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2019

Environmental impact fee calculation in Russia for EIA – modern practices

Problem book

УДК 330.4:502.3/.7
ББК 20.1
П 32

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П 32 Environmental impact fee calculation in Russia for EIA – modern practices.

Учебное пособие – М.: Мир науки, 2019. – Режим доступа:

<https://izd-mn.com/PDF/20MNNPU19.pdf> — Загл. с экрана.

ISBN 978-5-6042807-1-3

Задачник на английском языке предназначен для англоговорящих студентов экологических специальностей (спецкурс бакалавриат и магистратура). В задачнике содержатся некоторые сведения о процедуре оценке воздействия на окружающую среду в соответствии с действующим законодательством. Представлены образцы расчета платы за негативное воздействие на окружающую среду, их место в томе ОВОС / ПМООС. Даны исходные данные для самостоятельного решения задач.

ISBN 978-5-6042807-1-3

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Acronyms and abbreviations

a.s.l.-above sea level

APC – Approximate Permissible Concentration of chemical compounds in soil, set by calculation (tentative standard – 3 year validity period). APC values vary depending on soil type: (a) sand and clay sand, (b) acidic soils (loam and clay) with pH<5.5, and (c) neutral soils (loam and clay) with pH>5.5. APC values may in some instances be used instead of MPC values.

ASF-anthropogenic soil formations

BAT Best Available Techniques

BOD5 5 day Biological Oxygen Demand

BTEX benzene, toluene, ethylbenzene, xylene

CLATI – Center for laboratory analyses and technical measurements of Rosprirodnadzor

EBA – Environmental baseline assessment

EDD – Environmental Due – Diligence

EHS - Environment Health and Safety

EIA -Environmental Impact Assessment

EMERCOM – Ministry of Emergency situations Russia

ESAP - Environmental and Social Action Plan

ESHIA – Environmental social health impact assessment

EU – European Union

FGU – Federal State Institution

FS Feasibility Study

FWCC - Federal Waste Classification Catalogue

FWCC Federal Waste Classification Catalogue

FZ – Federal Law

GGTN -Gosgortekhnadzor – Federal Mining and Industrial Supervision Service

GIBDD – State Road Traffic Safety Inspection

GOST-Russian State (branch) Standards

HSE – Health Safety and Environment

IEM-Industrial Environmental Monitoring

ILO - International Labor Organization

IPON-Indigenous Peoples of the North

ISW – industrial solid waste

LNV -Limiting Nuisance Value

MPC d.a.-Maximum Permissible Concentration, daily-average

MPC –Maximum Permissible Concentration of a soil polluting substance. MPC's indicate concentrations which do not cause negative effects, either directly or indirectly, to the natural environment or human health.

MPC o.t.-Maximum Permissible Concentration, one-time

MPD-Maximum Permissible Discharge

MPE – Maximum permissible emission

MSW – municipal solid waste

NGO – nongovernmental organization

OSR – Oil Spill Response

OSRV - Oil Spill Response Vessel

PAH-polyaromatic hydrocarbons

PMOOS-OVOS-List of environmental protection measures, including EIA

POL-Petroleum, Oil, Lubricants

PPE-Personal Protection/Personal Protective Equipment

PPM-Personal Protection Means
RF – Russian Federation
Rosprirodnadzor – Federal Service on Environmental, Technological and Nuclear Supervision
RUR – Russian roubles
SanPiN-Sanitary regulations and norms
SEER – State Environmental Expert Review of RF
SER-State Experts’ Review
SIA – Strategic impact assessment
SLT – site layout
SMR-secondary material resources
SNiP - Construction Standards and Rules of RF (Building norms and regulations)
SPNA-Specially Protected Natural Areas
SPZ – Sanitary Protection Zone
SWL-solid domestic and industrial waste landfill
TAE-Temporary Agreed Emissions
Thd-thousand
TPH-Total Petroleum Hydrocarbons
TSEL-Tentatively Safe Effect Level
TsLATI-Center of Laboratory Analysis and Technical Measurements
UK – United Kingdom
UK RFCriminal Code of RF
UMC-unfavorable meteorological conditions
UPC-Urban planning Code
USA – United States of America
USSR – Union of Soviet Socialist Republics
UVD – Directorate of Internal Affairs
VOC-volatile organic compounds
WGSWDL – Project on waste generation standards and waste disposal limits
WGSWDL-Waste Generation Standards and Waste Disposal Limits
WPZ-Water Protection Zone
WTS-water treatment station
WWTS-waste water treatment station

The problem book contains examples and initial legal documents for calculation of environmental impact fee in Russia done during Environmental impact assessment. Except example calculation the problem book contains some information on Environmental impact assessment procedures in Russia – OVOS and PMOOS. Environmental impact fee in Russia includes fee for emission, discharge and waste disposal.

There is separate chapter with initial data, which allows students to calculate personally fee for environmental impact assessment.

Annexes contain citation of legal requirements related to the listed topics.

1. Environmental impact assessment - calculation of environmental impact fee

Environmental impact assessment (EIA) is a process that facilitates the adoption of environmentally - oriented management decisions on the implementation of the planned economic and other activities through the identification of possible adverse effects, environmental impact assessment, public opinion, the development of measures to reduce and prevent impacts. EIA is a document that comprehensively describes all types of impact of an enterprise, an economic entity on the environment.

Environmental impact in Russia is paid – fee for emission, discharge and waste disposal.

Let us review some details of EIA and proceed with the fee calculation itself.

