	0.098
										1.20.6208	4·10 ⁻⁴	0.094
										1.13.6149	3·10 ⁻⁴	0.08

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.38	6004	0.185	0.192	166 ↑ 1.4	1.15.851	0.041	11
										1.15.6199	0.026	6.8
										1.20.6205	0.016	4.25
										1.12.157	0.014	3.64
										1.4.240	0.011	2.95
										1.2.78	0.007	1.9
										1.13.6143	0.004	1.12
										1.4.380	0.004	1.11
										1.20.6207	0.003	0.92
										1.15.6200	0.003	0.92
										1.15.6201	0.003	0.91
										1.2.42	0.003	0.8
										1.1.32	0.003	0.75
										1.15.868	0.002	0.58
										1.15.867	0.002	0.54
										1.15.865	0.002	0.54
										1.15.864	0.002	0.53
										1.15.863	0.002	0.51
										1.15.866	0.002	0.51
										1.15.855	0.002	0.51
										1.15.854	0.002	0.5
										1.15.862	0.002	0.5
										1.1.344	0.002	0.5
										1.15.853	0.002	0.49
										1.1.345	0.002	0.49
										1.1.6001	0.002	0.49
										1.15.852	0.002	0.48
										1.1.919	0.002	0.48
										1.20.6206	0.002	0.43
										1.1.33	0.001	0.36
										1.1.36	0.001	0.355
										1.1.34	0.001	0.314
										1.15.6189	0.001	0.27
										1.15.6204	0.001	0.25
										1.1.35	0.001	0.25
										1.2.76	0.001	0.223
										1.15.6198	0.001	0.22
										1.13.6146	0.001	0.22
										1.4.316	0.001	0.216
										1.21.871	0.001	0.19
										1.12.6222	0.001	0.186
										1.2.38	0.001	0.184
										1.2.45	0.001	0.16
										1.20.6209	0.001	0.157
										1.15.861	0.001	0.15
										1.18.917	0.001	0.136
										1.4.213	4·10 ⁻⁴	0.12
										1.2.129	4·10 ⁻⁴	0.114
										1.2.39	4·10 ⁻⁴	0.113
										1.15.859	4·10 ⁻⁴	0.107
										1.15.869	4·10 ⁻⁴	0.106
										1.20.870	4·10 ⁻⁴	0.094
										1.15.6203	3·10 ⁻⁴	0.088
										1.20.6208	3·10 ⁻⁴	0.086
										1.15.858	3·10 ⁻⁴	0.085
										1.15.6190	3·10 ⁻⁴	0.076
										1.13.6149	3·10 ⁻⁴	0.074

16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.37	6004	0.216	0.153	172 ↑ 1.3	1.15.851	0.036	9.6
										1.15.6199	0.017	4.5
										1.20.6205	0.012	3.2
										1.12.157	0.009	2.54
										1.4.240	0.009	2.37
										1.2.78	0.005	1.26
										1.1.6001	0.004	1.16
										1.4.380	0.003	0.9
										1.13.6143	0.003	0.76
										1.20.6207	0.002	0.65
										1.1.344	0.002	0.61
										1.15.6200	0.002	0.61
										1.1.345	0.002	0.6
										1.15.6201	0.002	0.6
										1.1.32	0.002	0.59
										1.1.919	0.002	0.57
										1.2.42	0.002	0.54
										1.15.855	0.002	0.5
										1.15.854	0.002	0.5
										1.15.868	0.002	0.49
										1.15.853	0.002	0.49
										1.15.852	0.002	0.48
										1.15.867	0.002	0.47
										1.15.865	0.002	0.47
										1.15.864	0.002	0.46
										1.15.866	0.002	0.46
										1.15.863	0.002	0.45
										1.15.862	0.002	0.45
										1.1.36	0.001	0.38
										1.20.6206	0.001	0.313
										1.1.33	0.001	0.3
										1.1.34	0.001	0.235
										1.15.6189	0.001	0.224
										1.1.35	0.001	0.2
										1.4.316	0.001	0.183
										1.21.871	0.001	0.18
										1.15.6198	0.001	0.177
										1.15.6204	0.001	0.17
										1.13.6146	0.001	0.15
										1.2.76	0.001	0.146
										1.15.861	0.001	0.145
										1.1.8	0.001	0.138
										1.4.213	$5 \cdot 10^{-4}$	0.13
										1.18.917	$5 \cdot 10^{-4}$	0.126
										1.2.38	$5 \cdot 10^{-4}$	0.123
										1.12.6222	$4 \cdot 10^{-4}$	0.12
										1.2.45	$4 \cdot 10^{-4}$	0.116
										1.20.6209	$4 \cdot 10^{-4}$	0.113
										1.15.859	$4 \cdot 10^{-4}$	0.108
										1.15.858	$3 \cdot 10^{-4}$	0.09
										1.15.869	$3 \cdot 10^{-4}$	0.085
										1.20.870	$3 \cdot 10^{-4}$	0.078
										1.2.129	$3 \cdot 10^{-4}$	0.076
										1.2.39	$3 \cdot 10^{-4}$	0.074
										1.16.6207	$3 \cdot 10^{-4}$	0.072
										1.2.513	$2 \cdot 10^{-4}$	0.065
										1.15.6190	$2 \cdot 10^{-4}$	0.063
										1.20.6208	$2 \cdot 10^{-4}$	0.061
										1.4.245	$2 \cdot 10^{-4}$	0.061
										1.15.6203	$2 \cdot 10^{-4}$	0.059
										1.15.845	$2 \cdot 10^{-4}$	0.058
										1.8.976	$2 \cdot 10^{-4}$	0.052
										1.13.6149	$2 \cdot 10^{-4}$	0.05
										1.8.975	$1 \cdot 10^{-4}$	0.037
										1.2.44	$1 \cdot 10^{-4}$	0.037
										1.13.6141	$1 \cdot 10^{-4}$	0.037
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.3	6004	0.16	0.143	182 ↑ 1.2	1.15.851	0.034	11.2
										1.15.6199	0.014	4.65
										1.20.6205	0.01	3.4
										1.4.240	0.008	2.56

										1.12.157	0.008	2.56
										1.1.6001	0.007	2.17
										1.2.78	0.004	1.27
										1.4.380	0.003	0.97
										1.1.344	0.002	0.82
										1.1.345	0.002	0.81
										1.13.6143	0.002	0.79
										1.1.919	0.002	0.76
										1.20.6207	0.002	0.68
										1.1.32	0.002	0.67
										1.15.6200	0.002	0.63
										1.15.6201	0.002	0.63
										1.15.855	0.002	0.61
										1.15.854	0.002	0.61
										1.15.853	0.002	0.6
										1.15.852	0.002	0.6
										1.15.868	0.002	0.57
										1.15.867	0.002	0.56
										1.2.42	0.002	0.55
										1.15.865	0.002	0.55
										1.15.864	0.002	0.54
										1.15.866	0.002	0.54
										1.15.863	0.002	0.54
										1.15.862	0.002	0.53
										1.1.36	0.002	0.51
										1.1.33	0.001	0.35
										1.20.6206	0.001	0.33
										1.1.34	0.001	0.26
										1.1.8	0.001	0.26
										1.15.6189	0.001	0.25
										1.1.35	0.001	0.23
										1.4.316	0.001	0.216
										1.21.871	0.001	0.204
										1.15.6198	0.001	0.195
										1.15.6204	0.001	0.176
										1.15.861	0.001	0.176
										1.4.213	0.001	0.167
										1.13.6146	$5 \cdot 10^{-4}$	0.157
										1.18.917	$5 \cdot 10^{-4}$	0.15
										1.2.76	$4 \cdot 10^{-4}$	0.146
										1.15.859	$4 \cdot 10^{-4}$	0.136
										1.2.45	$4 \cdot 10^{-4}$	0.121
										1.2.38	$4 \cdot 10^{-4}$	0.121
										1.20.6209	$4 \cdot 10^{-4}$	0.117
										1.15.858	$3 \cdot 10^{-4}$	0.11
										1.12.6222	$3 \cdot 10^{-4}$	0.104
										1.2.513	$3 \cdot 10^{-4}$	0.098
										1.15.869	$3 \cdot 10^{-4}$	0.097
										1.16.6207	$3 \cdot 10^{-4}$	0.095
										1.20.870	$3 \cdot 10^{-4}$	0.086
										1.2.129	$2 \cdot 10^{-4}$	0.077
										1.2.39	$2 \cdot 10^{-4}$	0.073
										1.4.245	$2 \cdot 10^{-4}$	0.071
										1.15.6190	$2 \cdot 10^{-4}$	0.071
										1.8.976	$2 \cdot 10^{-4}$	0.071
										1.15.845	$2 \cdot 10^{-4}$	0.066
										1.20.6208	$2 \cdot 10^{-4}$	0.064
										1.15.6203	$2 \cdot 10^{-4}$	0.06
										1.13.6149	$2 \cdot 10^{-4}$	0.052
										1.1.4	$1 \cdot 10^{-4}$	0.05
										1.8.975	$1 \cdot 10^{-4}$	0.049
										1.3.801	$1 \cdot 10^{-4}$	0.043
										1.2.44	$1 \cdot 10^{-4}$	0.039
										1.13.6141	$1 \cdot 10^{-4}$	0.038
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.257	6004	0.112	0.145	192 ↑ 1.3	1.15.851	0.033	13
										1.15.6199	0.015	5.7
										1.20.6205	0.01	4
										1.1.6001	0.01	4
										1.4.240	0.007	2.7
										1.12.157	0.006	2.3

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
										1.2.78	0.003	1.34
										1.1.345	0.003	1.1
										1.1.344	0.003	1.1
										1.4.380	0.003	1.02
										1.1.919	0.003	1.01
										1.13.6143	0.003	0.98
										1.20.6207	0.002	0.8
										1.15.6201	0.002	0.78
										1.15.6200	0.002	0.77
										1.1.32	0.002	0.75
										1.15.855	0.002	0.7
										1.15.854	0.002	0.69
										1.15.853	0.002	0.68
										1.15.852	0.002	0.68
										1.1.36	0.002	0.66
										1.15.868	0.002	0.66
										1.15.867	0.002	0.65
										1.15.865	0.002	0.63
										1.15.866	0.002	0.63
										1.15.864	0.002	0.63
										1.15.863	0.002	0.62
										1.15.862	0.002	0.62
										1.2.42	0.001	0.57
										1.1.8	0.001	0.44
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.225	6004	0.083	0.142	203 ↗ 1.3	1.15.851	0.033	14.6
										1.15.6199	0.014	6.2
										1.1.6001	0.012	5.4
										1.20.6205	0.009	4.2
										1.4.240	0.007	3
										1.12.157	0.004	1.9
										1.2.78	0.003	1.36
										1.1.345	0.003	1.25
										1.1.344	0.003	1.24
										1.1.919	0.003	1.15
										1.4.380	0.003	1.14
										1.13.6143	0.002	1.07
										1.15.6201	0.002	0.85
										1.15.6200	0.002	0.84
										1.20.6207	0.002	0.82
										1.15.855	0.002	0.82
										1.15.854	0.002	0.82
										1.15.853	0.002	0.81
										1.15.852	0.002	0.8
										1.1.32	0.002	0.77
										1.15.868	0.002	0.76
										1.15.867	0.002	0.75
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.206	6004	0.064	0.142	214 ↗ 1.3	1.15.851	0.033	16.1
										1.15.6199	0.014	6.8
										1.1.6001	0.013	6.4
										1.20.6205	0.009	4.3
										1.4.240	0.007	3.33
										1.12.157	0.003	1.57
										1.2.78	0.003	1.4
										1.1.345	0.003	1.33
										1.1.344	0.003	1.33
										1.4.380	0.003	1.27
										1.1.919	0.003	1.23
										1.13.6143	0.002	1.17
										1.15.855	0.002	0.94
										1.15.854	0.002	0.94
										1.15.6201	0.002	0.94
										1.15.853	0.002	0.93
										1.15.852	0.002	0.93

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.2	6004	0.049	0.152	225 ↗ 1.3	1.15.851	0.035	17.4
										1.15.6199	0.016	8
										1.1.6001	0.015	7.4
										1.20.6205	0.009	4.2
										1.4.240	0.008	3.75
										1.2.78	0.003	1.53
										1.4.380	0.003	1.42
										1.13.6143	0.003	1.35
										1.1.344	0.003	1.35
										1.1.345	0.003	1.35
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.21	6004	0.039	0.17	234 ↗ 1	1.15.851	0.036	17.4
										1.15.6199	0.02	9.5
										1.1.6001	0.015	7.4
										1.20.6205	0.011	5.4
										1.4.240	0.008	3.84
										1.2.78	0.004	1.72
										1.13.6143	0.003	1.62
										1.4.380	0.003	1.5
										1.15.6201	0.003	1.34
										1.15.6200	0.003	1.3
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.22	6004	0.028	0.192	238 ↗ 1	1.15.851	0.041	18.5
										1.15.6199	0.032	14.4
										1.20.6205	0.023	10.3
										1.4.240	0.007	3.14
										1.13.6143	0.006	2.66
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.2	6004	0.029	0.173	246 ↗ 1.2	1.15.851	0.04	19.9
										1.20.6205	0.032	15.8
										1.15.6199	0.025	12.5
										1.4.240	0.005	2.7
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.205	6004	0.024	0.18	258 → 1.4	1.20.6205	0.045	21.8
										1.15.851	0.039	18.9
										1.15.6199	0.024	11.9
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.218	6004	0.018	0.2	271 → 1.3	1.20.6205	0.057	26.4
										1.15.851	0.04	18.2
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.235	6004	0.013	0.223	286 → 1.2	1.15.6199	0.024	11.1
										1.20.6205	0.065	27.6
										1.15.851	0.042	17.8
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.32	6004	0.014	0.31	293 ↘ 1.2	1.15.6199	0.026	11
										1.20.6205	0.096	29.8
										1.15.851	0.048	15
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.3	6004	0.013	0.285	311 ↘ 1.1	1.15.6199	0.043	13.5
										1.20.6205	0.084	28.1
										1.15.851	0.044	14.8
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.32	6004	0.013	0.31	323 ↘ 1	1.15.6199	0.038	12.6
										1.20.6205	0.084	26.2
										1.15.851	0.045	14.1
31. At the boundary of Deminka populated locality	Resi-dent.	2584.9	-779	2	0.22	6004	0.03	0.19	238 ↗ 1	1.15.6199	0.041	12.8
										1.15.851	0.04	18.3
										1.15.6199	0.031	14.2
										1.20.6205	0.026	11.9
										1.4.240	0.006	2.9
32. At the boundary of Myasotedovo populated locality	Resi-dent.	2326	-1762.6	2	0.178	6004	0.025	0.153	259 → 1.3	1.13.6143	0.006	2.66
										1.15.6201	0.004	2.04
										1.15.851	0.037	20.6
										1.20.6205	0.03	16.9
33. At the boundary of Myasotedovo populated locality	Resi-dent.	1766.8	-2105.5	2	0.18	6004	0.022	0.156	273 → 1.8	1.15.6199	0.019	10.5
										1.4.240	0.006	3.35
										1.20.6205	0.04	22.6
										1.15.851	0.031	17.3
										1.15.6199	0.02	11

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
34. At the boundary of Kaznacheyevsky populated locality	Resident.	68.3	-635.6	2	0.33	6004	0.014	0.32	339 ↓ 0.8	1.20.6205	0.07	21.1
										1.15.6199	0.058	17.4
										1.15.851	0.03	9.2
										1.20.6207	0.026	7.9
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.3	6004	0.014	0.29	357 ↓ 0.7	1.15.6199	0.073	24.2
										1.15.851	0.031	10.1
										1.13.6143	0.013	4.4
										1.4.240	0.012	4.1
										1.20.6205	0.012	3.9
										1.15.6200	0.009	3.05
										1.15.6201	0.008	2.7
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.166	6004	0.012	0.154	18 ↓ 1.3	1.15.851	0.038	23
										1.15.6199	0.018	11.1
										1.20.6205	0.009	5.4
										1.4.240	0.008	4.55
										1.12.157	0.003	1.96
										1.13.6143	0.003	1.93
										1.4.380	0.003	1.73
										1.15.866	0.003	1.73
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.15	6004	0.017	0.133	32 ↙ 1.2	1.15.851	0.034	22.9
										1.15.6199	0.014	9.2
										1.20.6205	0.009	6
										1.4.240	0.006	4.3
										1.12.157	0.003	1.74
										1.15.866	0.002	1.64
										1.1.6001	0.002	1.63
										1.15.867	0.002	1.62
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.2	6004	0.016	0.185	57 ↙ 1.4	1.15.851	0.042	21.1
										1.15.6199	0.024	12
										1.20.6205	0.011	5.3
										1.4.240	0.008	4
										1.15.866	0.005	2.3
										1.15.867	0.005	2.24
										1.15.862	0.004	2.2
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.376	6004	0.024	0.35	104 ← 1.1	1.15.863	0.004	2.17
										1.15.6199	0.061	16.2
										1.15.851	0.051	13.5
										1.20.6205	0.039	10.3
										1.4.240	0.014	3.7
										1.15.868	0.012	3.2
										1.15.865	0.011	2.96
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.36	6004	0.089	0.27	139 ↖ 1.4	1.15.864	0.011	2.94
										1.15.851	0.054	15.2
										1.15.6199	0.047	13
										1.4.240	0.03	8.3
										1.20.6205	0.027	7.5
										1.4.380	0.011	3.1
										1.13.6143	0.008	2.1
										1.2.78	0.007	1.97

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.38	6004	0.187	0.194	165 ↑ 1.4	1.15.851	0.042	11.1
										1.15.6199	0.026	6.8
										1.20.6205	0.016	4.1
										1.12.157	0.013	3.34
										1.4.240	0.012	3.16
										1.2.78	0.007	1.94
										1.4.380	0.005	1.2
										1.13.6143	0.004	1.12
										1.15.6200	0.004	0.92
										1.20.6207	0.003	0.9
										1.15.6201	0.003	0.9
										1.2.42	0.003	0.81
										1.1.32	0.003	0.71
										1.15.868	0.002	0.61
										1.15.867	0.002	0.57
										1.15.865	0.002	0.57
										1.15.864	0.002	0.56
										1.15.863	0.002	0.54
										1.15.866	0.002	0.54
										1.15.855	0.002	0.53
										1.15.854	0.002	0.53
										1.15.862	0.002	0.53
										1.15.853	0.002	0.52
										1.15.852	0.002	0.51
										1.1.344	0.002	0.44
										1.1.345	0.002	0.43
										1.1.919	0.002	0.425
										1.20.6206	0.002	0.415
										1.1.6001	0.001	0.37
										1.1.33	0.001	0.33
										1.1.36	0.001	0.31
										1.1.34	0.001	0.297
										1.15.6189	0.001	0.29
										1.15.6204	0.001	0.255
										1.15.6198	0.001	0.233
										1.1.35	0.001	0.23
										1.2.76	0.001	0.23
										1.13.6146	0.001	0.214
										1.4.316	0.001	0.206
										1.2.38	0.001	0.19
										1.12.6222	0.001	0.19
										1.21.871	0.001	0.19
										1.2.45	0.001	0.162
										1.15.861	0.001	0.158
										1.20.6209	0.001	0.153
										1.18.917	5·10 ⁻⁴	0.13
										1.4.213	5·10 ⁻⁴	0.127
										1.2.39	4·10 ⁻⁴	0.115
										1.2.129	4·10 ⁻⁴	0.113
										1.15.859	4·10 ⁻⁴	0.112
										1.15.869	4·10 ⁻⁴	0.107
										1.20.870	4·10 ⁻⁴	0.092
										1.15.6203	3·10 ⁻⁴	0.09
										1.15.858	3·10 ⁻⁴	0.088
										1.20.6208	3·10 ⁻⁴	0.084
										1.15.6190	3·10 ⁻⁴	0.08
										1.13.6149	3·10 ⁻⁴	0.074
										1.15.845	3·10 ⁻⁴	0.072

Table 1.11.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.125	6004	0.046	0.08	228 ↗ 5.3	1.15.851	0.016	12.9
										1.15.6199	0.012	9.7
										1.20.6205	0.005	4
										1.1.6001	0.004	3.5
										1.4.240	0.003	2.5
										1.13.6143	0.002	1.63
										1.15.6200	0.002	1.3
										1.15.6201	0.002	1.27
										1.1.344	0.002	1.22
										1.1.345	0.002	1.22
										1.1.919	0.002	1.2
										1.2.78	0.001	1.07
										1.15.868	0.001	1
										1.15.867	0.001	1
										1.15.865	0.001	1
										1.15.864	0.001	1
										1.15.866	0.001	1
										1.15.863	0.001	1
										1.15.862	0.001	0.99
										1.4.380	0.001	0.88
										1.15.855	0.001	0.8

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.11.2.

Table 1.11.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.126	-	0.023	0.103	43 ↙	5.3
2	-2171.24	1361.8	0.134	-	0.02	0.113	37 ↙	3.6
3	-1983.94	898.21	0.142	-	0.018	0.125	30 ↙	1.2
4	-1796.63	434.62	0.15	-	0.014	0.137	21 ↓	1.2
5	-1609.33	-28.98	0.158	-	0.012	0.146	11 ↓	1.2
6	-1422.03	-492.57	0.16	-	0.011	0.15	1 ↓	1.2
7	-1234.72	-956.16	0.16	-	0.012	0.15	352 ↓	1.3
8	-1047.42	-1419.75	0.157	-	0.014	0.143	342 ↓	1.4
9	-860.12	-1883.34	0.147	-	0.016	0.13	333 ↘	1.4
10	-672.81	-2346.94	0.14	-	0.019	0.12	325 ↘	3.3
11	-485.51	-2810.53	0.128	-	0.019	0.11	318 ↘	3.8
12	-298.21	-3274.12	0.118	-	0.02	0.098	312 ↘	4.3
13	-110.9	-3737.71	0.108	-	0.02	0.088	307 ↘	5.3
14	-1894.95	2012.7	0.14	-	0.025	0.114	50 ↙	3.5
15	-1707.65	1549.1	0.152	-	0.02	0.132	43 ↙	1.2
16	-1520.35	1085.51	0.168	-	0.013	0.155	34 ↙	1.3
17	-1333.04	621.92	0.19	-	0.013	0.176	24 ↙	1.3
18	-1145.74	158.33	0.2	-	0.013	0.188	13 ↓	1.3
19	-958.44	-305.26	0.206	-	0.012	0.193	1 ↓	1.2
20	-771.13	-768.86	0.21	-	0.012	0.196	349 ↓	1.2
21	-583.83	-1232.45	0.203	-	0.012	0.19	338 ↓	1.4
22	-396.53	-1696.04	0.184	-	0.013	0.17	328 ↘	1.7
23	-209.22	-2159.63	0.163	-	0.017	0.145	319 ↘	2.1
24	-21.92	-2623.22	0.144	-	0.018	0.125	312 ↘	3.3
25	165.38	-3086.82	0.13	-	0.02	0.11	306 ↘	3.9
26	352.69	-3550.41	0.116	-	0.021	0.095	301 ↘	4.5
27	-1431.36	2200	0.154	-	0.026	0.128	57 ↙	3.2
28	-1244.06	1736.41	0.175	-	0.018	0.157	51 ↙	1.3
29	-1056.75	1272.81	0.21	-	0.014	0.195	41 ↙	1.4

Table 1.11.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
30	-869.45	809.22	0.25	-	0.014	0.235	29 ↙	1.5
31	-682.15	345.63	0.263	-	0.014	0.25	15 ↓	1.2
32	-494.84	-117.96	0.26	-	0.014	0.25	0 ↓	1.1
33	-307.54	-581.55	0.27	-	0.013	0.255	347 ↓	1
34	-120.24	-1045.14	0.27	-	0.013	0.255	333 ↘	1
35	67.07	-1508.74	0.24	-	0.012	0.23	320 ↘	1.2
36	254.37	-1972.33	0.197	-	0.012	0.185	310 ↘	1.6
37	441.67	-2435.92	0.162	-	0.018	0.144	304 ↘	2.1
38	628.98	-2899.51	0.14	-	0.019	0.12	298 ↘	3.5
39	816.28	-3363.1	0.124	-	0.022	0.102	294 ↘	4.2
40	-967.77	2387.3	0.172	-	0.029	0.143	66 ↙	1.3
41	-780.46	1923.71	0.2	-	0.016	0.185	60 ↙	1.4
42	-593.16	1460.12	0.26	-	0.016	0.245	52 ↙	1.5
43	-405.86	996.53	0.33	-	0.016	0.316	39 ↙	1
44	-218.55	532.93	0.36	-	0.016	0.34	17 ↓	0.8
45	-31.25	69.34	0.33	-	0.015	0.316	357 ↓	0.6
46	156.05	-394.25	0.36	-	0.015	0.35	346 ↓	0.6
47	343.35	-857.84	0.37	-	0.014	0.36	324 ↘	0.9
48	530.66	-1321.43	0.31	-	0.013	0.295	308 ↘	1.2
49	717.96	-1785.03	0.237	-	0.012	0.225	299 ↘	1.2
50	905.26	-2248.62	0.18	-	0.016	0.166	294 ↘	1.8
51	1092.57	-2712.21	0.15	-	0.02	0.13	290 →	3.2
52	1279.87	-3175.8	0.13	-	0.023	0.107	287 →	3.9
53	-504.18	2574.61	0.19	-	0.035	0.155	77 ←	3.1
54	-316.87	2111.01	0.23	-	0.018	0.21	73 ←	1.6
55	-129.57	1647.42	0.32	-	0.018	0.3	67 ↙	1.2
56	57.73	1183.83	0.45	-	0.018	0.43	56 ↙	0.8
57	245.04	720.24	0.62	-	0.018	0.6	24 ↙	0.6
58	432.34	256.65	0.46	-	0.017	0.44	347 ↓	0.5
59	619.64	-206.95	0.67	333	0	0.67	16 ↓	5.3
60	806.95	-670.54	0.6	-	0.015	0.58	304 ↘	0.7
61	994.25	-1134.13	0.376	-	0.014	0.36	290 →	1.1
62	1181.55	-1597.72	0.26	-	0.013	0.247	285 →	1.2
63	1368.86	-2061.31	0.195	-	0.017	0.18	282 →	1.6
64	1556.16	-2524.91	0.155	-	0.024	0.13	280 →	2.3
65	1743.46	-2988.5	0.133	-	0.025	0.108	278 →	3.7
66	-40.58	2761.91	0.21	-	0.047	0.162	89 ←	3.2
67	146.72	2298.32	0.25	-	0.028	0.224	88 ←	1.7
68	334.02	1834.72	0.35	-	0.021	0.326	87 ←	1.2
69	521.33	1371.13	0.56	-	0.021	0.54	88 ←	0.9
70	708.63	907.54	1.47	-	0.02	1.45	82 ←	0.5
71	895.93	443.95	2.75	-	0.019	2.73	29 ↙	0.8
72	1083.24	-19.64	1.06	333	0	1.06	152 ↗	3.9
73	1270.54	-483.24	0.43	333	0	0.43	246 ↗	5.3
74	1457.84	-946.83	0.346	-	0.015	0.33	268 →	0.9
75	1645.15	-1410.42	0.25	-	0.014	0.24	270 →	1.1
76	1832.45	-1874.01	0.195	-	0.021	0.174	269 →	1.5
77	2019.75	-2337.6	0.155	-	0.028	0.127	269 →	2.3
78	2207.06	-2801.19	0.134	-	0.027	0.106	270 →	3.6
79	423.01	2949.21	0.226	-	0.064	0.162	100 ←	3.3
80	610.31	2485.62	0.266	-	0.049	0.217	102 ←	1.8
81	797.61	2022.03	0.33	-	0.025	0.304	106 ←	1.2
82	984.92	1558.44	0.46	-	0.024	0.43	115 ↗	0.7
83	1172.22	1094.84	0.8	-	0.023	0.77	107 ←	1.2
84	1359.52	631.25	0.54	-	0.022	0.52	173 ↑	5.3
85	1546.83	167.66	0.52	-	0.02	0.5	232 ↗	0.8
86	1734.13	-295.93	0.335	-	0.018	0.316	249 →	1.2
87	1921.43	-759.52	0.28	-	0.032	0.25	243 ↗	0.7
88	2108.74	-1223.12	0.23	-	0.026	0.203	252 →	1.1
89	2296.04	-1686.71	0.184	-	0.026	0.16	258 →	1.4
90	2483.34	-2150.3	0.153	-	0.027	0.126	262 →	1.2
91	2670.65	-2613.89	0.132	-	0.032	0.1	261 →	3.6
92	886.6	3136.51	0.24	-	0.09	0.153	111 ←	3.5
93	1073.9	2672.92	0.277	-	0.083	0.194	115 ↗	2
94	1261.21	2209.33	0.325	-	0.063	0.26	121 ↗	1.4

Table 1.11.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
95	1448.51	1745.74	0.38	-	0.036	0.344	131 ↖	1.5
96	1635.81	1282.15	0.52	-	0.028	0.49	153 ↖	0.5
97	1823.12	818.56	0.63	-	0.126	0.5	347 ↓	0.5
98	2010.42	354.96	2.54	-	0.113	2.43	121 ↖	0.6
99	2197.72	-108.63	0.29	-	0.031	0.26	249 →	0.5
100	2385.03	-572.22	0.24	-	0.034	0.207	232 ↗	0.9
101	2572.33	-1035.81	0.206	-	0.029	0.177	243 ↗	1.1
102	2759.63	-1499.4	0.175	-	0.03	0.146	250 →	1.1
103	2946.94	-1963	0.15	-	0.031	0.12	254 →	1.1
104	3134.24	-2426.59	0.13	-	0.032	0.098	256 →	1.1
105	1350.19	3323.82	0.263	-	0.124	0.14	119 ↖	3.8
106	1537.49	2860.23	0.3	-	0.132	0.168	125 ↖	3.2
107	1724.8	2396.63	0.335	-	0.123	0.21	132 ↖	1.8
108	1912.1	1933.04	0.36	-	0.098	0.264	143 ↖	1.4
109	2099.4	1469.45	0.38	-	0.069	0.31	157 ↖	1
110	2286.71	1005.86	0.46	-	0.033	0.43	181 ↑	0.9
111	2474.01	542.27	0.34	-	0.067	0.273	189 ↑	0.7
112	2661.31	78.67	0.32	-	0.028	0.29	218 ↗	1.1
113	2848.62	-384.92	0.24	-	0.034	0.21	231 ↗	1
114	3035.92	-848.51	0.2	-	0.037	0.165	237 ↗	1
115	3223.22	-1312.1	0.17	-	0.036	0.135	242 ↗	1.1
116	3410.53	-1775.69	0.147	-	0.036	0.11	246 ↗	1.1
117	3597.83	-2239.28	0.128	-	0.035	0.093	249 →	1.1
118	1813.78	3511.12	0.295	-	0.17	0.124	127 ↖	4.1
119	2001.09	3047.53	0.35	-	0.203	0.144	133 ↖	3.6
120	2188.39	2583.94	0.38	-	0.216	0.165	140 ↖	3.1
121	2375.69	2120.35	0.385	-	0.186	0.2	150 ↖	1.5
122	2563	1656.75	0.37	-	0.14	0.23	162 ↑	1.4
123	2750.3	1193.16	0.35	-	0.095	0.257	179 ↑	1.4
124	2937.6	729.57	0.307	-	0.076	0.23	193 ↑	1
125	3124.91	265.98	0.277	-	0.06	0.22	207 ↗	1.1
126	3312.21	-197.61	0.234	-	0.05	0.183	220 ↗	1.1
127	3499.51	-661.21	0.195	-	0.046	0.15	228 ↗	1.2
128	3686.82	-1124.8	0.165	-	0.043	0.122	234 ↗	1.2
129	3874.12	-1588.39	0.143	-	0.041	0.102	239 ↗	1.1
130	4061.42	-2051.98	0.125	-	0.038	0.087	243 ↗	1.1
131	2277.38	3698.42	0.34	-	0.233	0.11	133 ↖	4.6
132	2464.68	3234.83	0.45	-	0.33	0.123	139 ↖	4.1
133	2651.98	2771.24	0.53	-	0.4	0.137	146 ↖	3.6
134	2839.29	2307.65	0.48	-	0.325	0.156	155 ↖	1.3
135	3026.59	1844.06	0.39	-	0.22	0.174	166 ↑	1.3
136	3213.89	1380.47	0.33	-	0.148	0.183	178 ↑	1.2
137	3401.2	916.87	0.286	-	0.107	0.18	190 ↑	1.1
138	3588.5	453.28	0.25	-	0.08	0.17	202 ↑	1.2
139	3775.8	-10.31	0.216	-	0.065	0.15	213 ↗	1.3
140	3963.11	-473.9	0.184	-	0.056	0.128	221 ↗	1.2
141	4150.41	-937.49	0.158	-	0.05	0.108	227 ↗	1.2
142	4337.71	-1401.09	0.138	-	0.045	0.093	233 ↗	1.1
143	4525.01	-1864.68	0.122	-	0.041	0.081	236 ↗	4.7
144	2740.97	3885.73	0.39	-	0.294	0.098	138 ↖	5.3
145	2928.27	3422.14	0.51	-	0.41	0.107	144 ↖	4.6
146	3115.57	2958.54	0.52	-	0.4	0.116	151 ↖	4.1
147	3302.88	2494.95	0.53	-	0.4	0.126	159 ↑	3.7
148	3490.18	2031.36	0.43	-	0.294	0.134	168 ↑	3.5
149	3677.48	1567.77	0.324	-	0.183	0.14	178 ↑	1.2
150	3864.79	1104.18	0.27	-	0.127	0.14	189 ↑	1.2
151	4052.09	640.58	0.23	-	0.095	0.134	199 ↑	1.3
152	4239.39	176.99	0.198	-	0.075	0.122	207 ↗	3.4
153	4426.7	-286.6	0.173	-	0.063	0.11	215 ↗	3.7
154	4614	-750.19	0.15	-	0.055	0.096	221 ↗	4.1
155	4801.3	-1213.78	0.134	-	0.048	0.086	227 ↗	4.6
156	4988.61	-1677.37	0.12	-	0.043	0.077	231 ↗	5.3
157	3204.56	4073.03	0.39	-	0.3	0.087	142 ↖	5.3
158	3391.86	3609.44	0.51	-	0.41	0.094	148 ↖	5.3
159	3579.17	3145.85	0.51	-	0.41	0.1	154 ↖	5.3

Table 1.11.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
160	3766.47	2682.26	0.51	-	0.41	0.105	161 ↑	4.4
161	3953.77	2218.66	0.42	-	0.304	0.112	170 ↑	4.2
162	4141.08	1755.07	0.306	-	0.193	0.113	178 ↑	3.7
163	4328.38	1291.48	0.25	-	0.136	0.113	187 ↑	3.7
164	4515.68	827.89	0.212	-	0.104	0.11	195 ↑	3.8
165	4702.99	364.3	0.185	-	0.082	0.103	203 ↗	4.1
166	4890.29	-99.3	0.164	-	0.068	0.096	210 ↗	4.3
167	5077.59	-562.89	0.146	-	0.057	0.089	217 ↗	5.3
168	5264.9	-1026.48	0.13	-	0.05	0.08	222 ↗	5.3
169	5452.2	-1490.07	0.118	-	0.046	0.072	226 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.11.1, scale **1:50000**.

6004. Ammonia, hydrogen sulphide, formaldehyde



Figure 1.11.1 — Case No. 1, calculation for all enterprises and plants within the industrial site — prospects for development.
Site No. 1 — calculation for the entire cluster of industrial enterprises and plants within the industrial site.

Scale 1:50000

1.12 Calculation of contamination for summation group 6005. Ammonia, formaldehyde

The summation effect is observed in 6005. Ammonia, formaldehyde.

The number of sources of atmospheric contamination to be considered in the calculation is 98 (including: 76 stationary sources, 22 fugitive sources). Source distribution as per different heights is as follows: 0-10 m – 49; 11-20 m – 13; 21-29 m – 23; 30-50 m – 12; 51-100 m – 1; above 100 m – none.

The total emissions from the sources used in the calculations make up 8.34 g/s and 136.594 TPA.

The calculation included the background concentrations given in Atmospheric Contamination Checkpoint No. 1 (ACCP).

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (C_m) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.4**, which is reached in point No. 7 at the *boundary of SPZ and garden plots*, X= 402284.26 Y=-637058.5, at wind direction 52 and wind speed 1.1 m/s inclusive of: background concentration – 0.088 (background concentration before interpolation — 0.01768), input from plant emitters — 0.385.

- in the residential area it is **0.5**, which is reached in point No. 1.146 — *Calculation for the entire cluster of industrial enterprises and plants within the industrial site*, X=401812 Y=-633497, wind direction 151°, wind speed 1.1 m/s inclusive of: background concentration – 0.44 (background concentration before interpolation — 0.403), input from plant emitters — 0.1;

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.12.1.

Table 1.12.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.26	6005	0.014	0.25	331 ↘ 1	1.15.6199	0.067	25.6
										1.15.851	0.047	18
										1.4.240	0.015	5.7
										1.15.6200	0.008	3.24
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.29	6005	0.015	0.28	343 ↓ 0.8	1.15.6199	0.075	25.7
										1.15.851	0.035	11.8
										1.4.240	0.016	5.5
										1.15.6200	0.009	3.2
										1.15.868	0.008	2.7
										1.15.6201	0.008	2.67
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.315	6005	0.015	0.3	353 ↓ 0.7	1.15.6199	0.076	24.2
										1.15.851	0.028	9
										1.4.240	0.018	5.6
										1.15.867	0.01	3.1
										1.15.868	0.01	3.04
										1.15.865	0.01	3
										1.15.863	0.009	3

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.35	6005	0.016	0.33	16 ↓ 0.9	1.15.6199	0.059	16.9
										1.15.851	0.035	10.2
										1.4.240	0.017	4.8
										1.15.866	0.013	3.9
										1.15.867	0.013	3.85
										1.15.862	0.013	3.76
										1.15.863	0.013	3.75
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.326	6005	0.016	0.31	38 ↙ 1.1	1.15.6199	0.051	15.6
										1.15.851	0.046	14.1
										1.4.240	0.013	4.1
										1.15.866	0.012	3.65
										1.15.867	0.011	3.5
										1.15.862	0.011	3.5
										1.15.863	0.011	3.44
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.32	6005	0.017	0.305	45 ↙ 1.2	1.15.851	0.05	15.4
										1.15.6199	0.05	15.4
										1.4.240	0.012	3.9
										1.15.866	0.012	3.66
										1.15.867	0.011	3.5
										1.15.862	0.011	3.5
										1.15.863	0.011	3.44
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.4	6005	0.018	0.385	52 ↙ 1.1	1.15.851	0.05	15.4
										1.15.6199	0.05	15.4
										1.4.240	0.012	3.9
										1.15.866	0.012	3.66
										1.15.867	0.011	3.5
										1.15.862	0.011	3.5
										1.15.863	0.011	3.44
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.3	6005	0.018	0.283	64 ↙ 1.2	1.15.851	0.051	16.9
										1.15.6199	0.05	16.7
										1.4.240	0.011	3.7
										1.15.866	0.01	3.5
										1.15.867	0.01	3.4
										1.15.862	0.01	3.3
										1.15.868	0.01	3.3
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.306	6005	0.019	0.29	73 ← 1.2	1.15.6199	0.053	17.4
										1.15.851	0.053	17.2
										1.15.866	0.011	3.5
										1.15.867	0.011	3.5
										1.15.868	0.011	3.45
										1.15.862	0.01	3.4
										1.4.240	0.01	3.4
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.325	6005	0.022	0.3	94 ← 1	1.15.6199	0.063	19.5
										1.15.851	0.047	14.5
										1.15.868	0.013	3.85
										1.4.240	0.012	3.74
										1.15.865	0.012	3.65
										1.15.864	0.012	3.65
										1.15.867	0.012	3.6
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.306	6005	0.026	0.28	116 ↖ 1	1.15.6199	0.062	20.4
										1.15.851	0.047	15.3
										1.4.240	0.025	8.1
										1.15.868	0.01	3.2
										1.15.865	0.009	2.9
										1.4.380	0.009	2.9

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, ° speed ↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.31	6005	0.048	0.263	133 ↖ 1.1	1.15.6199	0.057	18.3
										1.15.851	0.05	16.1
										1.4.240	0.036	11.5
										1.4.380	0.013	4.2
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.33	6005	0.123	0.205	148 ↖ 1.5	1.15.851	0.051	15.7
										1.15.6199	0.04	12.3
										1.4.240	0.025	7.5
										1.4.380	0.009	2.8
										1.2.78	0.007	2.25
										1.15.6200	0.005	1.6
										1.15.6201	0.005	1.45
										1.15.868	0.004	1.2
										1.15.865	0.004	1.1
										1.15.864	0.004	1.08
										1.15.867	0.004	1.08
										1.2.42	0.003	1.03
										1.15.863	0.003	1.03

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.36	6005	0.19	0.17	158 ↑ 1.3	1.15.851	0.044	12.3
										1.15.6199	0.027	7.6
										1.4.240	0.015	4.3
										1.2.78	0.008	2.1
										1.12.157	0.007	1.95
										1.4.380	0.006	1.63
										1.15.6200	0.004	1.01
										1.15.6201	0.003	0.97
										1.2.42	0.003	0.91
										1.15.868	0.003	0.8
										1.15.867	0.003	0.74
										1.15.865	0.003	0.74
										1.15.864	0.003	0.73
										1.15.863	0.003	0.7
										1.15.866	0.003	0.7
										1.15.854	0.003	0.7
										1.15.855	0.003	0.7
										1.15.862	0.002	0.69
										1.15.853	0.002	0.69
										1.15.852	0.002	0.68
										1.1.32	0.002	0.57
										1.15.6189	0.001	0.38
										1.15.6198	0.001	0.31
										1.15.6204	0.001	0.29
										1.1.344	0.001	0.27
										1.1.919	0.001	0.27
										1.1.345	0.001	0.26
										1.2.76	0.001	0.257
										1.1.34	0.001	0.24
										1.1.33	0.001	0.23
										1.2.38	0.001	0.227
										1.13.6146	0.001	0.215
										1.15.861	0.001	0.21
										1.1.36	0.001	0.203
										1.4.316	0.001	0.197
										1.21.871	0.001	0.186
										1.2.45	0.001	0.173
										1.4.213	0.001	0.17
										1.1.6001	0.001	0.162
										1.1.35	0.001	0.158
										1.15.859	0.001	0.147
										1.2.39	5·10 ⁻⁴	0.13
										1.15.869	4·10 ⁻⁴	0.122
										1.18.917	4·10 ⁻⁴	0.117
										1.2.129	4·10 ⁻⁴	0.113
										1.15.6190	4·10 ⁻⁴	0.106
										1.20.6207	4·10 ⁻⁴	0.104
										1.15.6203	4·10 ⁻⁴	0.103
										1.15.858	3·10 ⁻⁴	0.097
										1.15.845	3·10 ⁻⁴	0.092
										1.20.6205	3·10 ⁻⁴	0.087
										1.4.245	2·10 ⁻⁴	0.066
										1.8.976	2·10 ⁻⁴	0.06
										1.13.6141	2·10 ⁻⁴	0.057
										1.2.44	2·10 ⁻⁴	0.053
										1.2.513	2·10 ⁻⁴	0.052
										1.15.6197	2·10 ⁻⁴	0.046
										1.13.6143	2·10 ⁻⁴	0.046
										1.8.975	2·10 ⁻⁴	0.043
										1.2.40	1·10 ⁻⁴	0.035
										1.2.79	1·10 ⁻⁴	0.034
										1.2.81	1·10 ⁻⁴	0.029

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.35	6005	0.18	0.17	169 ↑ 1.4	1.15.851	0.043	12.2
										1.15.6199	0.025	7.2
										1.4.240	0.013	3.8
										1.12.157	0.012	3.35
										1.2.78	0.007	2.07
										1.4.380	0.005	1.45
										1.15.6200	0.003	0.96
										1.15.6201	0.003	0.92
										1.2.42	0.003	0.88
										1.15.868	0.003	0.77
										1.15.867	0.003	0.73
										1.15.865	0.003	0.72
										1.15.864	0.003	0.71
										1.15.866	0.002	0.7
										1.15.863	0.002	0.7
										1.1.32	0.002	0.69
										1.15.855	0.002	0.68
										1.15.862	0.002	0.68
										1.15.854	0.002	0.68
										1.15.853	0.002	0.67
										1.15.852	0.002	0.66
										1.1.344	0.001	0.38
										1.15.6189	0.001	0.38
										1.1.919	0.001	0.37
										1.1.345	0.001	0.37
										1.1.33	0.001	0.314
										1.15.6198	0.001	0.3
										1.1.34	0.001	0.29
										1.15.6204	0.001	0.275
										1.1.36	0.001	0.27
										1.1.6001	0.001	0.253
										1.2.76	0.001	0.247
										1.21.871	0.001	0.225
										1.1.35	0.001	0.22
										1.2.38	0.001	0.21
										1.13.6146	0.001	0.208
										1.15.861	0.001	0.205
										1.4.316	0.001	0.19
										1.4.213	0.001	0.182
										1.2.45	0.001	0.174
										1.15.859	0.001	0.148
										1.18.917	4·10 ⁻⁴	0.128
										1.2.39	4·10 ⁻⁴	0.125
										1.15.858	4·10 ⁻⁴	0.119
										1.2.129	4·10 ⁻⁴	0.118
										1.15.869	4·10 ⁻⁴	0.116
										1.15.6190	4·10 ⁻⁴	0.106
										1.15.6203	3·10 ⁻⁴	0.097
										1.20.6207	3·10 ⁻⁴	0.093
										1.15.845	3·10 ⁻⁴	0.087
										1.2.513	3·10 ⁻⁴	0.077
										1.20.6205	3·10 ⁻⁴	0.071
										1.8.976	2·10 ⁻⁴	0.068
										1.4.245	2·10 ⁻⁴	0.064
										1.13.6141	2·10 ⁻⁴	0.053
										1.2.44	2·10 ⁻⁴	0.053
										1.8.975	2·10 ⁻⁴	0.049
										1.15.6197	2·10 ⁻⁴	0.044
										1.13.6143	2·10 ⁻⁴	0.043
										1.1.8	1·10 ⁻⁴	0.036
										1.2.40	1·10 ⁻⁴	0.033
										1.2.79	1·10 ⁻⁴	0.032

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.35	6005	0.215	0.136	174 ↑ 1.2	1.15.851	0.036	10.3
										1.15.6199	0.016	4.6
										1.4.240	0.01	2.8
										1.12.157	0.009	2.6
										1.2.78	0.005	1.35
										1.4.380	0.004	1.05
										1.1.6001	0.004	1
										1.15.6200	0.002	0.61
										1.15.855	0.002	0.61
										1.15.854	0.002	0.61
										1.1.32	0.002	0.6
										1.15.6201	0.002	0.6
										1.15.853	0.002	0.6
										1.15.852	0.002	0.6
										1.2.42	0.002	0.59
										1.15.868	0.002	0.59
										1.15.867	0.002	0.56
										1.15.865	0.002	0.56
										1.15.864	0.002	0.55
										1.1.344	0.002	0.55
										1.15.866	0.002	0.55
										1.1.345	0.002	0.54
										1.15.863	0.002	0.54
										1.15.862	0.002	0.54
										1.1.919	0.002	0.52
										1.1.36	0.001	0.365
										1.1.33	0.001	0.3
										1.15.6189	0.001	0.265
										1.1.34	0.001	0.235
										1.15.6198	0.001	0.207
										1.1.35	0.001	0.197
										1.21.871	0.001	0.18
										1.4.316	0.001	0.18
										1.15.861	0.001	0.176
										1.15.6204	0.001	0.175
										1.4.213	0.001	0.165
										1.2.76	0.001	0.158
										1.13.6146	0.001	0.144
										1.2.38	5·10 ⁻⁴	0.135
										1.15.859	5·10 ⁻⁴	0.133
										1.18.917	5·10 ⁻⁴	0.13
										1.2.45	4·10 ⁻⁴	0.124
										1.1.8	4·10 ⁻⁴	0.12
										1.15.858	4·10 ⁻⁴	0.1
										1.15.869	3·10 ⁻⁴	0.091
										1.2.513	3·10 ⁻⁴	0.085
										1.2.39	3·10 ⁻⁴	0.08
										1.2.129	3·10 ⁻⁴	0.08
										1.15.6190	3·10 ⁻⁴	0.075
										1.15.845	2·10 ⁻⁴	0.067
										1.8.976	2·10 ⁻⁴	0.067
										1.20.6207	2·10 ⁻⁴	0.066
										1.15.6203	2·10 ⁻⁴	0.061
										1.4.245	2·10 ⁻⁴	0.059
										1.20.6205	2·10 ⁻⁴	0.058
										1.8.975	2·10 ⁻⁴	0.046
										1.2.44	1·10 ⁻⁴	0.04
										1.13.6141	1·10 ⁻⁴	0.036
										1.15.6197	1·10 ⁻⁴	0.03

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.285	6005	0.158	0.128	184 ↑ 1.2	1.15.851	0.034	11.9
										1.15.6199	0.014	4.9
										1.4.240	0.009	3
										1.12.157	0.008	2.8
										1.1.6001	0.005	1.9
										1.2.78	0.004	1.4
										1.4.380	0.003	1.13
										1.1.344	0.002	0.79
										1.1.345	0.002	0.78
										1.1.919	0.002	0.73
										1.15.855	0.002	0.71
										1.15.854	0.002	0.71
										1.15.853	0.002	0.7
										1.1.32	0.002	0.7
										1.15.852	0.002	0.7
										1.15.868	0.002	0.66
										1.15.6200	0.002	0.65
										1.15.6201	0.002	0.64
										1.15.867	0.002	0.64
										1.15.865	0.002	0.63
										1.15.866	0.002	0.63
										1.15.864	0.002	0.63
										1.15.863	0.002	0.62
										1.2.42	0.002	0.62
										1.15.862	0.002	0.61
										1.1.36	0.001	0.5
										1.1.33	0.001	0.36
										1.15.6189	0.001	0.29
										1.1.34	0.001	0.27
										1.1.35	0.001	0.236
										1.15.6198	0.001	0.225
										1.1.8	0.001	0.22
										1.21.871	0.001	0.217
										1.4.316	0.001	0.21
										1.15.861	0.001	0.205
										1.4.213	0.001	0.2
										1.15.6204	0.001	0.186
										1.2.76	5·10 ⁻⁴	0.162
										1.15.859	5·10 ⁻⁴	0.158
										1.13.6146	5·10 ⁻⁴	0.158
										1.18.917	4·10 ⁻⁴	0.156
										1.2.38	4·10 ⁻⁴	0.137
										1.2.45	4·10 ⁻⁴	0.134
										1.15.858	4·10 ⁻⁴	0.127
										1.2.513	3·10 ⁻⁴	0.117
										1.15.869	3·10 ⁻⁴	0.102
										1.2.129	2·10 ⁻⁴	0.084
										1.8.976	2·10 ⁻⁴	0.083
										1.15.6190	2·10 ⁻⁴	0.082
										1.2.39	2·10 ⁻⁴	0.081
										1.15.845	2·10 ⁻⁴	0.075
										1.4.245	2·10 ⁻⁴	0.07
										1.20.6207	2·10 ⁻⁴	0.069
										1.15.6203	2·10 ⁻⁴	0.064
										1.20.6205	2·10 ⁻⁴	0.061
										1.8.975	2·10 ⁻⁴	0.057
										1.2.44	1·10 ⁻⁴	0.043
										1.1.4	1·10 ⁻⁴	0.043
										1.13.6141	1·10 ⁻⁴	0.039
										1.3.801	1·10 ⁻⁴	0.037

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, ° ↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.24	6005	0.11	0.13	194 ↑ 1.3	1.15.851	0.034	14
										1.15.6199	0.014	6
										1.1.6001	0.009	3.7
										1.4.240	0.008	3.26
										1.12.157	0.007	2.77
										1.2.78	0.004	1.55
										1.4.380	0.003	1.24
										1.1.345	0.003	1.1
										1.1.344	0.003	1.1
										1.1.919	0.002	1.03
										1.1.32	0.002	0.83
										1.15.855	0.002	0.81
										1.15.854	0.002	0.81
										1.15.6200	0.002	0.81
										1.15.6201	0.002	0.8
										1.15.853	0.002	0.8
										1.15.852	0.002	0.8
										1.15.868	0.002	0.77
										1.15.867	0.002	0.75
										1.15.865	0.002	0.73
										1.15.866	0.002	0.73
										1.15.864	0.002	0.73
										1.15.863	0.002	0.72
										1.15.862	0.002	0.72
										1.1.36	0.002	0.67
										1.2.42	0.002	0.66
										1.1.33	0.001	0.43
										1.1.8	0.001	0.41
										1.15.6189	0.001	0.35
										1.1.34	0.001	0.323
										1.1.35	0.001	0.29
										1.21.871	0.001	0.28
										1.15.6198	0.001	0.27
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.21	6005	0.082	0.13	205 ↗ 1.4	1.15.851	0.032	15.2
										1.15.6199	0.014	6.7
										1.1.6001	0.012	5.5
										1.4.240	0.008	3.64
										1.12.157	0.005	2.32
										1.2.78	0.003	1.6
										1.4.380	0.003	1.38
										1.1.345	0.003	1.34
										1.1.344	0.003	1.34
										1.1.919	0.003	1.25
										1.15.855	0.002	0.92
										1.15.854	0.002	0.92
										1.15.853	0.002	0.91
										1.15.852	0.002	0.9
										1.15.6200	0.002	0.9
										1.15.6201	0.002	0.9
										1.15.868	0.002	0.87
										1.1.32	0.002	0.86
										1.15.867	0.002	0.85
										1.15.866	0.002	0.84
										1.15.865	0.002	0.83
										1.15.864	0.002	0.83

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.193	6005	0.06	0.133	216 ↗ 5.3	1.15.851	0.031	16.3
										1.15.6199	0.017	8.6
										1.1.6001	0.011	5.7
										1.4.240	0.005	2.7
										1.1.345	0.004	2.1
										1.1.344	0.004	2.1
										1.1.919	0.004	2
										1.2.78	0.003	1.65
										1.15.868	0.003	1.34
										1.15.867	0.003	1.33
										1.15.865	0.003	1.33
										1.15.864	0.003	1.32
										1.15.863	0.003	1.31
										1.15.862	0.003	1.3
										1.15.866	0.003	1.3
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.188	6005	0.049	0.138	227 ↗ 1.3	1.15.851	0.033	17.8
										1.1.6001	0.016	8.3
										1.15.6199	0.015	8.1
										1.4.240	0.008	4.4
										1.2.78	0.003	1.8
										1.12.157	0.003	1.74
										1.4.380	0.003	1.7
										1.1.345	0.003	1.52
										1.1.344	0.003	1.52
										1.1.919	0.003	1.4
										1.15.854	0.002	1.16
										1.15.855	0.002	1.16
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.193	6005	0.038	0.155	237 ↗ 1.2	1.15.851	0.036	18.4
										1.15.6199	0.019	9.8
										1.1.6001	0.017	8.7
										1.4.240	0.01	5
										1.2.78	0.004	2.1
										1.4.380	0.004	1.88
										1.12.157	0.003	1.5
										1.1.344	0.003	1.44
										1.1.345	0.003	1.43
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.2	6005	0.027	0.17	247 ↗ 1.1	1.15.851	0.036	18.2
										1.15.6199	0.027	13.4
										1.1.6001	0.012	6
										1.4.240	0.012	5.8
										1.2.78	0.005	2.64
										1.4.380	0.004	2.2
										1.15.6201	0.004	1.96
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.17	6005	0.025	0.146	255 → 1.1	1.15.851	0.037	21.8
										1.15.6199	0.023	13.4
										1.4.240	0.01	5.6
										1.1.6001	0.006	3.7
										1.2.78	0.004	2.2
										1.4.380	0.004	2.13
										1.15.6201	0.003	1.95
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.156	6005	0.019	0.137	266 → 1.2	1.15.851	0.039	25.2
										1.15.6199	0.023	15
										1.4.240	0.009	5.8
										1.4.380	0.003	2.2
										1.15.6201	0.003	2.16
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.15	6005	0.013	0.138	277 → 1.4	1.15.851	0.041	27.4
										1.15.6199	0.026	17.3
										1.4.240	0.009	6
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.155	6005	0.013	0.142	288 → 1.5	1.15.851	0.043	27.5
										1.15.6199	0.029	18.5
										1.4.240	0.009	6

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.2	6005	0.014	0.188	294 ↘ 1.4	1.15.851	0.052	25.6
										1.15.6199	0.046	22.7
										1.4.240	0.011	5.6
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.192	6005	0.013	0.18	309 ↘ 1.5	1.15.851	0.05	26.1
										1.15.6199	0.042	21.9
										1.4.240	0.012	6.1
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.215	6005	0.013	0.2	318 ↘ 1.3	1.15.851	0.052	24.4
										1.15.6199	0.049	22.8
										1.4.240	0.013	5.9
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.195	6005	0.025	0.17	247 ↗ 1.1	1.15.851	0.038	19.3
										1.15.6199	0.028	14.1
										1.4.240	0.011	5.7
										1.1.6001	0.01	5.1
										1.2.78	0.005	2.5
										1.4.380	0.004	2.15
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.144	6005	0.023	0.12	265 → 1.2	1.15.6201	0.004	2.06
										1.15.851	0.036	24.7
										1.15.6199	0.018	12.2
										1.4.240	0.008	5.6
										1.1.6001	0.003	2.25
										1.4.380	0.003	2.13
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.133	6005	0.02	0.113	278 → 1.2	1.2.78	0.003	1.87
										1.15.6201	0.003	1.74
										1.15.851	0.035	26.6
										1.15.6199	0.017	12.6
										1.4.240	0.008	5.8
										1.4.380	0.003	2.2
34. At the boundary of Kaznacheysky populated locality	Resident.	68.3	-635.6	2	0.246	6005	0.014	0.233	330 ↘ 1	1.2.78	0.002	1.8
										1.15.6201	0.002	1.75
										1.15.851	0.061	24.7
										1.15.6199	0.046	18.7
										1.4.240	0.014	5.5
										1.15.6200	0.008	3.14
35. At the boundary of workers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.28	6005	0.014	0.267	352 ↓ 1	1.15.6199	0.062	22.2
										1.15.851	0.045	16.1
										1.4.240	0.015	5.5
										1.15.6200	0.008	2.75
										1.15.868	0.007	2.6
										1.15.867	0.007	2.6
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.15	6005	0.012	0.138	17 ↓ 5.3	1.15.851	0.04	26.9
										1.15.6199	0.019	12.9
										1.4.240	0.006	3.8
										1.2.78	0.003	2.3
										1.12.157	0.003	2.25
										1.1.6001	0.003	2.2
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.14	6005	0.013	0.128	30 ↙ 5.3	1.15.851	0.033	23.8
										1.15.6199	0.017	12.2
										1.4.240	0.005	3.5
										1.1.6001	0.005	3.3
										1.15.866	0.003	2.36
										1.15.867	0.003	2.35
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.183	6005	0.016	0.168	55 ↙ 1.5	1.15.862	0.003	2.34
										1.15.863	0.003	2.34
										1.15.851	0.04	22.1
										1.15.6199	0.024	12.8
										1.4.240	0.009	5.2
										1.15.866	0.005	2.53

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.316	6005	0.024	0.29	103 ← 1	1.15.6199	0.063	20
										1.15.851	0.047	14.9
										1.4.240	0.016	5.1
										1.15.868	0.012	3.7
										1.15.865	0.011	3.4
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.315	6005	0.088	0.227	141 ↖ 1.3	1.15.864	0.011	3.4
										1.15.851	0.052	16.6
										1.15.6199	0.046	14.6
										1.4.240	0.028	9
										1.4.380	0.011	3.4
										1.2.78	0.006	1.9
										1.15.6200	0.006	1.88
										1.15.6201	0.005	1.68
										1.15.868	0.005	1.66

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.355	6005	0.185	0.17	167 ↑ 1.4	1.15.851	0.043	12.1
										1.15.6199	0.026	7.3
										1.4.240	0.014	3.8
										1.12.157	0.011	3.17
										1.2.78	0.007	2.07
										1.4.380	0.005	1.44
										1.15.6200	0.003	0.97
										1.15.6201	0.003	0.93
										1.2.42	0.003	0.88
										1.15.868	0.003	0.75
										1.15.867	0.003	0.71
										1.15.865	0.003	0.7
										1.15.864	0.002	0.7
										1.1.32	0.002	0.68
										1.15.863	0.002	0.68
										1.15.866	0.002	0.68
										1.15.855	0.002	0.66
										1.15.862	0.002	0.66
										1.15.854	0.002	0.66
										1.15.853	0.002	0.65
										1.15.852	0.002	0.64
										1.1.344	0.001	0.37
										1.15.6189	0.001	0.37
										1.1.919	0.001	0.36
										1.1.345	0.001	0.355
										1.1.33	0.001	0.303
										1.15.6198	0.001	0.294
										1.1.34	0.001	0.285
										1.15.6204	0.001	0.276
										1.1.36	0.001	0.263
										1.2.76	0.001	0.25
										1.1.6001	0.001	0.237
										1.21.871	0.001	0.22
										1.2.38	0.001	0.21
										1.1.35	0.001	0.21
										1.13.6146	0.001	0.21
										1.15.861	0.001	0.2
										1.4.316	0.001	0.193
										1.2.45	0.001	0.173
										1.4.213	0.001	0.173
										1.15.859	0.001	0.143
										1.18.917	4·10 ⁻⁴	0.126
										1.2.39	4·10 ⁻⁴	0.125
										1.2.129	4·10 ⁻⁴	0.117
										1.15.869	4·10 ⁻⁴	0.116
										1.15.858	4·10 ⁻⁴	0.113
										1.15.6190	4·10 ⁻⁴	0.103
										1.15.6203	3·10 ⁻⁴	0.098
										1.20.6207	3·10 ⁻⁴	0.096
										1.15.845	3·10 ⁻⁴	0.086
										1.20.6205	3·10 ⁻⁴	0.075
										1.2.513	2·10 ⁻⁴	0.069
										1.4.245	2·10 ⁻⁴	0.065
										1.8.976	2·10 ⁻⁴	0.064
										1.13.6141	2·10 ⁻⁴	0.054
										1.2.44	2·10 ⁻⁴	0.053
										1.8.975	2·10 ⁻⁴	0.046
										1.13.6143	2·10 ⁻⁴	0.044
										1.15.6197	2·10 ⁻⁴	0.043
										1.1.8	1·10 ⁻⁴	0.035
										1.2.40	1·10 ⁻⁴	0.033
										1.2.79	1·10 ⁻⁴	0.032

Table 1.12.2 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.118	6005	0.046	0.072	230 ↗ 5.3	1.15.851	0.015	12.6
										1.15.6199	0.011	9.2
										1.1.6001	0.005	4.5
										1.4.240	0.004	3.4
										1.1.345	0.002	1.54
										1.1.344	0.002	1.54
										1.1.919	0.002	1.5
										1.2.78	0.002	1.5
										1.15.6200	0.001	1.22
										1.4.380	0.001	1.22
										1.15.6201	0.001	1.2
										1.15.868	0.001	1.1
										1.15.865	0.001	1.08
										1.15.864	0.001	1.07
										1.15.867	0.001	1.07
										1.15.863	0.001	1.06
										1.15.866	0.001	1.06
										1.15.862	0.001	1.06
										1.12.157	0.001	1.03
										1.15.854	0.001	0.9
										1.15.855	0.001	0.9
										1.15.853	0.001	0.9

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.12.2.

Table 1.12.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.118	-	0.022	0.096	42 ↙	5.3
2	-2171.24	1361.8	0.127	-	0.018	0.11	35 ↙	5.3
3	-1983.94	898.21	0.134	-	0.014	0.12	28 ↙	5.3
4	-1796.63	434.62	0.134	-	0.013	0.12	19 ↓	1.3
5	-1609.33	-28.98	0.14	-	0.012	0.127	9 ↓	1.3
6	-1422.03	-492.57	0.14	-	0.011	0.128	358 ↓	1.3
7	-1234.72	-956.16	0.133	-	0.011	0.122	348 ↓	1.3
8	-1047.42	-1419.75	0.124	-	0.011	0.112	339 ↓	1.2
9	-860.12	-1883.34	0.115	-	0.014	0.1	330 ↘	1.2
10	-672.81	-2346.94	0.106	-	0.016	0.09	323 ↘	1.1
11	-485.51	-2810.53	0.098	-	0.018	0.08	317 ↘	1.1
12	-298.21	-3274.12	0.09	-	0.02	0.07	312 ↘	1
13	-110.9	-3737.71	0.084	-	0.021	0.063	308 ↘	1
14	-1894.95	2012.7	0.131	-	0.022	0.11	48 ↙	5.3
15	-1707.65	1549.1	0.144	-	0.016	0.128	41 ↙	5.3
16	-1520.35	1085.51	0.157	-	0.013	0.144	33 ↙	3.9
17	-1333.04	621.92	0.172	-	0.013	0.16	22 ↓	1.5
18	-1145.74	158.33	0.182	-	0.013	0.17	10 ↓	1.5
19	-958.44	-305.26	0.18	-	0.012	0.17	358 ↓	1.5
20	-771.13	-768.86	0.17	-	0.012	0.158	345 ↓	1.5
21	-583.83	-1232.45	0.153	-	0.012	0.14	334 ↘	1.4
22	-396.53	-1696.04	0.133	-	0.011	0.122	324 ↘	1.3
23	-209.22	-2159.63	0.118	-	0.014	0.105	317 ↘	1.2
24	-21.92	-2623.22	0.107	-	0.017	0.09	311 ↘	1.1
25	165.38	-3086.82	0.098	-	0.02	0.078	307 ↘	1.1
26	352.69	-3550.41	0.09	-	0.021	0.068	303 ↘	1
27	-1431.36	2200	0.144	-	0.024	0.12	55 ↙	4.5
28	-1244.06	1736.41	0.16	-	0.016	0.145	49 ↙	3.8

Table 1.12.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
29	-1056.75	1272.81	0.193	-	0.014	0.18	40 ↙	1.5
30	-869.45	809.22	0.233	-	0.014	0.22	28 ↙	1.5
31	-682.15	345.63	0.25	-	0.014	0.234	13 ↓	1.3
32	-494.84	-117.96	0.24	-	0.014	0.23	357 ↓	1.2
33	-307.54	-581.55	0.223	-	0.013	0.21	341 ↓	1.2
34	-120.24	-1045.14	0.195	-	0.013	0.183	327 ↘	1.5
35	67.07	-1508.74	0.16	-	0.012	0.15	317 ↘	1.5
36	254.37	-1972.33	0.133	-	0.012	0.12	309 ↘	1.3
37	441.67	-2435.92	0.117	-	0.016	0.1	304 ↘	1.2
38	628.98	-2899.51	0.105	-	0.02	0.085	300 ↘	1.1
39	816.28	-3363.1	0.095	-	0.022	0.073	297 ↘	1
40	-967.77	2387.3	0.156	-	0.029	0.127	63 ↙	1.3
41	-780.46	1923.71	0.183	-	0.016	0.168	58 ↙	1.5
42	-593.16	1460.12	0.244	-	0.016	0.23	50 ↙	1.5
43	-405.86	996.53	0.31	-	0.016	0.296	37 ↙	1.1
44	-218.55	532.93	0.34	-	0.016	0.325	17 ↓	1
45	-31.25	69.34	0.314	-	0.015	0.3	354 ↓	0.7
46	156.05	-394.25	0.28	-	0.015	0.264	334 ↘	1
47	343.35	-857.84	0.24	-	0.014	0.227	317 ↘	1.1
48	530.66	-1321.43	0.197	-	0.013	0.184	306 ↘	1.4
49	717.96	-1785.03	0.152	-	0.012	0.14	300 ↘	1.4
50	905.26	-2248.62	0.127	-	0.016	0.11	296 ↘	1.2
51	1092.57	-2712.21	0.112	-	0.02	0.092	292 →	1.1
52	1279.87	-3175.8	0.1	-	0.023	0.078	290 →	1.1
53	-504.18	2574.61	0.172	-	0.034	0.138	74 ←	1.3
54	-316.87	2111.01	0.206	-	0.018	0.188	71 ←	1.6
55	-129.57	1647.42	0.29	-	0.018	0.27	65 ↙	1.3
56	57.73	1183.83	0.43	-	0.018	0.41	54 ↙	1.1
57	245.04	720.24	0.61	-	0.018	0.6	23 ↙	0.6
58	432.34	256.65	0.45	-	0.017	0.43	344 ↓	0.5
59	619.64	-206.95	0.394	-	0.016	0.38	318 ↘	0.6
60	806.95	-670.54	0.29	-	0.015	0.276	300 ↘	1.1
61	994.25	-1134.13	0.224	-	0.014	0.21	292 →	1.2
62	1181.55	-1597.72	0.17	-	0.013	0.157	287 →	1.6
63	1368.86	-2061.31	0.135	-	0.016	0.12	286 →	1.2
64	1556.16	-2524.91	0.118	-	0.021	0.097	284 →	1.1
65	1743.46	-2988.5	0.105	-	0.024	0.082	282 →	1.1
66	-40.58	2761.91	0.186	-	0.045	0.14	85 ←	1.3
67	146.72	2298.32	0.22	-	0.027	0.193	86 ←	1.5
68	334.02	1834.72	0.3	-	0.021	0.28	85 ←	1.1
69	521.33	1371.13	0.48	-	0.021	0.46	86 ←	0.9
70	708.63	907.54	1.38	-	0.02	1.36	79 ←	0.6
71	895.93	443.95	2.75	-	0.019	2.7	29 ↙	0.8
72	1083.24	-19.64	0.6	-	0.018	0.58	282 →	5.3
73	1270.54	-483.24	0.34	-	0.017	0.32	275 →	3.8
74	1457.84	-946.83	0.237	-	0.015	0.22	275 →	1.2
75	1645.15	-1410.42	0.18	-	0.014	0.166	274 →	1.6
76	1832.45	-1874.01	0.142	-	0.018	0.124	275 →	1.2
77	2019.75	-2337.6	0.124	-	0.023	0.1	275 →	1.1
78	2207.06	-2801.19	0.11	-	0.026	0.084	275 →	1.1
79	423.01	2949.21	0.2	-	0.063	0.136	97 ←	1.2
80	610.31	2485.62	0.23	-	0.049	0.18	100 ←	1.4
81	797.61	2022.03	0.28	-	0.025	0.253	106 ←	1.2
82	984.92	1558.44	0.395	-	0.024	0.37	111 ←	0.5
83	1172.22	1094.84	0.76	-	0.023	0.74	105 ←	1.6
84	1359.52	631.25	0.54	-	0.022	0.51	260 →	1.9
85	1546.83	167.66	0.5	-	0.02	0.48	232 ↗	3.6
86	1734.13	-295.93	0.32	-	0.018	0.3	249 →	1.7
87	1921.43	-759.52	0.24	-	0.017	0.22	255 →	5.3
88	2108.74	-1223.12	0.18	-	0.015	0.163	260 →	1.6
89	2296.04	-1686.71	0.148	-	0.023	0.125	265 →	1.2
90	2483.34	-2150.3	0.128	-	0.027	0.1	266 →	1.1
91	2670.65	-2613.89	0.113	-	0.028	0.085	267 →	1.1
92	886.6	3136.51	0.214	-	0.088	0.126	108 ←	1.2
93	1073.9	2672.92	0.244	-	0.082	0.163	114 ↖	1.4

Table 1.12.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
94	1261.21	2209.33	0.28	-	0.063	0.22	122 ↖	1.4
95	1448.51	1745.74	0.32	-	0.032	0.29	134 ↖	1
96	1635.81	1282.15	0.46	-	0.028	0.44	156 ↖	0.5
97	1823.12	818.56	0.63	-	0.126	0.5	347 ↓	0.5
98	2010.42	354.96	2.54	-	0.113	2.43	121 ↖	0.6
99	2197.72	-108.63	0.286	-	0.038	0.247	252 →	0.5
100	2385.03	-572.22	0.22	-	0.018	0.2	242 ↗	1.3
101	2572.33	-1035.81	0.18	-	0.026	0.153	252 →	1.1
102	2759.63	-1499.4	0.152	-	0.029	0.123	255 →	1.2
103	2946.94	-1963	0.13	-	0.031	0.1	258 →	1.1
104	3134.24	-2426.59	0.115	-	0.031	0.084	259 →	1.1
105	1350.19	3323.82	0.237	-	0.123	0.114	118 ↖	1.2
106	1537.49	2860.23	0.27	-	0.13	0.14	124 ↖	1.2
107	1724.8	2396.63	0.3	-	0.122	0.178	133 ↖	1.5
108	1912.1	1933.04	0.32	-	0.096	0.225	146 ↖	1.3
109	2099.4	1469.45	0.33	-	0.061	0.27	162 ↑	1
110	2286.71	1005.86	0.43	-	0.03	0.4	183 ↑	1
111	2474.01	542.27	0.3	-	0.026	0.277	205 ↗	1
112	2661.31	78.67	0.304	-	0.025	0.28	220 ↗	1.2
113	2848.62	-384.92	0.23	-	0.033	0.195	234 ↗	1.2
114	3035.92	-848.51	0.185	-	0.036	0.15	241 ↗	1.1
115	3223.22	-1312.1	0.154	-	0.036	0.118	246 ↗	1.2
116	3410.53	-1775.69	0.132	-	0.036	0.096	249 →	1.1
117	3597.83	-2239.28	0.116	-	0.035	0.08	252 →	1.1
118	1813.78	3511.12	0.27	-	0.17	0.102	125 ↖	1.1
119	2001.09	3047.53	0.32	-	0.2	0.12	132 ↖	1.2
120	2188.39	2583.94	0.356	-	0.212	0.143	141 ↖	1.2
121	2375.69	2120.35	0.355	-	0.184	0.17	152 ↖	1.4
122	2563	1656.75	0.34	-	0.136	0.204	165 ↑	1.4
123	2750.3	1193.16	0.33	-	0.092	0.237	182 ↑	1.5
124	2937.6	729.57	0.284	-	0.066	0.22	198 ↑	1.3
125	3124.91	265.98	0.257	-	0.054	0.203	210 ↗	1.3
126	3312.21	-197.61	0.22	-	0.049	0.17	222 ↗	1.3
127	3499.51	-661.21	0.182	-	0.046	0.136	231 ↗	1.3
128	3686.82	-1124.8	0.152	-	0.043	0.11	237 ↗	1.2
129	3874.12	-1588.39	0.13	-	0.041	0.09	242 ↗	1.1
130	4061.42	-2051.98	0.115	-	0.039	0.077	245 ↗	1.1
131	2277.38	3698.42	0.324	-	0.233	0.09	132 ↖	1.1
132	2464.68	3234.83	0.43	-	0.33	0.104	139 ↖	1.1
133	2651.98	2771.24	0.51	-	0.395	0.12	147 ↖	1.2
134	2839.29	2307.65	0.46	-	0.324	0.135	156 ↖	1.2
135	3026.59	1844.06	0.37	-	0.217	0.153	168 ↑	1.3
136	3213.89	1380.47	0.31	-	0.145	0.164	181 ↑	1.3
137	3401.2	916.87	0.267	-	0.103	0.163	193 ↑	1.2
138	3588.5	453.28	0.234	-	0.079	0.155	204 ↗	1.2
139	3775.8	-10.31	0.202	-	0.064	0.138	215 ↗	1.4
140	3963.11	-473.9	0.173	-	0.053	0.12	223 ↗	5.3
141	4150.41	-937.49	0.148	-	0.049	0.1	229 ↗	3.8
142	4337.71	-1401.09	0.13	-	0.044	0.085	234 ↗	4.7
143	4525.01	-1864.68	0.115	-	0.041	0.074	238 ↗	5.3
144	2740.97	3885.73	0.374	-	0.294	0.08	138 ↖	1
145	2928.27	3422.14	0.5	-	0.41	0.09	144 ↖	1.1
146	3115.57	2958.54	0.5	-	0.4	0.1	151 ↖	1.1
147	3302.88	2494.95	0.51	-	0.4	0.11	160 ↑	1.1
148	3490.18	2031.36	0.41	-	0.29	0.12	170 ↑	1.2
149	3677.48	1567.77	0.31	-	0.18	0.126	180 ↑	1.2
150	3864.79	1104.18	0.25	-	0.126	0.126	190 ↑	1.2
151	4052.09	640.58	0.215	-	0.095	0.12	200 ↑	1.3
152	4239.39	176.99	0.19	-	0.072	0.117	209 ↗	5.3
153	4426.7	-286.6	0.166	-	0.06	0.105	217 ↗	5.3
154	4614	-750.19	0.145	-	0.053	0.092	223 ↗	5.3
155	4801.3	-1213.78	0.127	-	0.047	0.08	228 ↗	5.3
156	4988.61	-1677.37	0.11	-	0.045	0.066	233 ↗	1
157	3204.56	4073.03	0.37	-	0.3	0.071	142 ↖	1
158	3391.86	3609.44	0.49	-	0.41	0.078	148 ↖	1

Table 1.12.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
159	3579.17	3145.85	0.49	-	0.41	0.086	155 ↖	1.1
160	3766.47	2682.26	0.5	-	0.41	0.092	163 ↑	1.1
161	3953.77	2218.66	0.4	-	0.3	0.098	171 ↑	1.1
162	4141.08	1755.07	0.293	-	0.19	0.104	181 ↑	5.3
163	4328.38	1291.48	0.237	-	0.133	0.105	190 ↑	5.3
164	4515.68	827.89	0.202	-	0.1	0.103	198 ↑	5.3
165	4702.99	364.3	0.177	-	0.079	0.098	205 ↗	5.3
166	4890.29	-99.3	0.156	-	0.066	0.09	212 ↗	5.3
167	5077.59	-562.89	0.137	-	0.057	0.08	218 ↗	4.7
168	5264.9	-1026.48	0.123	-	0.05	0.073	223 ↗	5.3
169	5452.2	-1490.07	0.11	-	0.046	0.064	228 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.12.1, scale 1:50000.

6005. Ammonia, formaldehyde.



Figure 1.12.1 — Case No. 1, calculation for all enterprises and plants within the industrial site — prospects for development.
Site No. 1 — calculation for the entire cluster of industrial enterprises and plants within the industrial site.

Scale 1:50000

1.13 Calculation of contamination for summation group 6046. Carbon Oxide and dust from cement production

The summation effect is observed in 6046. Carbon Oxide and dust from cement production. The number of sources of atmospheric contamination to be considered in the calculation is 130 (including: 96 stationary sources, 34 fugitive sources). Source distribution as per different heights is as follows:

0-10 m – 60; 11-20 m – 27; 21-29 m – 24; 30-50 m – 12; 51-100 m – 5; above 100 m – 2.

The total emissions from the sources used in the calculations make up 375.599 g/s and 1814.543 TPA.

The calculation included the background concentrations given in Atmospheric Contamination Checkpoint No. 1 (ACCP).

42 calculation points, 1 calculation site (169 calculation grid nodes).

The maximum calculated concentration at the ground level (Cm) as a percentage of the MAC for calculation site No. 1 -**Calculation for the entire cluster of industrial enterprises and plants within the industrial site** makes up:

- At the boundary of SPZ, it is **0.74**, which is reached in point No. 4 *at the boundary of SPZ and garden plots*, X=402830.45 Y=-637471.2, at wind direction 22° and wind speed 5.3 m/s inclusive of: background concentration – 0.075 (background concentration before interpolation — 0.02694), input from plant emitters — 0.72;

- in the residential area, it makes up **0.49**, which is reached in point No.35 *at the boundary of workers camp of Mine No. 20*, X=403394.34 Y=-637674, wind direction is 343°, wind velocity is 5.3 m/s inclusive of: background concentration – 0.069 (background concentration before interpolation — 0.0498), input from plant emitters — 0.445.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.13.1.

Table 1.13.1 — Maximum concentrations at the calculation points

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.37	6046	0.065	0.306	314 ↗ 5.3	1.16.6209	0.25	67.2
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.51	6046	0.067	0.45	328 ↗ 5.3	1.16.6209	0.39	75.8
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.66	6046	0.057	0.6	343 ↓ 5.3	1.16.6209	0.52	78.9
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.74	6046	0.027	0.72	22 ↓ 5.3	1.16.6209	0.53	71.4
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.44	6046	0.052	0.39	48 ↙ 2.4	1.16.6209	0.23	51.4
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.45	6046	0.072	0.376	58 ↙ 5.3	1.16.6209	0.274	61.2
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.61	6046	0.063	0.55	68 ← 1.5	1.16.6209	0.276	45.2
										1.16.970	0.027	4.4
										1.16.969	0.025	4

Table 1.13.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.42	6046	0.077	0.35	79 ← 5.3	1.16.6209	0.21	49.2
										1.16.969	0.014	3.2
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.42	6046	0.085	0.33	90 ← 5.3	1.16.6209	0.204	48.8
										1.16.969	0.014	3.23
10. At the boundary of design SPZ	SPZ	549.22	1778.21	2	0.39	6046	0.103	0.283	112 ← 5.3	1.16.6209	0.207	53.6
11. At the boundary of design SPZ	SPZ	1055.33	1854.85	2	0.34	6046	0.123	0.22	133 ↖ 5.3	1.16.6209	0.17	49.5
										1.16.963	0.008	2.46
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.32	6046	0.143	0.177	147 ↖ 5.3	1.16.6209	0.136	42.5
										1.16.963	0.007	2.07
										1.16.969	0.005	1.65
										1.16.965	0.005	1.44
										1.16.966	0.004	1.35
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.33	6046	0.17	0.163	155 ↖ 5.3	1.8.269	0.003	1.08
										1.16.6209	0.081	24.5
										1.14.832	0.048	14.5
										1.15.851	0.012	3.5
										1.16.963	0.004	1.1
										1.8.269	0.002	0.75
										1.16.969	0.002	0.7
										1.16.966	0.002	0.68
										1.16.965	0.002	0.64
										1.16.961	0.001	0.42
										1.16.960	0.001	0.3
										1.14.831	0.001	0.29
										1.16.968	0.001	0.21
										1.16.964	0.001	0.174
										1.4.6012	0.001	0.17
										1.16.973	5·10 ⁻⁴	0.136
										1.4.6013	4·10 ⁻⁴	0.128
										1.16.6208	4·10 ⁻⁴	0.128
										1.16.972	3·10 ⁻⁴	0.095
										1.2.6020	3·10 ⁻⁴	0.092
										1.15.850	3·10 ⁻⁴	0.079
										1.21.871	3·10 ⁻⁴	0.078
										1.16.970	2·10 ⁻⁴	0.061
										1.16.971	2·10 ⁻⁴	0.059
										1.15.844	2·10 ⁻⁴	0.045
										1.14.806	1·10 ⁻⁴	0.035
										1.14.804	1·10 ⁻⁴	0.03

Table 1.13.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
14. At the boundary of design SPZ	SPZ	2565.28	1975.93	2	0.37	6046	0.207	0.163	164 ↑ 5.3	1.14.832	0.07	18.8
										1.16.6209	0.061	16.4
										1.15.851	0.014	3.9
										1.8.269	0.003	0.7
										1.16.963	0.002	0.65
										1.16.969	0.002	0.45
										1.16.966	0.001	0.405
										1.16.965	0.001	0.4
										1.14.831	0.001	0.32
										1.16.961	0.001	0.3
										1.16.968	0.001	0.186
										1.16.960	0.001	0.18
										1.16.964	0.001	0.14
										1.16.973	5·10 ⁻⁴	0.134
										1.4.6012	4·10 ⁻⁴	0.112
										1.4.6013	4·10 ⁻⁴	0.106
										1.16.972	3·10 ⁻⁴	0.091
										1.16.6208	3·10 ⁻⁴	0.085
										1.16.970	3·10 ⁻⁴	0.068
										1.2.6020	2·10 ⁻⁴	0.068
										1.16.971	2·10 ⁻⁴	0.063
										1.1.500	2·10 ⁻⁴	0.06
										1.15.850	2·10 ⁻⁴	0.06
										1.21.871	2·10 ⁻⁴	0.059
										1.2.266	2·10 ⁻⁴	0.047
										1.14.804	1·10 ⁻⁴	0.038
										1.18.6804	1·10 ⁻⁴	0.037
										1.15.844	1·10 ⁻⁴	0.035
15. At the boundary of design SPZ	SPZ	2890.93	1732.73	2	0.36	6046	0.193	0.165	173 ↑ 5.3	1.14.832	0.075	20.8
										1.16.6209	0.054	15.1
										1.15.851	0.016	4.4
										1.8.269	0.003	0.75
										1.16.963	0.002	0.58
										1.16.969	0.002	0.44
										1.16.965	0.001	0.385
										1.16.966	0.001	0.38
										1.14.831	0.001	0.335
										1.16.961	0.001	0.297
										1.2.266	0.001	0.24
										1.16.968	0.001	0.186
										1.12.6158	0.001	0.17
										1.16.960	0.001	0.163
										1.16.973	0.001	0.144
										1.16.964	0.001	0.142
										1.1.500	4·10 ⁻⁴	0.108
										1.16.972	4·10 ⁻⁴	0.107
										1.9.930	4·10 ⁻⁴	0.106
										1.4.6013	4·10 ⁻⁴	0.104
										1.4.6012	4·10 ⁻⁴	0.1
										1.18.6804	3·10 ⁻⁴	0.09
										1.16.970	3·10 ⁻⁴	0.086
										1.16.6208	3·10 ⁻⁴	0.077
										1.16.971	3·10 ⁻⁴	0.074
										1.2.6020	2·10 ⁻⁴	0.062
										1.21.871	2·10 ⁻⁴	0.056
										1.15.850	2·10 ⁻⁴	0.055
										1.14.804	2·10 ⁻⁴	0.042
										1.18.919	1·10 ⁻⁴	0.038
										1.15.844	1·10 ⁻⁴	0.034

Table 1.13.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.35	6046	0.218	0.135	178 ↑ 5.3	1.14.832	0.062	17.7
										1.16.6209	0.038	10.9
										1.15.851	0.012	3.54
										1.8.269	0.003	0.87
										1.2.266	0.002	0.43
										1.16.963	0.001	0.41
										1.16.969	0.001	0.37
										1.9.930	0.001	0.365
										1.16.965	0.001	0.326
										1.16.966	0.001	0.29
										1.14.831	0.001	0.253
										1.16.961	0.001	0.246
										1.16.968	0.001	0.194
										1.16.973	0.001	0.165
										1.12.6158	0.001	0.164
										1.16.964	0.001	0.15
										1.16.972	5·10 ⁻⁴	0.133
										1.16.960	4·10 ⁻⁴	0.12
										1.16.970	4·10 ⁻⁴	0.114
										1.1.500	3·10 ⁻⁴	0.096
										1.18.6804	3·10 ⁻⁴	0.094
										1.16.971	3·10 ⁻⁴	0.092
										1.4.6013	3·10 ⁻⁴	0.073
										1.18.919	3·10 ⁻⁴	0.073
										1.4.6012	2·10 ⁻⁴	0.068
										1.1.919	2·10 ⁻⁴	0.063
										1.1.344	2·10 ⁻⁴	0.056
										1.16.6208	2·10 ⁻⁴	0.053
										1.1.345	2·10 ⁻⁴	0.052
										1.15.850	2·10 ⁻⁴	0.049
										1.2.6020	2·10 ⁻⁴	0.049
										1.21.871	2·10 ⁻⁴	0.044
										1.16.953	2·10 ⁻⁴	0.044
										1.7.6022	1·10 ⁻⁴	0.041
										1.16.952	1·10 ⁻⁴	0.041
										1.2.916	1·10 ⁻⁴	0.037
										1.15.844	1·10 ⁻⁴	0.035
										1.14.804	1·10 ⁻⁴	0.034

Table 1.13.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.29	6046	0.16	0.13	186 ↑ 5.3	1.14.832	0.056	19.6
										1.16.6209	0.033	11.5
										1.15.851	0.013	4.45
										1.8.269	0.003	1.02
										1.2.266	0.003	1.01
										1.9.930	0.002	0.71
										1.16.963	0.001	0.43
										1.16.969	0.001	0.4
										1.1.919	0.001	0.39
										1.1.344	0.001	0.38
										1.1.345	0.001	0.37
										1.16.965	0.001	0.35
										1.16.966	0.001	0.31
										1.16.961	0.001	0.27
										1.14.831	0.001	0.265
										1.16.968	0.001	0.21
										1.18.919	0.001	0.186
										1.16.973	0.001	0.186
										1.12.6158	0.001	0.183
										1.1.36	0.001	0.175
										1.16.964	5·10 ⁻⁴	0.165
										1.16.972	4·10 ⁻⁴	0.155
										1.18.6804	4·10 ⁻⁴	0.138
										1.16.970	4·10 ⁻⁴	0.137
										1.1.500	4·10 ⁻⁴	0.128
										1.16.960	4·10 ⁻⁴	0.128
										1.3.242	4·10 ⁻⁴	0.126
										1.16.971	3·10 ⁻⁴	0.108
										1.2.916	3·10 ⁻⁴	0.089
										1.4.6013	2·10 ⁻⁴	0.087
										1.4.6012	2·10 ⁻⁴	0.076
										1.7.6022	2·10 ⁻⁴	0.062
										1.16.953	2·10 ⁻⁴	0.06
										1.2.6020	2·10 ⁻⁴	0.058
										1.16.952	2·10 ⁻⁴	0.057
										1.16.6208	2·10 ⁻⁴	0.056
										1.19.6806	2·10 ⁻⁴	0.055
										1.15.850	1·10 ⁻⁴	0.052
										1.21.871	1·10 ⁻⁴	0.05
										1.15.844	1·10 ⁻⁴	0.038
										1.14.804	1·10 ⁻⁴	0.038
										1.1.928	1·10 ⁻⁴	0.035
										1.1.927	1·10 ⁻⁴	0.035
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.245	6046	0.113	0.133	196 ↑ 5.3	1.14.832	0.054	21.9
										1.16.6209	0.032	13.2
										1.15.851	0.013	5.3
										1.2.266	0.004	1.58
										1.8.269	0.003	1.3
										1.1.344	0.002	0.98
										1.1.345	0.002	0.97
										1.1.919	0.002	0.96
										1.3.242	0.001	0.56
										1.16.969	0.001	0.51
										1.16.963	0.001	0.51
										1.9.930	0.001	0.49
										1.1.36	0.001	0.44
										1.16.965	0.001	0.44
										1.16.966	0.001	0.364
										1.16.961	0.001	0.32
										1.18.919	0.001	0.3

Table 1.13.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.216	6046	0.084	0.133	205 ↗ 5.3	1.14.832	0.047	21.6
										1.16.6209	0.031	14.1
										1.15.851	0.013	6.1
										1.3.242	0.005	2.4
										1.2.266	0.004	1.94
										1.1.345	0.004	1.8
										1.1.344	0.004	1.8
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.2	6046	0.064	0.135	215 ↗ 5.3	1.14.832	0.046	23
										1.16.6209	0.029	14.4
										1.15.851	0.013	6.6
										1.3.242	0.009	4.6
										1.1.345	0.004	2
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.19	6046	0.052	0.138	225 ↗ 5.3	1.14.832	0.048	25.5
										1.16.6209	0.028	14.5
										1.15.851	0.014	7.5
										1.3.242	0.011	5.9
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.186	6046	0.053	0.133	232 ↗ 5.3	1.14.832	0.043	23.2
										1.16.6209	0.035	19
										1.15.851	0.019	9.9
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.196	6046	0.067	0.13	236 ↗ 5.3	1.16.6209	0.065	32.9
										1.15.851	0.021	10.6
										1.14.832	0.015	7.8
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.17	6046	0.059	0.11	246 ↗ 5.3	1.16.6209	0.051	30.4
										1.14.832	0.017	10.2
										1.15.851	0.017	10
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.158	6046	0.058	0.1	256 → 5.3	1.16.6209	0.056	35.2
										1.15.851	0.011	6.9
										1.14.832	0.009	5.8
										1.8.269	0.004	2.4
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.157	6046	0.056	0.1	267 → 5.3	1.16.6209	0.061	38.9
										1.15.851	0.008	4.8
										1.14.832	0.007	4.3
										1.8.269	0.004	2.45
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.163	6046	0.054	0.11	278 → 5.3	1.16.6209	0.069	42.5
										1.14.832	0.006	3.8
										1.15.851	0.006	3.56
										1.8.269	0.004	2.43
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.214	6046	0.06	0.154	281 → 5.3	1.16.6209	0.106	49.5
										1.16.963	0.005	2.33
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.212	6046	0.057	0.155	295 ↘ 5.3	1.16.6209	0.108	50.8
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.25	6046	0.059	0.19	303 ↘ 5.3	1.16.6209	0.138	55.3
31. At the boundary of Deminka populated locality	Resi-dent.	2584.9	-779	2	0.194	6046	0.066	0.128	237 ↗ 5.3	1.16.6209	0.064	32.9
										1.15.851	0.02	10.5
										1.14.832	0.015	7.8
32. At the boundary of Myasotedovo populated locality	Resi-dent.	2326	-1762.6	2	0.142	6046	0.051	0.09	257 → 5.3	1.16.6209	0.04	28.5
										1.14.832	0.018	12.5
										1.15.851	0.012	8.7
33. At the boundary of Myasotedovo populated locality	Resi-dent.	1766.8	-2105.5	2	0.133	6046	0.047	0.086	270 → 5.3	1.16.6209	0.04	30.4
										1.14.832	0.016	12.3
										1.15.851	0.01	7.6
34. At the boundary of Kaznacheyevsky populated locality	Resi-dent.	68.3	-635.6	2	0.33	6046	0.062	0.267	315 ↘ 5.3	1.16.6209	0.21	64.5
35. At the boundary of workers camp of Mine No.20	Resi-dent.	-164.5	-73.3	2	0.49	6046	0.05	0.445	343 ↓ 5.3	1.16.6209	0.354	71.6
36. At the boundary of Shechekino populated locality	Resi-dent.	-1565.2	358.29	2	0.223	6046	0.022	0.2	17 ↓ 5.3	1.16.6209	0.085	38.2
										1.14.832	0.053	23.7

Table 1.13.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.19	6046	0.026	0.165	31 ↙ 5.3	1.16.6209	0.06	31.7
										1.14.832	0.044	22.8
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.245	6046	0.059	0.186	63 ↙ 5.3	1.16.6209	0.097	39.4
										1.15.851	0.015	5.9
										1.14.832	0.011	4.3
										1.16.969	0.006	2.64
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.36	6046	0.11	0.253	121 ↖ 5.3	1.16.6209	0.19	52.6
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.313	6046	0.16	0.152	151 ↖ 5.3	1.16.6209	0.105	33.4
										1.14.832	0.013	4.1
										1.16.963	0.005	1.6
										1.15.851	0.004	1.4
										1.16.969	0.004	1.25
										1.16.965	0.003	1.08
										1.8.269	0.003	1.06
										1.16.966	0.003	1.03
										1.16.961	0.002	0.68
										1.16.960	0.001	0.42
										1.16.968	0.001	0.405
										1.16.964	0.001	0.34
										1.16.973	0.001	0.256
										1.16.972	0.001	0.185
										1.4.6012	0.001	0.164
										1.16.6208	5·10 ⁻⁴	0.15
										1.16.970	4·10 ⁻⁴	0.116
										1.16.971	3·10 ⁻⁴	0.106
										1.14.831	3·10 ⁻⁴	0.094
										1.21.871	3·10 ⁻⁴	0.088
										1.4.6013	3·10 ⁻⁴	0.084
										1.2.6020	3·10 ⁻⁴	0.083
										1.15.850	2·10 ⁻⁴	0.074
										1.15.844	2·10 ⁻⁴	0.066
										1.10.6180	1·10 ⁻⁴	0.043
										1.10.6182	1·10 ⁻⁴	0.042
										1.14.806	1·10 ⁻⁴	0.036
										1.15.846	1·10 ⁻⁴	0.035

Table 1.13.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.36	6046	0.2	0.164	172 ↑ 5.3	1.14.832	0.073	20.2
										1.16.6209	0.056	15.4
										1.15.851	0.015	4.1
										1.8.269	0.003	0.78
										1.16.963	0.002	0.6
										1.16.969	0.002	0.46
										1.16.965	0.001	0.41
										1.16.966	0.001	0.395
										1.14.831	0.001	0.33
										1.16.961	0.001	0.306
										1.16.968	0.001	0.204
										1.16.960	0.001	0.165
										1.2.266	0.001	0.16
										1.16.973	0.001	0.16
										1.16.964	0.001	0.157
										1.12.6158	5·10 ⁻⁴	0.127
										1.16.972	4·10 ⁻⁴	0.116
										1.4.6013	4·10 ⁻⁴	0.097
										1.4.6012	3·10 ⁻⁴	0.095
										1.16.970	3·10 ⁻⁴	0.094
										1.1.500	3·10 ⁻⁴	0.092
										1.16.971	3·10 ⁻⁴	0.081
										1.16.6208	3·10 ⁻⁴	0.077
										1.18.6804	3·10 ⁻⁴	0.073
										1.2.6020	2·10 ⁻⁴	0.059
										1.15.850	2·10 ⁻⁴	0.057
										1.21.871	2·10 ⁻⁴	0.055
										1.9.930	2·10 ⁻⁴	0.048
										1.14.804	1·10 ⁻⁴	0.041
										1.15.844	1·10 ⁻⁴	0.036
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.116	6046	0.047	0.069	229 ↗ 5.3	1.14.832	0.028	24.1
										1.16.6209	0.011	9.6
										1.15.851	0.006	5.2
										1.3.242	0.005	4.04
										1.8.269	0.003	2.2
										1.1.344	0.002	1.46
										1.1.345	0.002	1.46
										1.1.919	0.002	1.43
										1.2.266	0.002	1.32

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.13.2.

Table 1.13.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.137	-	0.031	0.106	43 ↙	5.3
2	-2171.24	1361.8	0.156	-	0.029	0.127	37 ↙	5.3
3	-1983.94	898.21	0.177	-	0.026	0.15	29 ↙	5.3
4	-1796.63	434.62	0.198	-	0.023	0.175	19 ↓	5.3
5	-1609.33	-28.98	0.206	-	0.022	0.184	7 ↓	5.3
6	-1422.03	-492.57	0.2	-	0.024	0.175	355 ↓	5.3
7	-1234.72	-956.16	0.18	-	0.026	0.155	344 ↓	5.3
8	-1047.42	-1419.75	0.157	-	0.03	0.126	333 ↘	5.3
9	-860.12	-1883.34	0.135	-	0.032	0.103	324 ↘	5.3
10	-672.81	-2346.94	0.117	-	0.03	0.088	318 ↘	5.3
11	-485.51	-2810.53	0.104	-	0.03	0.074	312 ↘	5.3

Table 1.13.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
12	-298.21	-3274.12	0.093	-	0.03	0.063	307 ↘	5.3
13	-110.9	-3737.71	0.084	-	0.029	0.056	304 ↘	5.3
14	-1894.95	2012.7	0.155	-	0.035	0.12	50 ↙	5.3
15	-1707.65	1549.1	0.186	-	0.031	0.155	43 ↙	5.3
16	-1520.35	1085.51	0.223	-	0.029	0.195	35 ↙	5.3
17	-1333.04	621.92	0.255	-	0.022	0.234	23 ↙	5.3
18	-1145.74	158.33	0.275	-	0.02	0.255	10 ↓	5.3
19	-958.44	-305.26	0.264	-	0.024	0.24	354 ↓	5.3
20	-771.13	-768.86	0.23	-	0.033	0.195	339 ↓	5.3
21	-583.83	-1232.45	0.19	-	0.039	0.15	326 ↘	5.3
22	-396.53	-1696.04	0.157	-	0.038	0.12	317 ↘	5.3
23	-209.22	-2159.63	0.131	-	0.036	0.095	310 ↘	5.3
24	-21.92	-2623.22	0.113	-	0.034	0.08	305 ↘	5.3
25	165.38	-3086.82	0.1	-	0.032	0.068	301 ↘	5.3
26	352.69	-3550.41	0.09	-	0.03	0.059	298 ↘	5.3
27	-1431.36	2200	0.173	-	0.044	0.13	59 ↙	5.3
28	-1244.06	1736.41	0.217	-	0.043	0.174	53 ↙	5.3
29	-1056.75	1272.81	0.266	-	0.038	0.23	44 ↙	5.3
30	-869.45	809.22	0.334	-	0.031	0.304	32 ↙	5.3
31	-682.15	345.63	0.4	-	0.018	0.38	13 ↓	5.3
32	-494.84	-117.96	0.38	-	0.031	0.35	351 ↓	5.3
33	-307.54	-581.55	0.295	-	0.049	0.246	331 ↘	5.3
34	-120.24	-1045.14	0.23	-	0.052	0.18	316 ↘	5.3
35	67.07	-1508.74	0.183	-	0.05	0.134	306 ↘	5.3
36	254.37	-1972.33	0.147	-	0.045	0.102	300 ↘	5.3
37	441.67	-2435.92	0.123	-	0.038	0.085	297 ↘	5.3
38	628.98	-2899.51	0.107	-	0.034	0.072	294 ↘	5.3
39	816.28	-3363.1	0.095	-	0.033	0.062	291 →	5.3
40	-967.77	2387.3	0.19	-	0.06	0.13	71 ←	5.3
41	-780.46	1923.71	0.244	-	0.064	0.18	67 ↙	5.3
42	-593.16	1460.12	0.32	-	0.063	0.26	59 ↙	5.3
43	-405.86	996.53	0.45	-	0.06	0.386	47 ↙	5.3
44	-218.55	532.93	0.7	-	0.028	0.68	23 ↙	5.3
45	-31.25	69.34	0.66	-	0.054	0.61	345 ↓	5.3
46	156.05	-394.25	0.43	-	0.067	0.36	315 ↘	5.3
47	343.35	-857.84	0.3	-	0.063	0.235	300 ↘	5.3
48	530.66	-1321.43	0.216	-	0.058	0.158	293 ↘	5.3
49	717.96	-1785.03	0.165	-	0.052	0.113	289 →	5.3
50	905.26	-2248.62	0.132	-	0.044	0.088	287 →	5.3
51	1092.57	-2712.21	0.113	-	0.039	0.073	285 →	5.3
52	1279.87	-3175.8	0.1	-	0.035	0.064	284 →	5.3
53	-504.18	2574.61	0.207	-	0.075	0.132	84 ←	5.3
54	-316.87	2111.01	0.27	-	0.079	0.192	83 ←	5.3
55	-129.57	1647.42	0.4	-	0.078	0.32	80 ←	5.3
56	57.73	1183.83	0.68	-	0.062	0.62	72 ←	1.4
57	245.04	720.24	1.7	-	0.083	1.62	55 ↙	5.3
58	432.34	256.65	2	-	0.079	1.92	317 ↘	0.8
59	619.64	-206.95	0.67	-	0.074	0.6	287 →	5.3
60	806.95	-670.54	0.374	-	0.069	0.305	280 →	5.3
61	994.25	-1134.13	0.244	-	0.064	0.18	277 →	5.3
62	1181.55	-1597.72	0.178	-	0.058	0.12	276 →	5.3
63	1368.86	-2061.31	0.14	-	0.05	0.09	276 →	5.3
64	1556.16	-2524.91	0.118	-	0.041	0.077	277 →	5.3
65	1743.46	-2988.5	0.103	-	0.036	0.067	277 →	5.3
66	-40.58	2761.91	0.213	-	0.089	0.124	97 ←	5.3
67	146.72	2298.32	0.27	-	0.094	0.18	99 ←	5.3
68	334.02	1834.72	0.38	-	0.097	0.28	103 ←	5.3
69	521.33	1371.13	0.56	-	0.097	0.47	110 ←	5.3
70	708.63	907.54	1.24	-	0.094	1.15	133 ↖	0.9
71	895.93	443.95	2.4	-	0.09	2.3	215 ↗	5.3
72	1083.24	-19.64	0.72	-	0.083	0.63	249 →	5.3
73	1270.54	-483.24	0.385	-	0.076	0.31	257 →	5.3
74	1457.84	-946.83	0.25	-	0.069	0.182	261 →	5.3
75	1645.15	-1410.42	0.183	-	0.062	0.12	263 →	5.3
76	1832.45	-1874.01	0.144	-	0.052	0.092	266 →	5.3

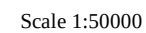
Table 1.13.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
77	2019.75	-2337.6	0.122	-	0.044	0.078	268 →	5.3
78	2207.06	-2801.19	0.107	-	0.039	0.068	269 →	5.3
79	423.01	2949.21	0.212	-	0.105	0.108	109 ←	5.3
80	610.31	2485.62	0.26	-	0.112	0.15	114 ↖	5.3
81	797.61	2022.03	0.32	-	0.115	0.21	122 ↖	5.3
82	984.92	1558.44	0.42	-	0.114	0.304	134 ↖	5.3
83	1172.22	1094.84	0.53	-	0.11	0.42	159 ↑	3.2
84	1359.52	631.25	0.65	-	0.1	0.55	194 ↑	5.3
85	1546.83	167.66	0.48	-	0.086	0.394	223 ↗	5.3
86	1734.13	-295.93	0.33	-	0.081	0.247	238 ↗	5.3
87	1921.43	-759.52	0.24	-	0.073	0.165	246 ↗	5.3
88	2108.74	-1223.12	0.18	-	0.063	0.12	252 →	5.3
89	2296.04	-1686.71	0.146	-	0.054	0.092	256 →	5.3
90	2483.34	-2150.3	0.125	-	0.044	0.081	260 →	5.3
91	2670.65	-2613.89	0.11	-	0.039	0.07	262 →	5.3
92	886.6	3136.51	0.215	-	0.122	0.093	118 ↖	5.3
93	1073.9	2672.92	0.256	-	0.135	0.12	126 ↖	5.3
94	1261.21	2209.33	0.293	-	0.14	0.153	135 ↖	5.3
95	1448.51	1745.74	0.334	-	0.138	0.197	148 ↖	5.3
96	1635.81	1282.15	0.38	-	0.123	0.257	166 ↑	5.3
97	1823.12	818.56	0.44	-	0.071	0.37	190 ↑	5.3
98	2010.42	354.96	0.364	-	0.078	0.286	210 ↗	5.3
99	2197.72	-108.63	0.28	-	0.078	0.205	225 ↗	5.3
100	2385.03	-572.22	0.22	-	0.071	0.15	235 ↗	5.3
101	2572.33	-1035.81	0.176	-	0.062	0.114	242 ↗	5.3
102	2759.63	-1499.4	0.147	-	0.052	0.096	248 →	5.3
103	2946.94	-1963	0.127	-	0.045	0.083	252 →	5.3
104	3134.24	-2426.59	0.112	-	0.04	0.072	255 →	5.3
105	1350.19	3323.82	0.232	-	0.147	0.086	126 ↖	5.3
106	1537.49	2860.23	0.27	-	0.167	0.1	134 ↖	5.3
107	1724.8	2396.63	0.3	-	0.174	0.126	143 ↖	5.3
108	1912.1	1933.04	0.32	-	0.164	0.158	155 ↖	5.3
109	2099.4	1469.45	0.355	-	0.123	0.23	169 ↑	5.3
110	2286.71	1005.86	0.374	-	0.084	0.29	187 ↑	5.3
111	2474.01	542.27	0.336	-	0.069	0.267	203 ↗	5.3
112	2661.31	78.67	0.287	-	0.054	0.233	217 ↗	5.3
113	2848.62	-384.92	0.217	-	0.056	0.16	228 ↗	5.3
114	3035.92	-848.51	0.177	-	0.055	0.122	235 ↗	5.3
115	3223.22	-1312.1	0.15	-	0.048	0.102	241 ↗	5.3
116	3410.53	-1775.69	0.13	-	0.042	0.088	246 ↗	5.3
117	3597.83	-2239.28	0.114	-	0.04	0.074	249 →	5.3
118	1813.78	3511.12	0.266	-	0.18	0.088	131 ↖	5.3
119	2001.09	3047.53	0.32	-	0.217	0.1	139 ↖	5.3
120	2188.39	2583.94	0.354	-	0.23	0.125	147 ↖	5.3
121	2375.69	2120.35	0.36	-	0.206	0.157	158 ↑	5.3
122	2563	1656.75	0.354	-	0.16	0.193	171 ↑	5.3
123	2750.3	1193.16	0.335	-	0.118	0.22	185 ↑	5.3
124	2937.6	729.57	0.3	-	0.09	0.21	198 ↑	5.3
125	3124.91	265.98	0.263	-	0.066	0.197	210 ↗	5.3
126	3312.21	-197.61	0.22	-	0.055	0.167	220 ↗	5.3
127	3499.51	-661.21	0.182	-	0.051	0.13	228 ↗	5.3
128	3686.82	-1124.8	0.153	-	0.048	0.105	234 ↗	5.3
129	3874.12	-1588.39	0.131	-	0.044	0.088	239 ↗	5.3
130	4061.42	-2051.98	0.115	-	0.041	0.074	243 ↗	5.3
131	2277.38	3698.42	0.315	-	0.234	0.081	137 ↖	5.3
132	2464.68	3234.83	0.42	-	0.327	0.094	144 ↖	5.3
133	2651.98	2771.24	0.5	-	0.39	0.112	152 ↖	5.3
134	2839.29	2307.65	0.46	-	0.326	0.13	162 ↑	5.3
135	3026.59	1844.06	0.37	-	0.225	0.15	173 ↑	5.3
136	3213.89	1380.47	0.317	-	0.154	0.162	184 ↑	5.3
137	3401.2	916.87	0.273	-	0.111	0.162	195 ↑	5.3
138	3588.5	453.28	0.24	-	0.083	0.156	205 ↗	5.3
139	3775.8	-10.31	0.208	-	0.065	0.143	214 ↗	5.3
140	3963.11	-473.9	0.177	-	0.055	0.122	222 ↗	5.3
141	4150.41	-937.49	0.15	-	0.05	0.1	228 ↗	5.3

Table 1.13.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
142	4337.71	-1401.09	0.13	-	0.046	0.084	233 ↗	5.3
143	4525.01	-1864.68	0.114	-	0.043	0.071	237 ↗	5.3
144	2740.97	3885.73	0.36	-	0.29	0.073	142 ↖	5.3
145	2928.27	3422.14	0.48	-	0.4	0.083	149 ↖	5.3
146	3115.57	2958.54	0.49	-	0.395	0.096	156 ↖	5.3
147	3302.88	2494.95	0.5	-	0.39	0.11	164 ↑	5.3
148	3490.18	2031.36	0.41	-	0.29	0.12	174 ↑	5.3
149	3677.48	1567.77	0.31	-	0.182	0.127	183 ↑	5.3
150	3864.79	1104.18	0.256	-	0.128	0.128	192 ↑	5.3
151	4052.09	640.58	0.22	-	0.095	0.125	201 ↑	5.3
152	4239.39	176.99	0.192	-	0.075	0.117	209 ↗	5.3
153	4426.7	-286.6	0.167	-	0.063	0.104	216 ↗	5.3
154	4614	-750.19	0.145	-	0.055	0.09	222 ↗	5.3
155	4801.3	-1213.78	0.126	-	0.05	0.077	227 ↗	5.3
156	4988.61	-1677.37	0.111	-	0.045	0.066	232 ↗	5.3
157	3204.56	4073.03	0.36	-	0.294	0.065	146 ↖	5.3
158	3391.86	3609.44	0.47	-	0.4	0.073	152 ↖	5.3
159	3579.17	3145.85	0.48	-	0.4	0.081	159 ↑	5.3
160	3766.47	2682.26	0.485	-	0.395	0.09	166 ↑	5.3
161	3953.77	2218.66	0.39	-	0.296	0.097	174 ↑	5.3
162	4141.08	1755.07	0.29	-	0.19	0.1	183 ↑	5.3
163	4328.38	1291.48	0.237	-	0.134	0.103	191 ↑	5.3
164	4515.68	827.89	0.203	-	0.102	0.1	198 ↑	5.3
165	4702.99	364.3	0.177	-	0.08	0.096	205 ↗	5.3
166	4890.29	-99.3	0.155	-	0.067	0.088	212 ↗	5.3
167	5077.59	-562.89	0.137	-	0.058	0.079	218 ↗	5.3
168	5264.9	-1026.48	0.12	-	0.051	0.069	223 ↗	5.3
169	5452.2	-1490.07	0.107	-	0.047	0.06	227 ↗	5.3

The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.13.1, scale 1:50000.



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1.14 Majorant calculation of contamination for all substances and summation groups

For the majorant, the contamination is calculated based on all sources of atmospheric contamination and all substances and summation groups. With this, for each calculation point, the results are the highest values of the maximum calculated concentrations for that point — both for each substance and summation group.

The concentrations at the ground level in each calculation point in the atmospheric air are cumulative maximum reachable concentrations which meet the most unfavourable climatic conditions. The maximum concentrations at the calculation points are given in Table 1.14.1.

Table 1.14.1 – Maximum concentration values in reference points

Description	Type	Coordinates			Calculated concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction; speed, ° ↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	Y ₀
1	2	3	4	5	6	7	8	9	10	11	12	13
Calculation site 1 (CS Local general enterprise coordinate system)												
1. At the boundary of calc. SPZ	SPZ	128.91	-532.25	2	0.6	301	0.011	0.59	330 ↘ 4	1.14.832	0.27	44.7
											1.15.851	21.2
2. At the boundary of calc. SPZ	SPZ	45.7	-174.85	2	0.66	301	0.011	0.65	343 ↓ 3.9	1.14.832	0.286	43.4
											1.15.851	20.2
3. At the boundary of calc. SPZ and garden plots	SPZ	-11.84	52.64	2	0.68	301	0.011	0.67	353 ↓ 3.9	1.14.832	0.29	42.7
											1.15.851	17.4
4. At the boundary of calc. SPZ and garden plots	SPZ	-187.7	525.5	2	0.74	6046	0.027	0.72	22 ↓ 5.3	1.16.6209	0.53	71.4
5. At the boundary of calc. SPZ and garden plots	SPZ	-336.17	1010.98	2	0.76	301	0.012	0.75	35 ↘ 4.1	1.14.832	0.277	36.3
										1.14.831	0.088	11.5
										1.15.851	0.05	6.6
6. At the boundary of calc. SPZ and garden plots	SPZ	-302.49	1171.47	2	0.78	301	0.012	0.77	42 ↘ 4.1	1.14.832	0.27	34.4
										1.14.831	0.085	10.9
										1.15.851	0.056	7.1
7. At the boundary of calc. SPZ and garden plots	SPZ	-9.7	1186.5	2	0.8	301	0.015	0.78	47 ↘ 3.8	1.14.832	0.294	37
										1.14.831	0.107	13.5
8. At the boundary of calc. SPZ and garden plots	SPZ	-109.14	1589.8	2	0.64	301	0.016	0.62	58 ↘ 3.9	1.14.832	0.274	43.1
										1.14.831	0.087	13.7
9. At the boundary of calc. SPZ and garden plots	SPZ	69.92	1693.68	2	0.62	301	0.017	0.61	65 ↘ 3.8	1.14.832	0.28	44.6
										1.14.831	0.092	14.8
10. At the boundary of calc. SPZ	SPZ	549.22	1778.21	2	0.63	301	0.019	0.61	84 ← 3.6	1.14.832	0.297	47
										1.14.831	0.111	17.7
11. At the boundary of calc. SPZ	SPZ	1055.33	1854.85	2	0.7	301	0.023	0.68	111 ← 3.8	1.14.832	0.304	43.2
										1.14.831	0.117	16.6
12. At the boundary of design SPZ and residential development area in Pervomayskiy populated locality	SPZ	1493.95	1863.25	2	0.67	301	0.027	0.64	132 ↖ 3.9	1.14.832	0.3	44.8
										1.15.851	0.12	17.8
13. At the boundary of design SPZ	SPZ	2067.88	2004.67	2	0.58	301	0.031	0.55	150 ↖ 4	1.14.832	0.257	44.6
										1.14.831	0.078	13.6
14. At the boundary of calc. SPZ	SPZ	2565.28	1975.93	2	0.56	301	0.038	0.52	162 ↑ 4	1.14.832	0.227	40.6
										1.14.831	0.061	10.9
15. At the boundary of calc. SPZ	SPZ	2890.93	1732.73	2	0.59	301	0.037	0.55	173 ↑ 4.1	1.14.832	0.216	36.8
										1.14.831	0.056	9.5
										1.15.851	0.049	8.4

Table 1.14.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
16. At the boundary of design SPZ	SPZ	3382.52	1752.4	2	0.54	301	0.04	0.5	178 ↑ 5.3	1.14.832	0.187	34.5
										1.14.831	0.043	7.9
										1.12.6158	0.04	7.5
										1.15.851	0.037	6.9
17. At the boundary of design SPZ	SPZ	3729.32	1400.13	2	0.53	301	0.03	0.5	188 ↑ 5.3	1.14.832	0.17	32
										1.12.6158	0.039	7.3
										1.14.831	0.037	7
										1.15.851	0.031	5.9
18. At the boundary of design SPZ	SPZ	3844.83	905.33	2	0.55	301	0.023	0.53	198 ↑ 5.3	1.14.832	0.17	31
										1.14.831	0.037	6.7
										1.16.952	0.033	6.1
										1.16.953	0.033	6
19. At the boundary of design SPZ	SPZ	3937.25	401.98	2	0.56	301	0.019	0.54	208 ↗ 5.3	1.15.851	0.032	5.8
										1.14.832	0.163	29.4
										1.16.952	0.039	7
										1.16.953	0.038	6.8
20. At the boundary of design SPZ	SPZ	3872.65	-99.74	2	0.57	301	0.016	0.55	217 ↗ 5.3	1.14.831	0.035	6.2
										1.15.851	0.031	5.5
										1.14.832	0.157	27.6
										1.16.952	0.04	7
21. At the boundary of design SPZ	SPZ	3570.83	-505.93	2	0.59	301	0.01	0.58	227 ↗ 5.3	1.16.953	0.039	6.9
										1.15.851	0.034	6
										1.14.831	0.033	5.8
										1.14.832	0.166	28.2
22. At the boundary of design SPZ	SPZ	3106.43	-698.53	2	0.6	301	0.01	0.6	236 ↗ 4.2	1.16.952	0.04	6.8
										1.16.953	0.04	6.7
										1.14.831	0.036	6.1
										1.15.851	0.036	6.1
23. At the boundary of design SPZ	SPZ	2596.09	-738.12	2	0.59	301	0.009	0.58	246 ↗ 3.8	1.14.832	0.18	29.8
										1.14.831	0.042	6.9
										1.15.851	0.042	6.9
										1.3.242	0.039	6.4
24. At the boundary of design SPZ	SPZ	2512.79	-1185.48	2	0.49	301	0.008	0.48	254 → 3.9	1.14.832	0.21	35.9
										1.14.831	0.054	9.1
										1.15.851	0.045	7.6
										1.14.832	0.184	37.5
25. At the boundary of design SPZ	SPZ	2141	-1530.93	2	0.44	301	0.008	0.43	265 → 4	1.15.851	0.05	10.1
										1.14.831	0.043	8.8
										1.14.832	0.17	39.1
										1.15.851	0.054	12.4
26. At the boundary of design SPZ	SPZ	1666.25	-1722.31	2	0.41	301	0.007	0.4	277 → 4	1.14.832	0.17	41.3
										1.15.851	0.057	13.8
										1.14.832	0.177	43.9
										1.15.851	0.059	14.7
27. At the boundary of design SPZ	SPZ	1181.83	-1765.76	2	0.404	301	0.007	0.4	289 → 4.1	1.14.832	0.217	46.2
										1.15.851	0.082	17.4
										1.14.832	0.208	45.5
										1.15.851	0.081	17.8
28. At the boundary of design SPZ	SPZ	935.23	-1331.96	2	0.47	301	0.007	0.46	296 ↘ 4.1	1.14.832	0.227	45.4
										1.15.851	0.096	19.1
										1.14.832	0.21	36.1
										1.14.831	0.053	9.1
29. At the boundary of design SPZ	SPZ	449.01	-1337.58	2	0.46	301	0.007	0.45	309 ↘ 4.1	1.15.851	0.051	8.9
										1.14.832	0.153	37.5
										1.15.851	0.044	10.8
										1.14.831	0.033	8.1
30. At the boundary of design SPZ	SPZ	233.62	-1045.12	2	0.5	301	0.01	0.49	318 ↘ 4.1	1.14.832	0.144	38.9
										1.15.851	0.044	11.9
										1.14.832	0.254	44.8
										1.15.851	0.117	20.7
31. At the boundary of Deminka populated locality	Resident.	2584.9	-779	2	0.58	301	0.009	0.57	246 ↗ 3.9	1.14.832	0.21	36.1
										1.14.831	0.053	9.1
										1.15.851	0.051	8.9
										1.14.832	0.153	37.5
32. At the boundary of Myasotedovo populated locality	Resident.	2326	-1762.6	2	0.41	301	0.007	0.4	264 → 4	1.15.851	0.044	10.8
										1.14.831	0.033	8.1
										1.14.832	0.144	38.9
										1.15.851	0.044	11.9
33. At the boundary of Myasotedovo populated locality	Resident.	1766.8	-2105.5	2	0.37	301	0.007	0.36	277 → 4	1.14.832	0.254	44.8
										1.15.851	0.117	20.7
										1.14.832	0.254	44.8
										1.15.851	0.117	20.7
34. At the boundary of Kaznacheysky populated locality	Resident.	68.3	-635.6	2	0.57	301	0.01	0.56	330 ↘ 4	1.14.832	0.254	44.8
										1.15.851	0.117	20.7
										1.14.832	0.254	44.8
										1.15.851	0.117	20.7

Table 1.14.1 (continued)

Description	Type	Coordinates			Designed concentration		Back-ground, % MAC	Input from the plant, % MAC	Wind: direction, speed °↑ m/s	Plant, shop, source of atmospheric emissions (emitter)	Input from emitter	
		X	Y	height, m	% MAC	Code 3B					% MAC	%
1	2	3	4	5	6	7	8	9	10	11	12	13
35. At the boundary of wokers camp of Mine No.20	Resident.	-164.5	-73.3	2	0.65	301	0.011	0.64	352 ↓ 4	1.14.832	0.27	41.6
										1.15.851	0.115	17.8
36. At the boundary of Shechekino populated locality	Resident.	-1565.2	358.29	2	0.52	301	0.009	0.51	14 ↓ 5.3	1.14.832	0.173	33.5
										1.14.831	0.038	7.4
										1.15.844	0.035	6.8
										1.15.851	0.035	6.7
37. At the boundary of Shechekino populated locality	Resident.	-1835.9	994.4	2	0.53	301	0.009	0.52	27 ↙ 5.3	1.14.832	0.155	29.1
										1.16.952	0.045	8.5
										1.16.953	0.044	8.3
										1.15.844	0.033	6.2
38. At the boundary of Yasekni populated locality	Resident.	-849.5	1835.8	2	0.59	301	0.014	0.58	54 ↙ 4.6	1.14.832	0.193	32.6
										1.15.851	0.048	8.2
										1.14.831	0.047	7.9
										1.16.953	0.035	5.9
39. At the boundary of Pervomayskiy populated locality	Resident.	753.2	1825.6	2	0.66	301	0.021	0.64	95 ← 3.7	1.14.832	0.305	46.4
										1.14.831	0.116	17.6
40. At the boundary of Pervomayskiy populated locality	Resident.	1777.8	1990.7	2	0.6	301	0.027	0.58	141 ↖ 4	1.14.832	0.276	45.7
										1.15.851	0.095	15.7
At the boundary of Kochaki populated locality	Resident.	2843.1	1777.1	2	0.58	301	0.037	0.54	171 ↑ 4.1	1.14.832	0.22	37.6
										1.14.831	0.057	9.8
										1.15.851	0.052	8.9
42. At the boundary of Ozerniy populated locality	Resident.	5036.1	-1445.81	2	0.34	301	0.008	0.33	230 ↗ 5.3	1.14.832	0.087	25.7
										1.16.952	0.03	8.9
										1.16.953	0.03	8.8
										1.15.846	0.019	5.7
										1.15.851	0.017	5

The results of calculation for site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site" are given in Table 1.14.2.

Table 1.14.2 — Maximum concentrations in calculation grid nodes, site No. 1 — "Calculation for the entire cluster of industrial enterprises and plants within the industrial site"

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
1	-2358.54	1825.39	0.44	301	0.009	0.44	41 ↙	5.3
2	-2171.24	1361.8	0.49	301	0.009	0.48	34 ↙	5.3
3	-1983.94	898.21	0.51	301	0.009	0.5	25 ↙	5.3
4	-1796.63	434.62	0.5	301	0.009	0.49	16 ↓	5.3
5	-1609.33	-28.98	0.47	301	0.009	0.465	6 ↓	5.3
6	-1422.03	-492.57	0.45	301	0.009	0.44	356 ↓	5.3
7	-1234.72	-956.16	0.42	301	0.008	0.41	346 ↓	5.3
8	-1047.42	-1419.75	0.385	301	0.008	0.38	336 ↘	5.3
9	-860.12	-1883.34	0.35	301	0.008	0.34	327 ↘	5.3
10	-672.81	-2346.94	0.32	301	0.008	0.31	320 ↘	5.3
11	-485.51	-2810.53	0.29	301	0.005	0.286	314 ↘	5.3
12	-298.21	-3274.12	0.27	301	0.005	0.264	309 ↘	5.3
13	-110.9	-3737.71	0.25	301	0.005	0.244	305 ↘	5.3
14	-1894.95	2012.7	0.49	301	0.011	0.48	47 ↙	5.3
15	-1707.65	1549.1	0.55	301	0.01	0.54	39 ↙	5.3
16	-1520.35	1085.51	0.59	301	0.01	0.58	30 ↙	5.3
17	-1333.04	621.92	0.57	301	0.01	0.56	19 ↓	5.3
18	-1145.74	158.33	0.53	301	0.01	0.52	8 ↓	5.3
19	-958.44	-305.26	0.51	301	0.009	0.5	356 ↓	5.3
20	-771.13	-768.86	0.47	301	0.009	0.465	343 ↓	5.3
21	-583.83	-1232.45	0.42	301	0.009	0.41	332 ↘	4.7
22	-396.53	-1696.04	0.38	301	0.008	0.37	323 ↘	5.3

Table 1.14.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
23	-209.22	-2159.63	0.34	301	0.008	0.335	315 ↘	5.3
24	-21.92	-2623.22	0.307	301	0.006	0.3	308 ↘	4
25	165.38	-3086.82	0.284	301	0.005	0.28	303 ↘	5.3
26	352.69	-3550.41	0.26	301	0.005	0.256	299 ↘	5.3
27	-1431.36	2200	0.51	301	0.012	0.5	54 ↙	5.3
28	-1244.06	1736.41	0.6	301	0.012	0.58	47 ↙	5.3
29	-1056.75	1272.81	0.67	301	0.011	0.66	37 ↙	5.3
30	-869.45	809.22	0.65	301	0.011	0.64	25 ↙	4.7
31	-682.15	345.63	0.6	301	0.011	0.59	11 ↓	4.1
32	-494.84	-117.96	0.58	301	0.01	0.57	355 ↓	4.1
33	-307.54	-581.55	0.54	301	0.01	0.53	339 ↓	4.1
34	-120.24	-1045.14	0.47	301	0.01	0.465	326 ↘	4.1
35	67.07	-1508.74	0.42	301	0.009	0.41	316 ↘	5.3
36	254.37	-1972.33	0.365	301	0.006	0.36	308 ↘	4.1
37	441.67	-2435.92	0.33	301	0.006	0.32	302 ↘	4.1
38	628.98	-2899.51	0.3	301	0.006	0.294	297 ↘	5.3
39	816.28	-3363.1	0.27	301	0.005	0.267	293 ↘	4.6
40	-967.77	2387.3	0.49	301	0.014	0.475	63 ↙	4.5
41	-780.46	1923.71	0.57	301	0.014	0.56	57 ↙	4.1
42	-593.16	1460.12	0.69	301	0.014	0.68	48 ↙	4.5
43	-405.86	996.53	0.75	301	0.012	0.74	34 ↙	4.1
44	-218.55	532.93	0.7	6046	0.028	0.68	23 ↙	5.3
45	-31.25	69.34	0.68	301	0.011	0.67	354 ↓	3.9
46	156.05	-394.25	0.63	301	0.011	0.62	333 ↘	3.9
47	343.35	-857.84	0.55	301	0.01	0.54	317 ↘	4
48	530.66	-1321.43	0.46	301	0.007	0.46	307 ↘	4.1
49	717.96	-1785.03	0.4	301	0.007	0.39	300 ↘	5.3
50	905.26	-2248.62	0.35	301	0.006	0.344	294 ↘	4
51	1092.57	-2712.21	0.317	301	0.006	0.31	290 →	5.3
52	1279.87	-3175.8	0.286	301	0.006	0.28	287 →	4.6
53	-504.18	2574.61	0.46	301	0.015	0.45	72 ←	4
54	-316.87	2111.01	0.53	301	0.016	0.52	67 ↙	4
55	-129.57	1647.42	0.62	301	0.016	0.61	59 ↙	3.9
56	57.73	1183.83	0.76	301	0.016	0.75	48 ↙	3.8
57	245.04	720.24	1.7	6046	0.083	1.62	55 ↙	5.3
58	432.34	256.65	2	6046	0.079	1.92	317 ↘	0.8
59	619.64	-206.95	0.79	301	0.012	0.77	320 ↘	3.8
60	806.95	-670.54	0.64	301	0.008	0.63	303 ↘	4
61	994.25	-1134.13	0.51	301	0.008	0.5	294 ↘	4.1
62	1181.55	-1597.72	0.43	301	0.007	0.42	289 →	4.1
63	1368.86	-2061.31	0.37	301	0.007	0.365	285 →	4
64	1556.16	-2524.91	0.33	301	0.006	0.326	282 →	4.1
65	1743.46	-2988.5	0.3	301	0.006	0.294	280 →	4.6
66	-40.58	2761.91	0.45	301	0.017	0.43	83 ←	4
67	146.72	2298.32	0.53	301	0.018	0.51	81 ←	3.9
68	334.02	1834.72	0.61	301	0.018	0.59	77 ←	3.7
69	521.33	1371.13	0.67	301	0.018	0.65	69 ←	3.7
70	708.63	907.54	1.47	6004	0.02	1.45	82 ←	0.5
71	895.93	443.95	2.75	6004	0.019	2.73	29 ↙	0.8
72	1083.24	-19.64	1.06	333	-	1.06	152 ↖	3.9
73	1270.54	-483.24	0.64	301	0.009	0.63	282 →	3.8
74	1457.84	-946.83	0.53	301	0.008	0.53	278 →	3.9
75	1645.15	-1410.42	0.45	301	0.008	0.445	276 →	4
76	1832.45	-1874.01	0.395	301	0.007	0.39	274 →	4
77	2019.75	-2337.6	0.35	301	0.007	0.34	273 →	4.2
78	2207.06	-2801.19	0.315	301	0.006	0.31	272 →	5.3
79	423.01	2949.21	0.44	301	0.02	0.42	96 ←	4
80	610.31	2485.62	0.52	301	0.021	0.5	97 ←	3.9
81	797.61	2022.03	0.63	301	0.022	0.61	99 ←	3.8
82	984.92	1558.44	0.77	301	0.021	0.75	105 ←	3.6
83	1172.22	1094.84	0.8	6004	0.023	0.77	107 ←	1.2
84	1359.52	631.25	3.74	301	0.019	3.7	331 ↘	0.7
85	1546.83	167.66	0.7	301	0.011	0.69	254 →	3.9
86	1734.13	-295.93	0.6	301	0.01	0.6	259 →	3.7
87	1921.43	-759.52	0.55	301	0.009	0.54	261 →	3.8

Table 1.14.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
88	2108.74	-1223.12	0.48	301	0.008	0.47	262 →	3.9
89	2296.04	-1686.71	0.42	301	0.008	0.41	264 →	3.9
90	2483.34	-2150.3	0.37	301	0.007	0.36	264 →	4
91	2670.65	-2613.89	0.33	301	0.006	0.32	265 →	5.3
92	886.6	3136.51	0.42	301	0.024	0.4	108 ←	4
93	1073.9	2672.92	0.5	301	0.026	0.475	112 ←	4
94	1261.21	2209.33	0.6	301	0.026	0.58	119 ↖	4
95	1448.51	1745.74	0.7	301	0.026	0.67	132 ↖	3.9
96	1635.81	1282.15	0.84	301	0.024	0.82	106 ←	3.6
97	1823.12	818.56	2.6	301	0.022	2.57	226 ↗	0.9
98	2010.42	354.96	2.54	6004	0.113	2.43	121 ↖	0.6
99	2197.72	-108.63	0.8	301	0.018	0.78	241 ↗	2.4
100	2385.03	-572.22	0.61	301	0.01	0.6	246 ↗	3.7
101	2572.33	-1035.81	0.52	301	0.009	0.51	251 →	3.9
102	2759.63	-1499.4	0.446	301	0.008	0.44	254 →	4
103	2946.94	-1963	0.39	301	0.007	0.38	256 →	5.3
104	3134.24	-2426.59	0.34	301	0.007	0.335	258 →	5.3
105	1350.19	3323.82	0.405	301	0.029	0.375	119 ↖	5.3
106	1537.49	2860.23	0.47	301	0.032	0.44	125 ↖	4.1
107	1724.8	2396.63	0.54	301	0.034	0.51	134 ↖	4
108	1912.1	1933.04	0.6	301	0.028	0.57	147 ↖	4
109	2099.4	1469.45	0.66	301	0.025	0.63	164 ↑	3.9
110	2286.71	1005.86	1.01	301	0.022	1	189 ↑	4.5
111	2474.01	542.27	0.81	301	0.019	0.8	208 ↗	4
112	2661.31	78.67	0.87	301	0.017	0.85	222 ↗	4.1
113	2848.62	-384.92	0.72	301	0.011	0.71	233 ↗	4.1
114	3035.92	-848.51	0.57	301	0.009	0.56	240 ↗	4.1
115	3223.22	-1312.1	0.47	301	0.008	0.46	245 ↗	4.6
116	3410.53	-1775.69	0.41	301	0.008	0.4	248 →	5.3
117	3597.83	-2239.28	0.35	301	0.007	0.345	251 →	5.3
118	1813.78	3511.12	0.394	301	0.043	0.35	128 ↖	5.3
119	2001.09	3047.53	0.455	301	0.059	0.4	134 ↖	5.3
120	2188.39	2583.94	0.49	301	0.04	0.45	144 ↖	4.1
121	2375.69	2120.35	0.54	301	0.038	0.51	155 ↖	4
122	2563	1656.75	0.62	301	0.032	0.59	169 ↑	4
123	2750.3	1193.16	0.75	301	0.026	0.72	186 ↑	5.3
124	2937.6	729.57	0.72	301	0.022	0.7	202 ↑	4.1
125	3124.91	265.98	0.72	301	0.018	0.7	213 ↗	4.7
126	3312.21	-197.61	0.68	301	0.016	0.66	223 ↗	5.3
127	3499.51	-661.21	0.58	301	0.01	0.57	231 ↗	5.3
128	3686.82	-1124.8	0.48	301	0.009	0.47	237 ↗	5.3
129	3874.12	-1588.39	0.41	301	0.008	0.4	241 ↗	5.3
130	4061.42	-2051.98	0.354	301	0.007	0.35	244 ↗	5.3
131	2277.38	3698.42	0.43	301	0.104	0.324	134 ↖	5.3
132	2464.68	3234.83	0.52	301	0.19	0.33	142 ↖	2.4
133	2651.98	2771.24	0.61	301	0.238	0.37	150 ↖	2.4
134	2839.29	2307.65	0.57	301	0.163	0.41	160 ↑	2.4
135	3026.59	1844.06	0.56	301	0.041	0.52	172 ↑	5.3
136	3213.89	1380.47	0.61	301	0.031	0.58	185 ↑	5.3
137	3401.2	916.87	0.62	301	0.024	0.6	197 ↑	5.1
138	3588.5	453.28	0.61	301	0.02	0.6	207 ↗	5.3
139	3775.8	-10.31	0.59	301	0.017	0.57	216 ↗	5.3
140	3963.11	-473.9	0.53	301	0.014	0.52	224 ↗	5.3
141	4150.41	-937.49	0.46	301	0.009	0.45	230 ↗	5.3
142	4337.71	-1401.09	0.4	301	0.008	0.39	234 ↗	5.3
143	4525.01	-1864.68	0.345	301	0.007	0.34	238 ↗	5.3
144	2740.97	3885.73	0.45	301	0.173	0.276	140 ↖	1.5
145	2928.27	3422.14	0.57	301	0.264	0.3	147 ↖	2.4
146	3115.57	2958.54	0.58	301	0.25	0.33	155 ↖	2.4
147	3302.88	2494.95	0.6	301	0.24	0.366	164 ↑	2.4
148	3490.18	2031.36	0.53	301	0.134	0.4	174 ↑	2.4
149	3677.48	1567.77	0.53	301	0.034	0.49	184 ↑	5.3
150	3864.79	1104.18	0.53	301	0.026	0.51	194 ↑	5.3
151	4052.09	640.58	0.53	301	0.021	0.51	203 ↗	5.3
152	4239.39	176.99	0.51	301	0.017	0.49	211 ↗	5.3

Table 1.14.2 (continued)

No.	Coordinates		Calculated concentration		Background, % MAC	Input from the plant, % MAC	Wind	
	X	Y	% MAC	Code 3B			direction,	speed, m/s
1	2	3	4	5	6	7	8	9
153	4426.7	-286.6	0.47	301	0.015	0.46	218 ↗	5.3
154	4614	-750.19	0.42	301	0.013	0.41	224 ↗	5.3
155	4801.3	-1213.78	0.37	301	0.008	0.36	229 ↗	5.3
156	4988.61	-1677.37	0.33	301	0.007	0.32	233 ↗	5.3
157	3204.56	4073.03	0.44	301	0.184	0.256	145 ↖	1.5
158	3391.86	3609.44	0.55	301	0.275	0.275	151 ↖	1.5
159	3579.17	3145.85	0.56	301	0.266	0.3	159 ↑	2.4
160	3766.47	2682.26	0.58	301	0.256	0.32	166 ↑	2.4
161	3953.77	2218.66	0.5	301	0.16	0.34	175 ↑	2.4
162	4141.08	1755.07	0.46	301	0.034	0.42	184 ↑	5.3
163	4328.38	1291.48	0.46	301	0.026	0.435	192 ↑	5.3
164	4515.68	827.89	0.46	301	0.021	0.435	200 ↑	5.3
165	4702.99	364.3	0.44	301	0.017	0.42	207 ↗	5.3
166	4890.29	-99.3	0.41	301	0.015	0.4	214 ↗	5.3
167	5077.59	-562.89	0.38	301	0.013	0.37	219 ↗	5.3
168	5264.9	-1026.48	0.34	301	0.011	0.33	224 ↗	5.3
169	5452.2	-1490.07	0.304	301	0.007	0.297	228 ↗	5.3

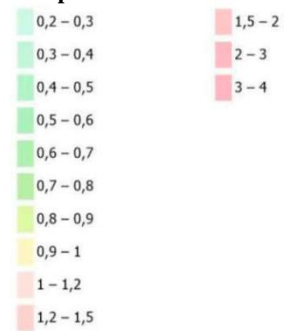
The key plan of the plant area with contour curves of calculated concentrations (as % MAC) for calculation site No. 1 — **Calculation for the entire cluster of industrial enterprises and plants within the industrial site** is shown on Figure 1.14.1, scale 1:50000.

C
↑



-  SPZ calc.
 Boundary of the plant area
 Residential buildings
 Design area

Map of maximum concentrations



Scale 1:50000

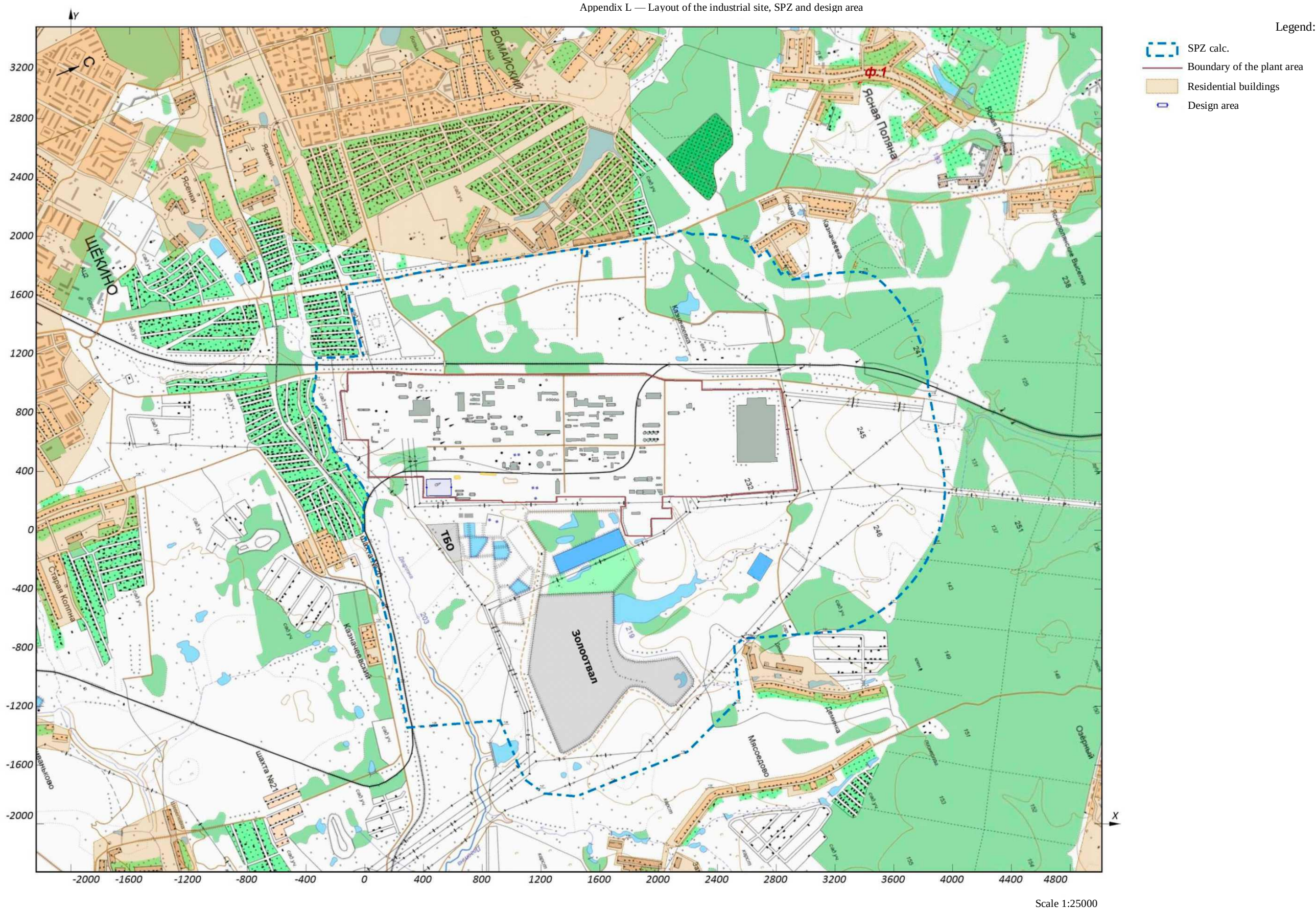


Figure 1 — Layout of the industrial site, SPZ and design area

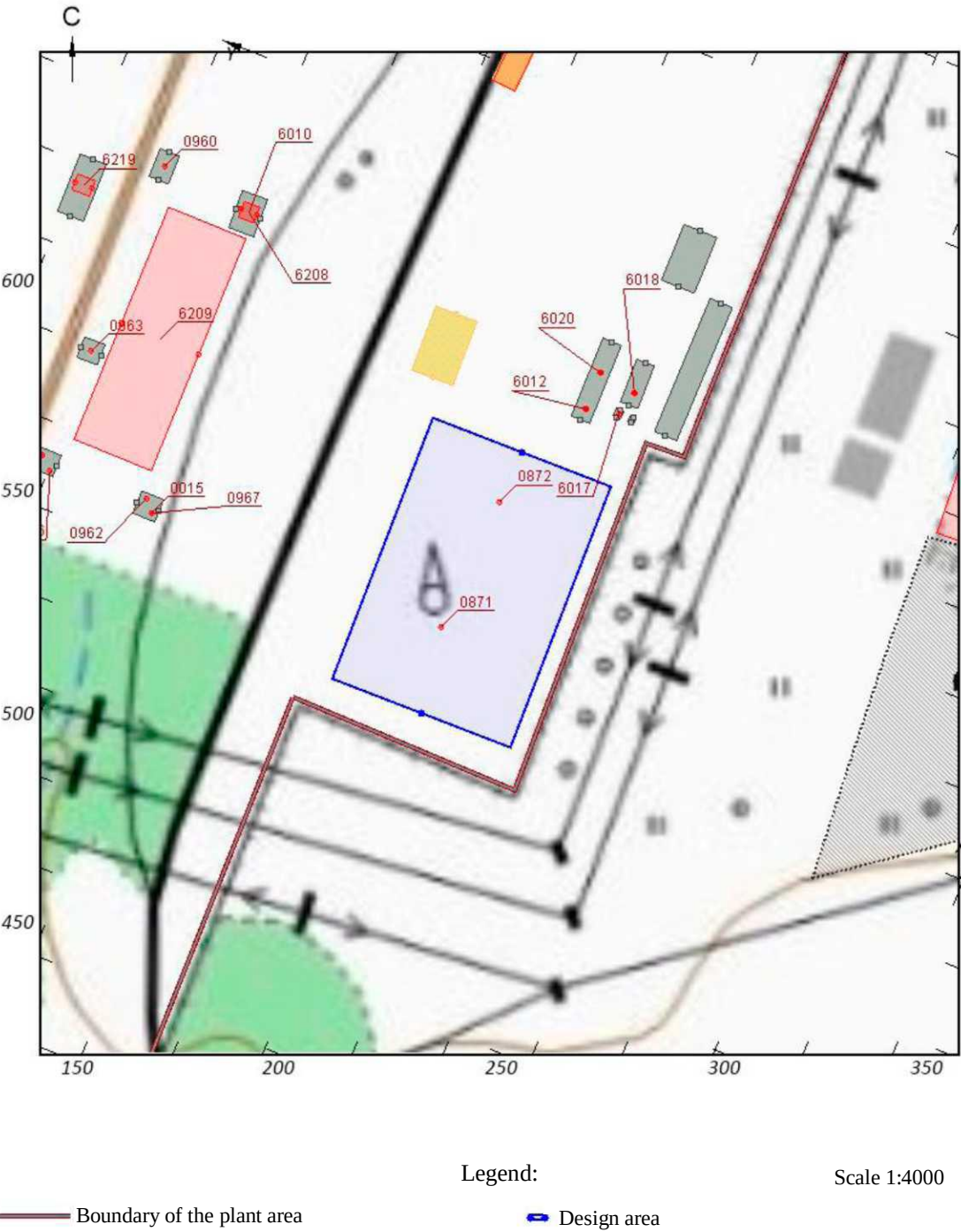


Figure 2 — Emitters layout

Appendix N

Noise level calculation

Local sound attenuation is calculated based on GOST 31295.2-2005 — Noise. Local sound attenuation. Part 2. General calculation procedure based on EKO-Center-Shum software

Data about types and coordinates of the points where atmospheric contamination was measured are given in Table 1.1.

Table 1.1 — Calculation point parameters

Description	Coordinates		Height, m	Point type
	x	y		
1	2	3	4	5
1. At the boundary of garden plots	-1711.493	-1507.785	1.5	Residential area
2. At the boundary of garden plots	-813.654	-1814.343	1.5	Residential area
3. At the boundary of Kaznacheyevsky residential area	13.104	-2098.223	1.5	Residential area

Data about coordinates of calculation areas, calculation grid size (each grid nod forms a calculation point) are given in Table 1.2.

Table 1.2 — Calculation area parameters

Description	Centerline coordinates				Width, m	Height, m	Grid size, m	SPZ interval m
	Point 1		Point 2					
	x ₁	y ₁	x ₂	y ₂				
1	2	3	4	5	6	7	8	9
1.	-2672.393	-1445.13	662.945	-1445.13	2385.42	1.5	100	0

Parameters of sources of the noise to be included in this calculation, are given in Table 1.3.

Table 1.3 — Parameters of the sources of the noise

Source	Type	Height, m	Coordinates			LpA
			x ₁	y ₁	width, m	
			x ₂	y ₂		
1	2	3	4	5	6	7
1. Source of the noise 1	T	1.5	-714.4	-1252.6	-	122

Note: for the T-sources (point sources), the sound power is expressed in dB. For the L-type sources (linear sources), it is expressed in dB per meter of the source length. For the P-type sources (plot sources), it is expressed in dB per sq. meter of the source area.

Legends and calculation of attenuation factor

The concentration of the water vapours at the given temperature, relative humidity and pressure shall be calculated as per the following formula:

$$h = (h_r \cdot 10^C) / (p_a / p_r) \quad (1.1)$$

where p_a — means atmospheric pressure, kPa;

p_r — means reference atmospheric pressure.

The exponent C shall be calculated as per the following formula:

$$C = -6.8346(T_{01} / T)^{1.261} + 4.6151 \quad (1.2)$$

where T means temperature, K ;

T_{01} — means the temperature at the triple point at the temperature sheet, 273.16 K (+0.01 °C).

The variable parameters are sound frequency f (Hz), air temperature T (K), water vapour concentration h (%) and atmospheric pressure p_a (kPa).

The attenuation of the sound absorption in the atmosphere is a function of relaxation frequency f_{r0} and f_{rN} for oxygen and nitrogen respectively. The relaxation frequencies shall be calculated as per the following formulae:

$$f_{rO} = (p_a / p_r) \cdot (24 + 4.04 \cdot 10^4 \cdot h \cdot (0.02 + h / 0.391 + h)) \quad (1.1)$$

$$f_{rN} = (p_a / p_r) \cdot (T / T_0)^{-1/2} \cdot (9 + 280 \cdot h \cdot \exp\{ - 4.170[(T / T_0)^{-1/2} - 1]\}) \quad (1.2)$$

Attenuation factor α shall be calculated as per the following formula:

$$\begin{aligned} \alpha = & 8.686 \cdot f^2 \cdot ([1.84 \cdot 10^{-11} \cdot (p_a / p_r)^{-1}] \cdot (T / T_0)^{-1/2} + (T / T_0)^{-5/2} \times \\ & \times \{0.01275 \cdot [\exp(-2239,1 / T)] \cdot [f_{rO} + f^2 / f_{rO}]^{-1} + \\ & + 0.1068 \cdot [\exp(-3352,0 / T)] \cdot [f_{rN} + f^2 / f_{rN}]^{-1}\}) \end{aligned} \quad (1.3)$$

In formulae (1)-(3) $p_r = 101.325$ kPa, $T_0 = 293.15$ K.

Attenuation factor calculation

At the air temperature of $T = 20^\circ\text{C}$ and the relative humidity of $h = 70\%$, with the pressure of $p_a = 101.325$ kPa, the attenuation factor acc. to Table 1 in GOST 31295.1-2005 will make up:

$$C = -6.8346 \cdot (273.16 / 20)^{1.261} + 4.6151 = -1.637;$$

$$h = 70 \cdot 10^{-1.637} / (101.325 / 101.325) = 1.614 \%;$$

$$f_{rO} = 101.325 / 101.325 (24 + 4.04 \cdot 10^4 \cdot 1.614 \cdot (0.02 + 1.614) / (0.391 + 1.614)) = 53173.957 \text{ Hz};$$

$$f_{rN} = 101.325 / 101.325 \cdot (20 / 293.15)^{-1/2} \cdot (9 + 280 \cdot 1.614 \cdot \exp\{-4.170[(20 / 293.15)^{-1/2} - 1]\}) = 460.991 \text{ Hz};$$

$$\begin{aligned} \alpha_{31.5} = & 8.686 \cdot 31.5^2 \cdot ([1.84 \cdot 10^{-11} \cdot (101.325 / 101.325)^{-1}] \cdot (20 / 293.15)^{-1/2} + (20 / 293.15)^{-5/2} \times \\ & \times \{0.01275 \cdot [\exp(-2239,1 / 20)] \cdot [53173.957 + 31.5^2 / 53173.957]^{-1} + \\ & + 0.1068 \cdot [\exp(-3352,0 / 20)] \cdot [460.991 + 31.5^2 / 460.991]^{-1}\}) \cdot 10^3 = 0.02265 \text{ dB/km}. \end{aligned}$$

The results of sound pressure level calculations in the relevant points are given in Table 1.5.

Table 1.5 — Sound pressure level at the calculation points

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. At the boundary of the garden plots	Resident.	-1711.493	-1507.785	1.5	0	0	0	0	0	0	0	0	0	27.2
2. At the boundary of the garden plots	Resident.	-813.654	-1814.343	1.5	0	0	0	0	0	0	0	0	0	42.8
3. At the boundary of the residential area in Kaznacheyevsky	Resident.	13.104	-2098.223	1.5	0	0	0	0	0	0	0	0	0	24.5

Note — type of calculation points: Us. — user, Ind — a point in the industrial area, Resident. — a point in the residential area, SPZ — a point at the boundary of SPZ, Protect. — a point in the protected area around hospital and sanatorium buildings, Gen. — a point in the area around hotels and hostels, SiteH — a point in a recreation site near hospitals, SiteR — a point in a recreation site within the residential area.

Calculation of sound pressure level in the calculation points:

Results of calculation for site No. 1 are given in Table 1.6.

Table 1.6 — Sound pressure level in the grid nodes of site No. 1

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0. 1.0	Us.	-2672.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	0
1. 1.1	Us.	-2572.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	0
2. 1.2	Us.	-2472.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	0
3. 1.3	Us.	-2372.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	0
4. 1.4	Us.	-2272.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	0
5. 1.5	Us.	-2172.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	0
6. 1.6	Us.	-2072.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	0
7. 1.7	Us.	-1972.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	2.7
8. 1.8	Us.	-1872.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	4.5
9. 1.9	Us.	-1772.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	6.3
10. 1.10	Us.	-1672.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	7.9
11. 1.11	Us.	-1572.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	9.4
12. 1.12	Us.	-1472.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	10.9
13. 1.13	Us.	-1372.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	12.2
14. 1.14	Us.	-1272.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	13.3
15. 1.15	Us.	-1172.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	14.3
16. 1.16	Us.	-1072.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	15.1
17. 1.17	Us.	-972.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	15.8
18. 1.18	Us.	-872.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	16.2
19. 1.19	Us.	-772.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	16.4
20. 1.20	Us.	-672.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	16.4
21. 1.21	Us.	-572.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	16.2
22. 1.22	Us.	-472.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	15.8
23. 1.23	Us.	-372.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	15.2
24. 1.24	Us.	-272.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	14.5
25. 1.25	Us.	-172.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	13.5
26. 1.26	Us.	-72.393	-2637.84	1.5	0	0	0	0	0	0	0	0	0	12.4
27. 1.27	Us.	27.607	-2637.84	1.5	0	0	0	0	0	0	0	0	0	11.1
28. 1.28	Us.	127.607	-2637.84	1.5	0	0	0	0	0	0	0	0	0	9.7
29. 1.29	Us.	227.607	-2637.84	1.5	0	0	0	0	0	0	0	0	0	8.2
30. 1.30	Us.	327.607	-2637.84	1.5	0	0	0	0	0	0	0	0	0	6.5
31. 1.31	Us.	427.607	-2637.84	1.5	0	0	0	0	0	0	0	0	0	4.8
32. 1.32	Us.	527.607	-2637.84	1.5	0	0	0	0	0	0	0	0	0	3
33. 1.33	Us.	627.607	-2637.84	1.5	0	0	0	0	0	0	0	0	0	1.1
34. 1.34	Us.	-2672.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	0
35. 1.35	Us.	-2572.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	0
36. 1.36	Us.	-2472.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	0
37. 1.37	Us.	-2372.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	0
38. 1.38	Us.	-2272.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	0
39. 1.39	Us.	-2172.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	0
40. 1.40	Us.	-2072.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	2.7
41. 1.41	Us.	-1972.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	4.7
42. 1.42	Us.	-1872.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	6.6
43. 1.43	Us.	-1772.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	8.5
44. 1.44	Us.	-1672.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	10.2
45. 1.45	Us.	-1572.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	11.8
46. 1.46	Us.	-1472.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	13.4
47. 1.47	Us.	-1372.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	14.7
48. 1.48	Us.	-1272.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	16
49. 1.49	Us.	-1172.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	17.1
50. 1.50	Us.	-1072.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	17.9
51. 1.51	Us.	-972.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	18.6
52. 1.52	Us.	-872.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	19.1
53. 1.53	Us.	-772.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	19.3
54. 1.54	Us.	-672.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	19.4
55. 1.55	Us.	-572.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	19.2
56. 1.56	Us.	-472.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	18.7
57. 1.57	Us.	-372.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	18.1
58. 1.58	Us.	-272.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	17.2

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
59. 1.59	Us.	-172.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	16.2
60. 1.60	Us.	-72.393	-2537.84	1.5	0	0	0	0	0	0	0	0	0	15
61. 1.61	Us.	27.607	-2537.84	1.5	0	0	0	0	0	0	0	0	0	13.6
62. 1.62	Us.	127.607	-2537.84	1.5	0	0	0	0	0	0	0	0	0	12.1
63. 1.63	Us.	227.607	-2537.84	1.5	0	0	0	0	0	0	0	0	0	10.5
64. 1.64	Us.	327.607	-2537.84	1.5	0	0	0	0	0	0	0	0	0	8.7
65. 1.65	Us.	427.607	-2537.84	1.5	0	0	0	0	0	0	0	0	0	6.9
66. 1.66	Us.	527.607	-2537.84	1.5	0	0	0	0	0	0	0	0	0	5
67. 1.67	Us.	627.607	-2537.84	1.5	0	0	0	0	0	0	0	0	0	3.1
68. 1.68	Us.	-2672.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	0
69. 1.69	Us.	-2572.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	0
70. 1.70	Us.	-2472.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	0
71. 1.71	Us.	-2372.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	0
72. 1.72	Us.	-2272.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	0
73. 1.73	Us.	-2172.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	2.5
74. 1.74	Us.	-2072.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	4.6
75. 1.75	Us.	-1972.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	6.7
76. 1.76	Us.	-1872.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	8.7
77. 1.77	Us.	-1772.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	10.6
78. 1.78	Us.	-1672.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	12.4
79. 1.79	Us.	-1572.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	14.2
80. 1.80	Us.	-1472.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	15.8
81. 1.81	Us.	-1372.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	17.3
82. 1.82	Us.	-1272.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	18.7
83. 1.83	Us.	-1172.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	19.8
84. 1.84	Us.	-1072.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	20.8
85. 1.85	Us.	-972.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	21.5
86. 1.86	Us.	-872.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	22.1
87. 1.87	Us.	-772.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	22.3
88. 1.88	Us.	-672.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	22.4
89. 1.89	Us.	-572.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	22.1
90. 1.90	Us.	-472.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	21.6
91. 1.91	Us.	-372.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	20.9
92. 1.92	Us.	-272.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	20
93. 1.93	Us.	-172.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	18.9
94. 1.94	Us.	-72.393	-2437.84	1.5	0	0	0	0	0	0	0	0	0	17.5
95. 1.95	Us.	27.607	-2437.84	1.5	0	0	0	0	0	0	0	0	0	16.1
96. 1.96	Us.	127.607	-2437.84	1.5	0	0	0	0	0	0	0	0	0	14.5
97. 1.97	Us.	227.607	-2437.84	1.5	0	0	0	0	0	0	0	0	0	12.7
98. 1.98	Us.	327.607	-2437.84	1.5	0	0	0	0	0	0	0	0	0	10.9
99. 1.99	Us.	427.607	-2437.84	1.5	0	0	0	0	0	0	0	0	0	9
100. 1.100	Us.	527.607	-2437.84	1.5	0	0	0	0	0	0	0	0	0	7
101. 1.101	Us.	627.607	-2437.84	1.5	0	0	0	0	0	0	0	0	0	4.9
102. 1.102	Us.	-2672.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	0
103. 1.103	Us.	-2572.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	0
104. 1.104	Us.	-2472.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	0
105. 1.105	Us.	-2372.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	0
106. 1.106	Us.	-2272.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	2
107. 1.107	Us.	-2172.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	4.2
108. 1.108	Us.	-2072.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	6.4
109. 1.109	Us.	-1972.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	8.5
110. 1.110	Us.	-1872.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	10.6
111. 1.111	Us.	-1772.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	12.7
112. 1.112	Us.	-1672.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	14.6
113. 1.113	Us.	-1572.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	16.5
114. 1.114	Us.	-1472.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	18.3
115. 1.115	Us.	-1372.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	19.9
116. 1.116	Us.	-1272.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	21.3
117. 1.117	Us.	-1172.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	22.6
118. 1.118	Us.	-1072.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	23.7
119. 1.119	Us.	-972.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	24.5
120. 1.120	Us.	-872.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	25.1
121. 1.121	Us.	-772.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	25.4
122. 1.122	Resi- dent.	-672.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	25.4
123. 1.123	Resi- dent.	-572.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	25.2

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
124. 1.124	Resi- dent.	-472.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	24.6
125. 1.125	Us.	-372.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	23.8
126. 1.126	Us.	-272.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	22.8
127. 1.127	Us.	-172.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	21.5
128. 1.128	Us.	-72.393	-2337.84	1.5	0	0	0	0	0	0	0	0	0	20.1
129. 1.129	Us.	27.607	-2337.84	1.5	0	0	0	0	0	0	0	0	0	18.5
130. 1.130	Us.	127.607	-2337.84	1.5	0	0	0	0	0	0	0	0	0	16.8
131. 1.131	Us.	227.607	-2337.84	1.5	0	0	0	0	0	0	0	0	0	14.9
132. 1.132	Us.	327.607	-2337.84	1.5	0	0	0	0	0	0	0	0	0	13
133. 1.133	Us.	427.607	-2337.84	1.5	0	0	0	0	0	0	0	0	0	11
134. 1.134	Us.	527.607	-2337.84	1.5	0	0	0	0	0	0	0	0	0	8.9
135. 1.135	Us.	627.607	-2337.84	1.5	0	0	0	0	0	0	0	0	0	6.7
136. 1.136	Us.	-2672.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	0
137. 1.137	Us.	-2572.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	0
138. 1.138	Us.	-2472.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	0
139. 1.139	Us.	-2372.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	1.1
140. 1.140	Us.	-2272.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	3.5
141. 1.141	Us.	-2172.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	5.8
142. 1.142	Us.	-2072.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	8.1
143. 1.143	Us.	-1972.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	10.3
144. 1.144	Us.	-1872.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	12.5
145. 1.145	Us.	-1772.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	14.7
146. 1.146	Us.	-1672.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	16.8
147. 1.147	Us.	-1572.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	18.8
148. 1.148	Us.	-1472.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	20.6
149. 1.149	Us.	-1372.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	22.4
150. 1.150	Us.	-1272.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	24
151. 1.151	Us.	-1172.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	25.4
152. 1.152	Us.	-1072.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	26.6
153. 1.153	Us.	-972.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	27.5
154. 1.154	Us.	-872.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	28.2
155. 1.155	Us.	-772.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	28.5
156. 1.156	Resi- dent.	-672.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	28.5
157. 1.157	Resi- dent.	-572.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	28.2
158. 1.158	Resi- dent.	-472.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	27.6
159. 1.159	Us.	-372.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	26.8
160. 1.160	Us.	-272.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	25.6
161. 1.161	Us.	-172.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	24.2
162. 1.162	Us.	-72.393	-2237.84	1.5	0	0	0	0	0	0	0	0	0	22.7
163. 1.163	Us.	27.607	-2237.84	1.5	0	0	0	0	0	0	0	0	0	20.9
164. 1.164	Us.	127.607	-2237.84	1.5	0	0	0	0	0	0	0	0	0	19.1
165. 1.165	Resi- dent.	227.607	-2237.84	1.5	0	0	0	0	0	0	0	0	0	17.1
166. 1.166	Us.	327.607	-2237.84	1.5	0	0	0	0	0	0	0	0	0	15
167. 1.167	Us.	427.607	-2237.84	1.5	0	0	0	0	0	0	0	0	0	12.9
168. 1.168	Us.	527.607	-2237.84	1.5	0	0	0	0	0	0	0	0	0	10.7
169. 1.169	Us.	627.607	-2237.84	1.5	0	0	0	0	0	0	0	0	0	8.4
170. 1.170	Us.	-2672.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	0
171. 1.171	Us.	-2572.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	0
172. 1.172	Us.	-2472.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	0
173. 1.173	Us.	-2372.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	2.5
174. 1.174	Us.	-2272.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	4.9
175. 1.175	Us.	-2172.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	7.3
176. 1.176	Us.	-2072.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	9.7
177. 1.177	Us.	-1972.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	12
178. 1.178	Us.	-1872.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	14.3
179. 1.179	Us.	-1772.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	16.6
180. 1.180	Us.	-1672.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	18.8
181. 1.181	Us.	-1572.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	21
182. 1.182	Us.	-1472.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	23
183. 1.183	Us.	-1372.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	24.9
184. 1.184	Us.	-1272.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	26.6
185. 1.185	Us.	-1172.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	28.2
186. 1.186	Us.	-1072.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	29.5
187. 1.187	Us.	-972.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	30.6
188. 1.188	Us.	-872.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	31.3

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
189. 1.189	Us.	-772.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	31.7
190. 1.190	Us.	-672.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	31.8
191. 1.191	Resi- dent.	-572.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	31.4
192. 1.192	Resi- dent.	-472.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	30.7
193. 1.193	Us.	-372.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	29.7
194. 1.194	Us.	-272.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	28.4
195. 1.195	Us.	-172.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	26.9
196. 1.196	Us.	-72.393	-2137.84	1.5	0	0	0	0	0	0	0	0	0	25.2
197. 1.197	Resi- dent.	27.607	-2137.84	1.5	0	0	0	0	0	0	0	0	0	23.3
198. 1.198	Resi- dent.	127.607	-2137.84	1.5	0	0	0	0	0	0	0	0	0	21.3
199. 1.199	Us.	227.607	-2137.84	1.5	0	0	0	0	0	0	0	0	0	19.2
200. 1.200	Us.	327.607	-2137.84	1.5	0	0	0	0	0	0	0	0	0	17
201. 1.201	Us.	427.607	-2137.84	1.5	0	0	0	0	0	0	0	0	0	14.7
202. 1.202	Us.	527.607	-2137.84	1.5	0	0	0	0	0	0	0	0	0	12.4
203. 1.203	Us.	627.607	-2137.84	1.5	0	0	0	0	0	0	0	0	0	10.1
204. 1.204	Resi- dent.	-2672.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	0
205. 1.205	Us.	-2572.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	0
206. 1.206	Us.	-2472.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	1.2
207. 1.207	Us.	-2372.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	3.7
208. 1.208	Us.	-2272.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	6.2
209. 1.209	Us.	-2172.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	8.7
210. 1.210	Us.	-2072.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	11.2
211. 1.211	Us.	-1972.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	13.6
212. 1.212	Us.	-1872.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	16
213. 1.213	Us.	-1772.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	18.4
214. 1.214	Us.	-1672.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	20.8
215. 1.215	Us.	-1572.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	23.1
216. 1.216	Us.	-1472.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	25.2
217. 1.217	Us.	-1372.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	27.3
218. 1.218	Us.	-1272.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	29.3
219. 1.219	Us.	-1172.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	31
220. 1.220	Us.	-1072.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	32.5
221. 1.221	Us.	-972.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	33.7
222. 1.222	Us.	-872.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	34.6
223. 1.223	Us.	-772.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	35
224. 1.224	Us.	-672.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	35.1
225. 1.225	Us.	-572.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	34.7
226. 1.226	Us.	-472.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	33.9
227. 1.227	Us.	-372.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	32.7
228. 1.228	Us.	-272.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	31.3
229. 1.229	Us.	-172.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	29.6
230. 1.230	Us.	-72.393	-2037.84	1.5	0	0	0	0	0	0	0	0	0	27.6
231. 1.231	Us.	27.607	-2037.84	1.5	0	0	0	0	0	0	0	0	0	25.6
232. 1.232	Us.	127.607	-2037.84	1.5	0	0	0	0	0	0	0	0	0	23.4
233. 1.233	Us.	227.607	-2037.84	1.5	0	0	0	0	0	0	0	0	0	21.1
234. 1.234	Us.	327.607	-2037.84	1.5	0	0	0	0	0	0	0	0	0	18.8
235. 1.235	Us.	427.607	-2037.84	1.5	0	0	0	0	0	0	0	0	0	16.4
236. 1.236	Us.	527.607	-2037.84	1.5	0	0	0	0	0	0	0	0	0	14
237. 1.237	Us.	627.607	-2037.84	1.5	0	0	0	0	0	0	0	0	0	11.6
238. 1.238	Resi- dent.	-2672.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	0
239. 1.239	Us.	-2572.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	0
240. 1.240	Us.	-2472.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	2.3
241. 1.241	Us.	-2372.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	4.8
242. 1.242	Us.	-2272.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	7.4
243. 1.243	Us.	-2172.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	10
244. 1.244	Us.	-2072.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	12.5
245. 1.245	Us.	-1972.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	15.1
246. 1.246	Us.	-1872.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	17.6
247. 1.247	Us.	-1772.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	20.1
248. 1.248	Us.	-1672.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	22.6
249. 1.249	Us.	-1572.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	25
250. 1.250	Us.	-1472.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	27.4
251. 1.251	Us.	-1372.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	29.7
252. 1.252	Us.	-1272.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	31.8
253. 1.253	Us.	-1172.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	33.8

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
254. 1.254	Us.	-1072.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	35.5
255. 1.255	Us.	-972.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	36.9
256. 1.256	Us.	-872.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	38
257. 1.257	Us.	-772.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	38.5
258. 1.258	Us.	-672.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	38.5
259. 1.259	SPZ	-572.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	38.1
260. 1.260	Us.	-472.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	37.1
261. 1.261	Us.	-372.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	35.8
262. 1.262	Us.	-272.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	34.1
263. 1.263	Us.	-172.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	32.2
264. 1.264	Us.	-72.393	-1937.84	1.5	0	0	0	0	0	0	0	0	0	30
265. 1.265	Us.	27.607	-1937.84	1.5	0	0	0	0	0	0	0	0	0	27.8
266. 1.266	Us.	127.607	-1937.84	1.5	0	0	0	0	0	0	0	0	0	25.4
267. 1.267	Us.	227.607	-1937.84	1.5	0	0	0	0	0	0	0	0	0	23
268. 1.268	Us.	327.607	-1937.84	1.5	0	0	0	0	0	0	0	0	0	20.5
269. 1.269	Us.	427.607	-1937.84	1.5	0	0	0	0	0	0	0	0	0	18
270. 1.270	Us.	527.607	-1937.84	1.5	0	0	0	0	0	0	0	0	0	15.5
271. 1.271	Us.	627.607	-1937.84	1.5	0	0	0	0	0	0	0	0	0	12.9
272. 1.272	Us.	-2672.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	0
273. 1.273	Us.	-2572.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	0
274. 1.274	Us.	-2472.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	3.2
275. 1.275	Us.	-2372.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	5.8
276. 1.276	Us.	-2272.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	8.5
277. 1.277	Us.	-2172.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	11.1
278. 1.278	Us.	-2072.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	13.7
279. 1.279	Us.	-1972.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	16.4
280. 1.280	Us.	-1872.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	19
281. 1.281	Us.	-1772.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	21.7
282. 1.282	Us.	-1672.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	24.3
283. 1.283	Us.	-1572.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	26.9
284. 1.284	Us.	-1472.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	29.4
285. 1.285	Us.	-1372.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	31.9
286. 1.286	Us.	-1272.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	34.3
287. 1.287	Us.	-1172.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	36.6
288. 1.288	Us.	-1072.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	38.6
289. 1.289	Us.	-972.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	40.2
290. 1.290	Us.	-872.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	41.5
291. 1.291	Us.	-772.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	42.1
292. 1.292	Us.	-672.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	42.2
293. 1.293	Us.	-572.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	41.6
294. 1.294	Us.	-472.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	40.5
295. 1.295	Us.	-372.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	38.9
296. 1.296	Us.	-272.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	36.9
297. 1.297	Us.	-172.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	34.7
298. 1.298	Us.	-72.393	-1837.84	1.5	0	0	0	0	0	0	0	0	0	32.3
299. 1.299	Us.	27.607	-1837.84	1.5	0	0	0	0	0	0	0	0	0	29.8
300. 1.300	Us.	127.607	-1837.84	1.5	0	0	0	0	0	0	0	0	0	27.3
301. 1.301	Us.	227.607	-1837.84	1.5	0	0	0	0	0	0	0	0	0	24.7
302. 1.302	Us.	327.607	-1837.84	1.5	0	0	0	0	0	0	0	0	0	22.1
303. 1.303	Us.	427.607	-1837.84	1.5	0	0	0	0	0	0	0	0	0	19.4
304. 1.304	Us.	527.607	-1837.84	1.5	0	0	0	0	0	0	0	0	0	16.8
305. 1.305	Us.	627.607	-1837.84	1.5	0	0	0	0	0	0	0	0	0	14.2
306. 1.306	Us.	-2672.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	0
307. 1.307	Us.	-2572.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	1.4
308. 1.308	Us.	-2472.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	4
309. 1.309	Us.	-2372.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	6.7
310. 1.310	Us.	-2272.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	9.4
311. 1.311	Us.	-2172.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	12.1
312. 1.312	Us.	-2072.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	14.8
313. 1.313	Us.	-1972.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	17.5
314. 1.314	Us.	-1872.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	20.3
315. 1.315	Us.	-1772.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	23
316. 1.316	Us.	-1672.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	25.8
317. 1.317	Us.	-1572.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	28.6
318. 1.318	Us.	-1472.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	31.3

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
319. 1.319	Us.	-1372.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	34
320. 1.320	Us.	-1272.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	36.7
321. 1.321	Us.	-1172.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	39.2
322. 1.322	Us.	-1072.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	41.6
323. 1.323	Us.	-972.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	43.6
324. 1.324	Us.	-872.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	45.2
325. 1.325	Us.	-772.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	46
326. 1.326	Us.	-672.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	46.1
327. 1.327	Us.	-572.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	45.3
328. 1.328	Us.	-472.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	43.9
329. 1.329	Us.	-372.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	41.9
330. 1.330	Us.	-272.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	39.6
331. 1.331	Us.	-172.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	37.1
332. 1.332	Us.	-72.393	-1737.84	1.5	0	0	0	0	0	0	0	0	0	34.5
333. 1.333	Us.	27.607	-1737.84	1.5	0	0	0	0	0	0	0	0	0	31.7
334. 1.334	Us.	127.607	-1737.84	1.5	0	0	0	0	0	0	0	0	0	29
335. 1.335	Us.	227.607	-1737.84	1.5	0	0	0	0	0	0	0	0	0	26.2
336. 1.336	Us.	327.607	-1737.84	1.5	0	0	0	0	0	0	0	0	0	23.5
337. 1.337	Us.	427.607	-1737.84	1.5	0	0	0	0	0	0	0	0	0	20.7
338. 1.338	Us.	527.607	-1737.84	1.5	0	0	0	0	0	0	0	0	0	18
339. 1.339	Us.	627.607	-1737.84	1.5	0	0	0	0	0	0	0	0	0	15.2
340. 1.340	Resi- dent.	-2672.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	0
341. 1.341	Us.	-2572.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	2
342. 1.342	Us.	-2472.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	4.7
343. 1.343	Us.	-2372.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	7.4
344. 1.344	Us.	-2272.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	10.1
345. 1.345	Us.	-2172.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	12.9
346. 1.346	Us.	-2072.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	15.7
347. 1.347	Us.	-1972.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	18.5
348. 1.348	Us.	-1872.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	21.3
349. 1.349	Us.	-1772.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	24.2
350. 1.350	Us.	-1672.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	27.1
351. 1.351	Us.	-1572.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	30
352. 1.352	Us.	-1472.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	32.9
353. 1.353	Us.	-1372.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	35.9
354. 1.354	Us.	-1272.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	38.8
355. 1.355	Us.	-1172.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	41.8
356. 1.356	Us.	-1072.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	44.5
357. 1.357	Us.	-972.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	47.1
358. 1.358	Us.	-872.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	49.1
359. 1.359	Us.	-772.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	50.3
360. 1.360	Us.	-672.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	50.4
361. 1.361	Us.	-572.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	49.3
362. 1.362	Us.	-472.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	47.4
363. 1.363	Us.	-372.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	45
364. 1.364	Us.	-272.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	42.2
365. 1.365	Us.	-172.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	39.3
366. 1.366	Us.	-72.393	-1637.84	1.5	0	0	0	0	0	0	0	0	0	36.4
367. 1.367	Us.	27.607	-1637.84	1.5	0	0	0	0	0	0	0	0	0	33.4
368. 1.368	Us.	127.607	-1637.84	1.5	0	0	0	0	0	0	0	0	0	30.5
369. 1.369	Us.	227.607	-1637.84	1.5	0	0	0	0	0	0	0	0	0	27.5
370. 1.370	Us.	327.607	-1637.84	1.5	0	0	0	0	0	0	0	0	0	24.6
371. 1.371	Us.	427.607	-1637.84	1.5	0	0	0	0	0	0	0	0	0	21.8
372. 1.372	Us.	527.607	-1637.84	1.5	0	0	0	0	0	0	0	0	0	18.9
373. 1.373	Us.	627.607	-1637.84	1.5	0	0	0	0	0	0	0	0	0	16.1
374. 1.374	Resi- dent.	-2672.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	0
375. 1.375	Resi- dent.	-2572.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	2.5
376. 1.376	Us.	-2472.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	5.2
377. 1.377	Us.	-2372.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	8
378. 1.378	Us.	-2272.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	10.7
379. 1.379	Us.	-2172.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	13.5
380. 1.380	Us.	-2072.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	16.4
381. 1.381	Us.	-1972.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	19.2
382. 1.382	Us.	-1872.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	22.2
383. 1.383	Us.	-1772.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	25.1

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
384. 1.384	Us.	-1672.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	28.1
385. 1.385	Us.	-1572.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	31.2
386. 1.386	Us.	-1472.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	34.3
387. 1.387	Us.	-1372.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	37.5
388. 1.388	Us.	-1272.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	40.7
389. 1.389	Us.	-1172.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	44
390. 1.390	Us.	-1072.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	47.3
391. 1.391	Us.	-972.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	50.5
392. 1.392	Us.	-872.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	53.3
393. 1.393	Us.	-772.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	55.1
394. 1.394	Us.	-672.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	55.2
395. 1.395	Us.	-572.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	53.6
396. 1.396	Us.	-472.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	51
397. 1.397	Us.	-372.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	47.8
398. 1.398	Us.	-272.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	44.5
399. 1.399	Us.	-172.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	41.2
400. 1.400	Us.	-72.393	-1537.84	1.5	0	0	0	0	0	0	0	0	0	38
401. 1.401	Us.	27.607	-1537.84	1.5	0	0	0	0	0	0	0	0	0	34.8
402. 1.402	Us.	127.607	-1537.84	1.5	0	0	0	0	0	0	0	0	0	31.7
403. 1.403	Us.	227.607	-1537.84	1.5	0	0	0	0	0	0	0	0	0	28.6
404. 1.404	Us.	327.607	-1537.84	1.5	0	0	0	0	0	0	0	0	0	25.6
405. 1.405	Us.	427.607	-1537.84	1.5	0	0	0	0	0	0	0	0	0	22.6
406. 1.406	Us.	527.607	-1537.84	1.5	0	0	0	0	0	0	0	0	0	19.7
407. 1.407	Us.	627.607	-1537.84	1.5	0	0	0	0	0	0	0	0	0	16.8
408. 1.408	Resi- dent.	-2672.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	0
409. 1.409	Resi- dent.	-2572.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	2.8
410. 1.410	Us.	-2472.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	5.6
411. 1.411	Us.	-2372.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	8.4
412. 1.412	Us.	-2272.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	11.2
413. 1.413	Us.	-2172.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	14
414. 1.414	Us.	-2072.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	16.9
415. 1.415	Us.	-1972.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	19.8
416. 1.416	Us.	-1872.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	22.8
417. 1.417	Us.	-1772.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	25.8
418. 1.418	Us.	-1672.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	28.9
419. 1.419	Us.	-1572.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	32
420. 1.420	Us.	-1472.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	35.3
421. 1.421	Us.	-1372.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	38.7
422. 1.422	Us.	-1272.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	42.1
423. 1.423	Us.	-1172.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	45.8
424. 1.424	Us.	-1072.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	49.7
425. 1.425	Us.	-972.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	53.7
426. 1.426	Us.	-872.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	57.7
427. 1.427	Us.	-772.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	60.8
428. 1.428	Us.	-672.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	61.1
429. 1.429	Us.	-572.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	58.3
430. 1.430	Us.	-472.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	54.3
431. 1.431	Ind.	-372.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	50.3
432. 1.432	Ind.	-272.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	46.4
433. 1.433	Ind.	-172.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	42.7
434. 1.434	Us.	-72.393	-1437.84	1.5	0	0	0	0	0	0	0	0	0	39.2
435. 1.435	Us.	27.607	-1437.84	1.5	0	0	0	0	0	0	0	0	0	35.8
436. 1.436	Us.	127.607	-1437.84	1.5	0	0	0	0	0	0	0	0	0	32.5
437. 1.437	Us.	227.607	-1437.84	1.5	0	0	0	0	0	0	0	0	0	29.4
438. 1.438	Us.	327.607	-1437.84	1.5	0	0	0	0	0	0	0	0	0	26.3
439. 1.439	Us.	427.607	-1437.84	1.5	0	0	0	0	0	0	0	0	0	23.2
440. 1.440	Us.	527.607	-1437.84	1.5	0	0	0	0	0	0	0	0	0	20.3
441. 1.441	Us.	627.607	-1437.84	1.5	0	0	0	0	0	0	0	0	0	17.3
442. 1.442	Resi- dent.	-2672.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	0
443. 1.443	Resi- dent.	-2572.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	3
444. 1.444	Resi- dent.	-2472.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	5.8
445. 1.445	Us.	-2372.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	8.6
446. 1.446	Us.	-2272.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	11.4
447. 1.447	Us.	-2172.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	14.3
448. 1.448	Us.	-2072.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	17.2

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB										La, dB(a)
		x	y		31.5	63	125	250	500	1000	2000	4000	8000		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
449. 1.449	Us.	-1972.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	20.1	
450. 1.450	Us.	-1872.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	23.1	
451. 1.451	Us.	-1772.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	26.2	
452. 1.452	Us.	-1672.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	29.3	
453. 1.453	Us.	-1572.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	32.5	
454. 1.454	Us.	-1472.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	35.9	
455. 1.455	Us.	-1372.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	39.4	
456. 1.456	Us.	-1272.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	43	
457. 1.457	Us.	-1172.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	47	
458. 1.458	Us.	-1072.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	51.3	
459. 1.459	Us.	-972.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	56.1	
460. 1.460	Us.	-872.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	61.8	
461. 1.461	Us.	-772.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	68.4	
462. 1.462	Us.	-672.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	69.3	
463. 1.463	Us.	-572.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	62.8	
464. 1.464	Us.	-472.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	56.9	
465. 1.465	Ind.	-372.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	52	
466. 1.466	Us.	-272.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	47.6	
467. 1.467	Us.	-172.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	43.6	
468. 1.468	Us.	-72.393	-1337.84	1.5	0	0	0	0	0	0	0	0	0	39.9	
469. 1.469	Us.	27.607	-1337.84	1.5	0	0	0	0	0	0	0	0	0	36.4	
470. 1.470	Us.	127.607	-1337.84	1.5	0	0	0	0	0	0	0	0	0	33.1	
471. 1.471	Us.	227.607	-1337.84	1.5	0	0	0	0	0	0	0	0	0	29.8	
472. 1.472	Us.	327.607	-1337.84	1.5	0	0	0	0	0	0	0	0	0	26.7	
473. 1.473	Us.	427.607	-1337.84	1.5	0	0	0	0	0	0	0	0	0	23.6	
474. 1.474	Us.	527.607	-1337.84	1.5	0	0	0	0	0	0	0	0	0	20.6	
475. 1.475	Us.	627.607	-1337.84	1.5	0	0	0	0	0	0	0	0	0	17.6	
476. 1.476	Resident.	-2672.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	0	
477. 1.477	Resident.	-2572.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	3.1	
478. 1.478	Resident.	-2472.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	5.8	
479. 1.479	Us.	-2372.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	8.6	
480. 1.480	Us.	-2272.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	11.5	
481. 1.481	Us.	-2172.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	14.3	
482. 1.482	Us.	-2072.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	17.2	
483. 1.483	Us.	-1972.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	20.2	
484. 1.484	Us.	-1872.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	23.2	
485. 1.485	Us.	-1772.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	26.3	
486. 1.486	Us.	-1672.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	29.4	
487. 1.487	Us.	-1572.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	32.7	
488. 1.488	Us.	-1472.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	36	
489. 1.489	Us.	-1372.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	39.6	
490. 1.490	Us.	-1272.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	43.3	
491. 1.491	Us.	-1172.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	47.3	
492. 1.492	Us.	-1072.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	51.7	
493. 1.493	Us.	-972.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	56.8	
494. 1.494	Us.	-872.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	63.4	
495. 1.495	Us.	-772.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	74.1	
496. 1.496	Us.	-672.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	77	
497. 1.497	Us.	-572.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	64.6	
498. 1.498	Us.	-472.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	57.8	
499. 1.499	Us.	-372.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	52.5	
500. 1.500	Us.	-272.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	48	
501. 1.501	Us.	-172.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	43.9	
502. 1.502	Us.	-72.393	-1237.84	1.5	0	0	0	0	0	0	0	0	0	40.1	
503. 1.503	Us.	27.607	-1237.84	1.5	0	0	0	0	0	0	0	0	0	36.6	
504. 1.504	Us.	127.607	-1237.84	1.5	0	0	0	0	0	0	0	0	0	33.2	
505. 1.505	Us.	227.607	-1237.84	1.5	0	0	0	0	0	0	0	0	0	29.9	
506. 1.506	Us.	327.607	-1237.84	1.5	0	0	0	0	0	0	0	0	0	26.8	
507. 1.507	Us.	427.607	-1237.84	1.5	0	0	0	0	0	0	0	0	0	23.7	
508. 1.508	Us.	527.607	-1237.84	1.5	0	0	0	0	0	0	0	0	0	20.7	
509. 1.509	Us.	627.607	-1237.84	1.5	0	0	0	0	0	0	0	0	0	17.7	
510. 1.510	Resident.	-2672.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	0	
511. 1.511	Resident.	-2572.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	3	
512. 1.512	Resident.	-2472.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	5.7	
513. 1.513	Resident.	-2372.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	8.5	

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
514. 1.514	Us.	-2272.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	11.4
515. 1.515	Us.	-2172.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	14.2
516. 1.516	Us.	-2072.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	17.1
517. 1.517	Us.	-1972.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	20
518. 1.518	Us.	-1872.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	23
519. 1.519	Us.	-1772.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	26.1
520. 1.520	Us.	-1672.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	29.2
521. 1.521	Us.	-1572.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	32.4
522. 1.522	Us.	-1472.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	35.8
523. 1.523	Us.	-1372.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	39.2
524. 1.524	Us.	-1272.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	42.8
525. 1.525	Us.	-1172.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	46.7
526. 1.526	Us.	-1072.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	50.9
527. 1.527	Us.	-972.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	55.5
528. 1.528	Us.	-872.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	60.7
529. 1.529	Us.	-772.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	65.9
530. 1.530	Us.	-672.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	66.5
531. 1.531	Us.	-572.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	61.6
532. 1.532	Us.	-472.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	56.3
533. 1.533	Us.	-372.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	51.6
534. 1.534	Us.	-272.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	47.4
535. 1.535	Us.	-172.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	43.4
536. 1.536	Us.	-72.393	-1137.84	1.5	0	0	0	0	0	0	0	0	0	39.8
537. 1.537	Us.	27.607	-1137.84	1.5	0	0	0	0	0	0	0	0	0	36.3
538. 1.538	Us.	127.607	-1137.84	1.5	0	0	0	0	0	0	0	0	0	33
539. 1.539	Us.	227.607	-1137.84	1.5	0	0	0	0	0	0	0	0	0	29.7
540. 1.540	Us.	327.607	-1137.84	1.5	0	0	0	0	0	0	0	0	0	26.6
541. 1.541	Us.	427.607	-1137.84	1.5	0	0	0	0	0	0	0	0	0	23.5
542. 1.542	Ind.	527.607	-1137.84	1.5	0	0	0	0	0	0	0	0	0	20.5
543. 1.543	Ind.	627.607	-1137.84	1.5	0	0	0	0	0	0	0	0	0	17.6
544. 1.544	Resi- dent.	-2672.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	0
545. 1.545	Resi- dent.	-2572.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	2.7
546. 1.546	Resi- dent.	-2472.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	5.5
547. 1.547	Resi- dent.	-2372.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	8.3
548. 1.548	Us.	-2272.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	11.1
549. 1.549	Us.	-2172.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	13.9
550. 1.550	Us.	-2072.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	16.8
551. 1.551	Us.	-1972.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	19.7
552. 1.552	Us.	-1872.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	22.6
553. 1.553	Us.	-1772.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	25.6
554. 1.554	Us.	-1672.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	28.7
555. 1.555	Us.	-1572.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	31.8
556. 1.556	Us.	-1472.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	35
557. 1.557	Us.	-1372.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	38.3
558. 1.558	Us.	-1272.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	41.8
559. 1.559	Us.	-1172.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	45.3
560. 1.560	Us.	-1072.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	49
561. 1.561	Us.	-972.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	52.8
562. 1.562	Us.	-872.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	56.4
563. 1.563	Us.	-772.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	59
564. 1.564	Us.	-672.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	59.2
565. 1.565	Us.	-572.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	56.9
566. 1.566	Us.	-472.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	53.4
567. 1.567	Us.	-372.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	49.6
568. 1.568	Us.	-272.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	45.9
569. 1.569	Us.	-172.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	42.3
570. 1.570	Us.	-72.393	-1037.84	1.5	0	0	0	0	0	0	0	0	0	38.9
571. 1.571	Us.	27.607	-1037.84	1.5	0	0	0	0	0	0	0	0	0	35.6
572. 1.572	Us.	127.607	-1037.84	1.5	0	0	0	0	0	0	0	0	0	32.3
573. 1.573	Us.	227.607	-1037.84	1.5	0	0	0	0	0	0	0	0	0	29.2
574. 1.574	Us.	327.607	-1037.84	1.5	0	0	0	0	0	0	0	0	0	26.1
575. 1.575	Ind.	427.607	-1037.84	1.5	0	0	0	0	0	0	0	0	0	23.1
576. 1.576	Ind.	527.607	-1037.84	1.5	0	0	0	0	0	0	0	0	0	20.1
577. 1.577	Ind.	627.607	-1037.84	1.5	0	0	0	0	0	0	0	0	0	17.2
578. 1.578	Resi- dent.	-2672.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	0

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
579. 1.579	Resi- dent.	-2572.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	2.3
580. 1.580	Resi- dent.	-2472.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	5.1
581. 1.581	Resi- dent.	-2372.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	7.8
582. 1.582	Resi- dent.	-2272.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	10.6
583. 1.583	Us.	-2172.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	13.4
584. 1.584	Us.	-2072.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	16.2
585. 1.585	Us.	-1972.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	19
586. 1.586	Us.	-1872.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	21.9
587. 1.587	Us.	-1772.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	24.9
588. 1.588	Us.	-1672.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	27.8
589. 1.589	Us.	-1572.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	30.9
590. 1.590	Us.	-1472.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	33.9
591. 1.591	Us.	-1372.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	37
592. 1.592	Us.	-1272.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	40.2
593. 1.593	Us.	-1172.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	43.4
594. 1.594	Us.	-1072.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	46.5
595. 1.595	Us.	-972.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	49.5
596. 1.596	Us.	-872.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	52
597. 1.597	Us.	-772.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	53.6
598. 1.598	Us.	-672.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	53.7
599. 1.599	Us.	-572.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	52.3
600. 1.600	Us.	-472.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	49.9
601. 1.601	Us.	-372.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	47
602. 1.602	Us.	-272.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	43.9
603. 1.603	Us.	-172.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	40.7
604. 1.604	Us.	-72.393	-937.84	1.5	0	0	0	0	0	0	0	0	0	37.5
605. 1.605	Us.	27.607	-937.84	1.5	0	0	0	0	0	0	0	0	0	34.4
606. 1.606	Us.	127.607	-937.84	1.5	0	0	0	0	0	0	0	0	0	31.3
607. 1.607	Us.	227.607	-937.84	1.5	0	0	0	0	0	0	0	0	0	28.3
608. 1.608	Ind.	327.607	-937.84	1.5	0	0	0	0	0	0	0	0	0	25.3
609. 1.609	Ind.	427.607	-937.84	1.5	0	0	0	0	0	0	0	0	0	22.4
610. 1.610	Ind.	527.607	-937.84	1.5	0	0	0	0	0	0	0	0	0	19.5
611. 1.611	Ind.	627.607	-937.84	1.5	0	0	0	0	0	0	0	0	0	16.6
612. 1.612	Resi- dent.	-2672.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	0
613. 1.613	Resi- dent.	-2572.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	1.8
614. 1.614	Resi- dent.	-2472.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	4.5
615. 1.615	Resi- dent.	-2372.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	7.2
616. 1.616	Resi- dent.	-2272.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	9.9
617. 1.617	Resi- dent.	-2172.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	12.7
618. 1.618	Us.	-2072.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	15.4
619. 1.619	Us.	-1972.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	18.2
620. 1.620	Us.	-1872.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	21
621. 1.621	Us.	-1772.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	23.9
622. 1.622	Us.	-1672.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	26.7
623. 1.623	Us.	-1572.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	29.6
624. 1.624	Us.	-1472.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	32.5
625. 1.625	Us.	-1372.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	35.4
626. 1.626	Us.	-1272.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	38.2
627. 1.627	Us.	-1172.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	41
628. 1.628	Us.	-1072.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	43.7
629. 1.629	Us.	-972.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	46
630. 1.630	Us.	-872.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	47.9
631. 1.631	Us.	-772.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	49
632. 1.632	Us.	-672.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	49.1
633. 1.633	Us.	-572.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	48.1
634. 1.634	Us.	-472.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	46.4
635. 1.635	Us.	-372.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	44.1
636. 1.636	Us.	-272.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	41.5
637. 1.637	Us.	-172.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	38.7
638. 1.638	Us.	-72.393	-837.84	1.5	0	0	0	0	0	0	0	0	0	35.8
639. 1.639	Us.	27.607	-837.84	1.5	0	0	0	0	0	0	0	0	0	32.9
640. 1.640	Us.	127.607	-837.84	1.5	0	0	0	0	0	0	0	0	0	30.1
641. 1.641	Us.	227.607	-837.84	1.5	0	0	0	0	0	0	0	0	0	27.2
642. 1.642	Ind.	327.607	-837.84	1.5	0	0	0	0	0	0	0	0	0	24.3
643. 1.643	Ind.	427.607	-837.84	1.5	0	0	0	0	0	0	0	0	0	21.5

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB										La, dB(a)
		x	y		31.5	63	125	250	500	1000	2000	4000	8000		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
644. 1.644	Ind.	527.607	-837.84	1.5	0	0	0	0	0	0	0	0	0	18.7	
645. 1.645	Ind.	627.607	-837.84	1.5	0	0	0	0	0	0	0	0	0	15.9	
646. 1.646	Resident.	-2672.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	0	
647. 1.647	Resident.	-2572.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	1.1	
648. 1.648	Resident.	-2472.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	3.8	
649. 1.649	Resident.	-2372.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	6.5	
650. 1.650	Resident.	-2272.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	9.1	
651. 1.651	Resident.	-2172.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	11.8	
652. 1.652	Us.	-2072.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	14.5	
653. 1.653	Us.	-1972.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	17.2	
654. 1.654	Us.	-1872.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	19.9	
655. 1.655	Us.	-1772.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	22.6	
656. 1.656	Us.	-1672.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	25.4	
657. 1.657	Us.	-1572.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	28.1	
658. 1.658	Us.	-1472.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	30.8	
659. 1.659	Us.	-1372.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	33.4	
660. 1.660	Us.	-1272.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	36	
661. 1.661	Us.	-1172.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	38.5	
662. 1.662	Us.	-1072.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	40.7	
663. 1.663	Us.	-972.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	42.6	
664. 1.664	Us.	-872.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	44	
665. 1.665	Us.	-772.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	44.9	
666. 1.666	Us.	-672.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	44.9	
667. 1.667	Us.	-572.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	44.2	
668. 1.668	Us.	-472.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	42.9	
669. 1.669	Us.	-372.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	41	
670. 1.670	Us.	-272.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	38.8	
671. 1.671	Us.	-172.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	36.4	
672. 1.672	Us.	-72.393	-737.84	1.5	0	0	0	0	0	0	0	0	0	33.8	
673. 1.673	Us.	27.607	-737.84	1.5	0	0	0	0	0	0	0	0	0	31.2	
674. 1.674	Us.	127.607	-737.84	1.5	0	0	0	0	0	0	0	0	0	28.5	
675. 1.675	Us.	227.607	-737.84	1.5	0	0	0	0	0	0	0	0	0	25.8	
676. 1.676	Us.	327.607	-737.84	1.5	0	0	0	0	0	0	0	0	0	23.1	
677. 1.677	Ind.	427.607	-737.84	1.5	0	0	0	0	0	0	0	0	0	20.4	
678. 1.678	Ind.	527.607	-737.84	1.5	0	0	0	0	0	0	0	0	0	17.6	
679. 1.679	Ind.	627.607	-737.84	1.5	0	0	0	0	0	0	0	0	0	14.9	
680. 1.680	Resident.	-2672.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	0	
681. 1.681	Resident.	-2572.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	0	
682. 1.682	Resident.	-2472.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	3	
683. 1.683	Resident.	-2372.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	5.6	
684. 1.684	Resident.	-2272.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	8.2	
685. 1.685	Resident.	-2172.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	10.8	
686. 1.686	Resident.	-2072.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	13.4	
687. 1.687	Us.	-1972.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	16	
688. 1.688	Us.	-1872.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	18.6	
689. 1.689	Us.	-1772.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	21.2	
690. 1.690	Us.	-1672.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	23.8	
691. 1.691	Us.	-1572.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	26.4	
692. 1.692	Us.	-1472.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	28.9	
693. 1.693	Us.	-1372.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	31.3	
694. 1.694	Us.	-1272.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	33.6	
695. 1.695	Us.	-1172.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	35.8	
696. 1.696	Us.	-1072.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	37.7	
697. 1.697	Us.	-972.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	39.3	
698. 1.698	Us.	-872.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	40.4	
699. 1.699	Us.	-772.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	41	
700. 1.700	Us.	-672.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	41.1	
701. 1.701	Us.	-572.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	40.6	
702. 1.702	Us.	-472.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	39.5	
703. 1.703	Us.	-372.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	37.9	
704. 1.704	Us.	-272.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	36.1	
705. 1.705	Us.	-172.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	34	
706. 1.706	Us.	-72.393	-637.84	1.5	0	0	0	0	0	0	0	0	0	31.7	
707. 1.707	Us.	27.607	-637.84	1.5	0	0	0	0	0	0	0	0	0	29.3	
708. 1.708	Us.	127.607	-637.84	1.5	0	0	0	0	0	0	0	0	0	26.8	

Table 1.6 (continued)

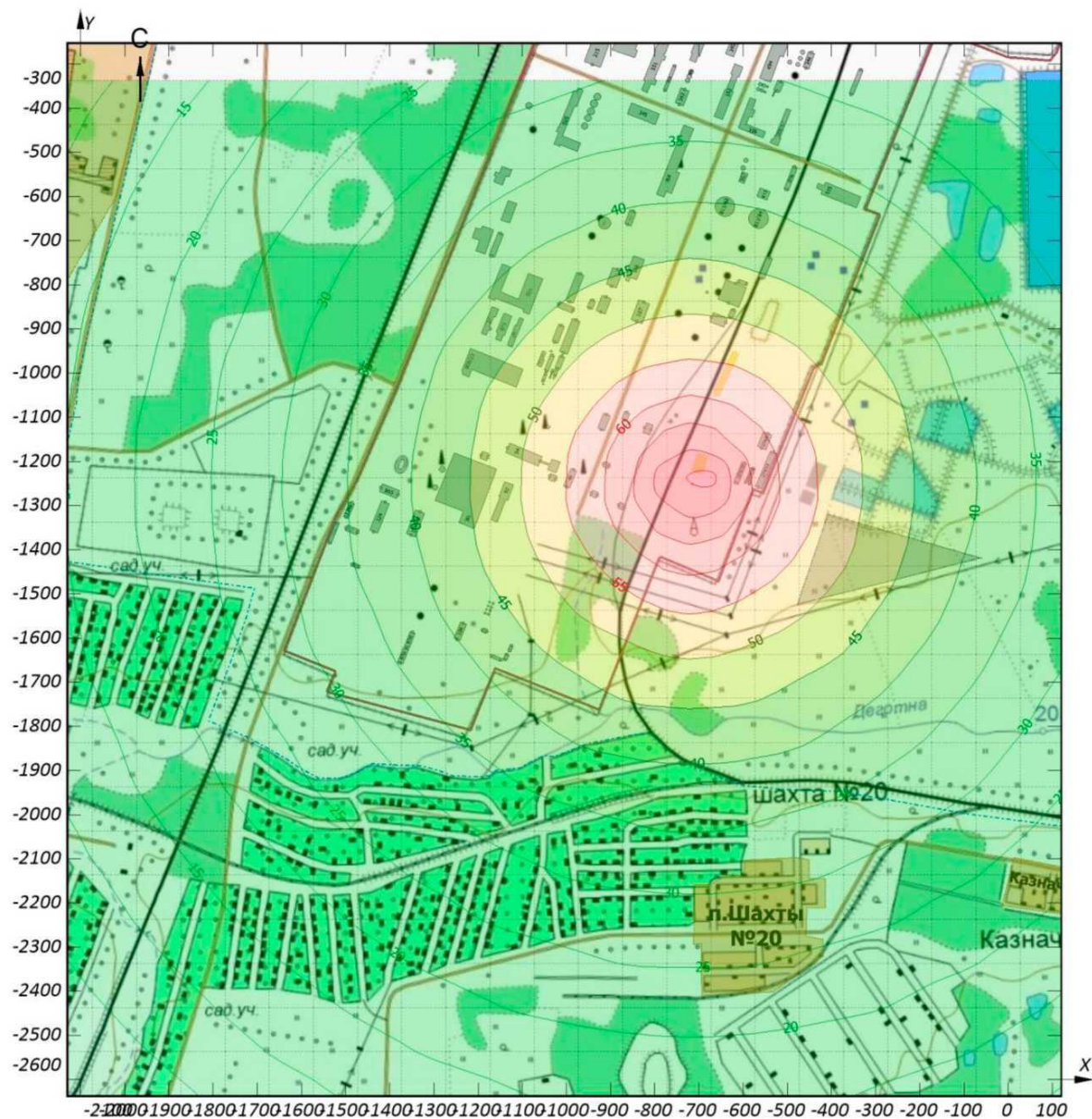
Point	Type	Coordinates		Height, m	Sound pressure level, dB										La, dB(a)
		x	y		31.5	63	125	250	500	1000	2000	4000	8000		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
709. 1.709	Us.	227.607	-637.84	1.5	0	0	0	0	0	0	0	0	0	24.2	
710. 1.710	Us.	327.607	-637.84	1.5	0	0	0	0	0	0	0	0	0	21.6	
711. 1.711	Ind.	427.607	-637.84	1.5	0	0	0	0	0	0	0	0	0	19	
712. 1.712	Ind.	527.607	-637.84	1.5	0	0	0	0	0	0	0	0	0	16.4	
713. 1.713	Ind.	627.607	-637.84	1.5	0	0	0	0	0	0	0	0	0	13.8	
714. 1.714	Resi- dent.	-2672.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	0	
715. 1.715	Resi- dent.	-2572.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	0	
716. 1.716	Resi- dent.	-2472.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	2	
717. 1.717	Resi- dent.	-2372.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	4.5	
718. 1.718	Resi- dent.	-2272.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	7.1	
719. 1.719	Resi- dent.	-2172.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	9.6	
720. 1.720	Resi- dent.	-2072.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	12.1	
721. 1.721	Us.	-1972.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	14.7	
722. 1.722	Us.	-1872.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	17.2	
723. 1.723	Us.	-1772.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	19.6	
724. 1.724	Us.	-1672.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	22.1	
725. 1.725	Us.	-1572.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	24.5	
726. 1.726	Us.	-1472.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	26.8	
727. 1.727	Us.	-1372.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	29	
728. 1.728	Us.	-1272.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	31.1	
729. 1.729	Us.	-1172.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	33	
730. 1.730	Us.	-1072.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	34.6	
731. 1.731	Us.	-972.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	36	
732. 1.732	Us.	-872.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	36.9	
733. 1.733	Us.	-772.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	37.5	
734. 1.734	Us.	-672.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	37.5	
735. 1.735	Us.	-572.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	37.1	
736. 1.736	Us.	-472.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	36.2	
737. 1.737	Us.	-372.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	34.9	
738. 1.738	Us.	-272.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	33.3	
739. 1.739	Us.	-172.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	31.4	
740. 1.740	Us.	-72.393	-537.84	1.5	0	0	0	0	0	0	0	0	0	29.3	
741. 1.741	Us.	27.607	-537.84	1.5	0	0	0	0	0	0	0	0	0	27.1	
742. 1.742	Us.	127.607	-537.84	1.5	0	0	0	0	0	0	0	0	0	24.8	
743. 1.743	Us.	227.607	-537.84	1.5	0	0	0	0	0	0	0	0	0	22.5	
744. 1.744	Us.	327.607	-537.84	1.5	0	0	0	0	0	0	0	0	0	20	
745. 1.745	Ind.	427.607	-537.84	1.5	0	0	0	0	0	0	0	0	0	17.6	
746. 1.746	Us.	527.607	-537.84	1.5	0	0	0	0	0	0	0	0	0	15.1	
747. 1.747	Us.	627.607	-537.84	1.5	0	0	0	0	0	0	0	0	0	12.5	
748. 1.748	Resi- dent.	-2672.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	0	
749. 1.749	Resi- dent.	-2572.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	0	
750. 1.750	Resi- dent.	-2472.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	0	
751. 1.751	Resi- dent.	-2372.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	3.4	
752. 1.752	Resi- dent.	-2272.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	5.8	
753. 1.753	Resi- dent.	-2172.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	8.3	
754. 1.754	Resi- dent.	-2072.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	10.7	
755. 1.755	Us.	-1972.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	13.2	
756. 1.756	Us.	-1872.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	15.6	
757. 1.757	Us.	-1772.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	17.9	
758. 1.758	Us.	-1672.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	20.2	
759. 1.759	Us.	-1572.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	22.4	
760. 1.760	Us.	-1472.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	24.6	
761. 1.761	Us.	-1372.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	26.6	
762. 1.762	Us.	-1272.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	28.5	
763. 1.763	Us.	-1172.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	30.2	
764. 1.764	Us.	-1072.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	31.6	
765. 1.765	Us.	-972.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	32.8	
766. 1.766	Us.	-872.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	33.6	
767. 1.767	Us.	-772.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	34.1	
768. 1.768	Us.	-672.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	34.1	
769. 1.769	Us.	-572.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	33.7	
770. 1.770	Us.	-472.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	32.9	
771. 1.771	Us.	-372.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	31.8	
772. 1.772	Us.	-272.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	30.4	
773. 1.773	Us.	-172.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	28.8	

Table 1.6 (continued)

Point	Type	Coordinates		Height, m	Sound pressure level, dB									
		x	y		31.5	63	125	250	500	1000	2000	4000	8000	La, dB(a)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
774. 1.774	Us.	-72.393	-437.84	1.5	0	0	0	0	0	0	0	0	0	26.9
775. 1.775	Us.	27.607	-437.84	1.5	0	0	0	0	0	0	0	0	0	24.9
776. 1.776	Us.	127.607	-437.84	1.5	0	0	0	0	0	0	0	0	0	22.8
777. 1.777	Us.	227.607	-437.84	1.5	0	0	0	0	0	0	0	0	0	20.6
778. 1.778	Us.	327.607	-437.84	1.5	0	0	0	0	0	0	0	0	0	18.3
779. 1.779	Us.	427.607	-437.84	1.5	0	0	0	0	0	0	0	0	0	15.9
780. 1.780	Us.	527.607	-437.84	1.5	0	0	0	0	0	0	0	0	0	13.5
781. 1.781	Us.	627.607	-437.84	1.5	0	0	0	0	0	0	0	0	0	11.1
782. 1.782	Resi- dent.	-2672.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	0
783. 1.783	Resi- dent.	-2572.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	0
784. 1.784	Resi- dent.	-2472.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	0
785. 1.785	Resi- dent.	-2372.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	2.1
786. 1.786	Resi- dent.	-2272.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	4.5
787. 1.787	Resi- dent.	-2172.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	6.9
788. 1.788	Resi- dent.	-2072.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	9.2
789. 1.789	Resi- dent.	-1972.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	11.5
790. 1.790	Us.	-1872.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	13.8
791. 1.791	Us.	-1772.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	16.1
792. 1.792	Us.	-1672.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	18.2
793. 1.793	Us.	-1572.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	20.3
794. 1.794	Us.	-1472.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	22.3
795. 1.795	Us.	-1372.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	24.2
796. 1.796	Us.	-1272.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	25.9
797. 1.797	Us.	-1172.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	27.4
798. 1.798	Us.	-1072.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	28.7
799. 1.799	Us.	-972.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	29.7
800. 1.800	Us.	-872.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	30.4
801. 1.801	Us.	-772.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	30.8
802. 1.802	Us.	-672.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	30.8
803. 1.803	Us.	-572.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	30.5
804. 1.804	Us.	-472.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	29.8
805. 1.805	Us.	-372.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	28.8
806. 1.806	Us.	-272.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	27.6
807. 1.807	Us.	-172.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	26.1
808. 1.808	Us.	-72.393	-337.84	1.5	0	0	0	0	0	0	0	0	0	24.4
809. 1.809	Us.	27.607	-337.84	1.5	0	0	0	0	0	0	0	0	0	22.6
810. 1.810	Us.	127.607	-337.84	1.5	0	0	0	0	0	0	0	0	0	20.6
811. 1.811	Us.	227.607	-337.84	1.5	0	0	0	0	0	0	0	0	0	18.6
812. 1.812	Us.	327.607	-337.84	1.5	0	0	0	0	0	0	0	0	0	16.4
813. 1.813	Us.	427.607	-337.84	1.5	0	0	0	0	0	0	0	0	0	14.2
814. 1.814	Us.	527.607	-337.84	1.5	0	0	0	0	0	0	0	0	0	11.9
815. 1.815	Us.	627.607	-337.84	1.5	0	0	0	0	0	0	0	0	0	9.6

Note — type of calculation points: Us. — user, Ind — a point in the industrial area, Resident. — a point in the residential area, SPZ — a point at the boundary of SPZ, Protect. — a point in the protected area around hospital and sanatorium buildings, Gen. — a point in the area around hotels and hostels, SiteH — a point in a recreation site near hospitals, SiteR — a point in a recreation site within the residential area.

Integrated index



Scale 1:15000

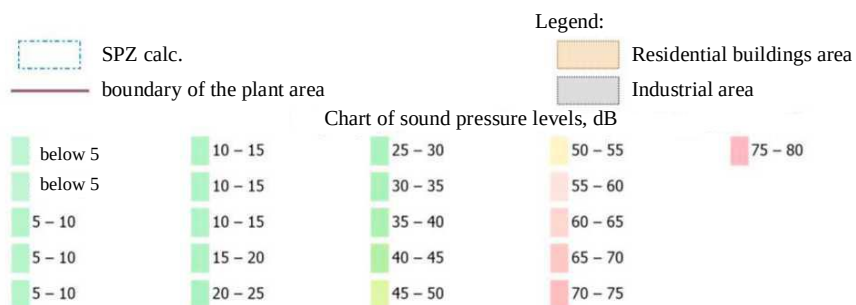


Figure 1.2.1 — Case 1 — Calculation site 1