The section “List of environmental protection measures” including an Environmental Impact Assessment (PMOOS-OVOS) is the document containing the information on the EIA of certain project.

The purpose (aim) of the EIA is to prevent or mitigate the impact of the proposed activity on the environment and related social, economic, environmental and other consequences.

As a result of the development of the EIA project, information will be prepared on the scale and nature of the environmental impact of the proposed economic activity, the assessment of environmental and other impacts, their significance, and the possibility of reducing them.

The basic principles of an EIA¹

- The principle of presumption of potential environmental hazard of any proposed economic or other activity.
- The principle of mandatory state environmental impact assessment. The EIA materials of the planned economic and other activities, which are the object of environmental expertise, are part of the documentation submitted for examination.
- The principle of prevention. Prevention (prevention) of possible adverse effects on the environment and related social, economic and other consequences in the event of the implementation of the planned economic and other activities.
- The principle of variation. Evaluation of alternative options for construction or economic activity.
- Principle of responsibility. The customer (initiator) of the activity is responsible for the consequences of the implementation of design decisions. The customer (contractor) identifies, analyzes and takes into account the environmental and other related consequences of all considered alternative options to achieve the goal of the planned economic and other activities, as well as the "zero option" (abandonment of activities).
- Principle of publicity. Participation of public organizations (associations), taking into account public opinion in the environmental impact assessment. Ensuring public participation in the preparation and discussion of materials on environmental impact assessment of the planned economic and other activities that are subject to environmental impact assessment as an integral part of the environmental impact assessment process.

¹ According to Order 372 On approval of regulations for environmental impact assessment of planned industrial or other activities in the Russian Federation sect.II

- The principle of scientific validity, objectivity and legality of conclusions of ecological examination. Materials for environmental impact assessment should be scientifically justified, reliable and reflect the results of studies carried out taking into account the relationship of various environmental, as well as social and economic factors.
- The principle of reliability and completeness of information submitted for environmental assessment. The customer is obliged to provide all participants in the environmental impact assessment process with the opportunity to obtain complete and accurate information in a timely manner.
- The principle of monitoring the impact of the project on the environment. The results of the environmental impact assessment serve as the basis for monitoring, post-project analysis and environmental control over the implementation of the planned economic and other activities.
- The principle of accounting transboundary impact. In the event that the proposed economic and other activities may have a transboundary impact, studies and the preparation of environmental impact assessment materials shall be carried out taking into account the UNECE Convention on environmental impact assessment in a transboundary context.

Main tasks of the EIA

- Identification and analysis of all possible impacts of the planned activity on the environment of the project implementation area of the planned activity.
- Forecast and assessment of possible changes in the environment that may occur as a result of negative impacts as a result of the planned activities.
- Prediction and sequencing of the significance of environmental and related social, economic and other impacts.
- Accounting in the prepared economic decisions of possible consequences of their implementation.

The work is aimed at assessing the environmental implications of the projected economic activities, so as to prevent or mitigate the impact thereof on the environment, as well as the social, economic and other consequences associated therewith.

Section “List of environmental protection measures” including an Environmental Impact Assessment (PMOOS-OVOS) is drawn up taking into account requirements of international standards (ratified by the Russian Federation), acts of law, and regulatory and procedural documents of the Russian Federation (as amended).

EIA related legal requirements

List of regulatory and procedural documents used to develop the section PMOOS-OVOS is given below in table 1.1.

Table 1.1. List of legislation related to EIA

EIA and Environmental Expert Review	
On environmental expert review, No. 174-FZ, dated 23 November 1995	Law establishes two types of environmental expert review: state environmental expert review and public environmental expert review. Law regulates procedure of State Environmental Expert Review (SEER). The Law determines SEER as mandatory for all types of pre-project and project documents, regardless of financial sources of the proposed activity, and of its initiator.
On structure of project documentation sections and requirements to their contents Decree of RF Government # 80 of 16 February 2008	<p>Provides requirements to EIA content.</p> <p>25. Section 8 "List of environmental protection measures" shall contain:</p> <p>in the text part</p> <p>a) the results of the evaluation of the impact of the facility on the environment;</p> <p>b) the list of actions for prevention and (or) reduction of possible negative impact of the planned economic activity on environment and rational use of natural resources for the period of construction and operation of the capital construction object including:</p> <ul style="list-style-type: none"> ✓ results of calculations of surface concentrations of pollutants, analysis and proposals for maximum permissible and temporarily agreed emissions; ✓ substantiation of decisions on wastewater treatment and disposal of neutralized elements, on prevention of emergency wastewater discharges; ✓ measures for the protection of atmospheric air; ✓ measures for circulating water supply - for industrial facilities; ✓ measures for the protection and rational use of land resources and soil cover, including measures for the reclamation of disturbed or contaminated land and soil cover; ✓ measures for collection, use, disposal, transportation and disposal of hazardous waste; ✓ measures for the protection of mineral resources - for industrial facilities; ✓ measures for the protection of objects of flora and fauna and their habitat (in the presence of objects of flora and fauna listed in the Red book of the Russian Federation and the red book of the subjects of the Russian Federation, separately indicate measures for the protection of such objects); ✓ measures to minimize the occurrence of possible emergencies at the capital construction site and the consequences of their impact on the ecosystem of the region; ✓ measures, technical solutions and facilities to ensure the rational use and protection of water bodies, as well as the conservation of aquatic biological resources (including the

	<p>prevention of fish and other aquatic biological resources in water intake facilities) and their habitats, including the conditions of their reproduction, feeding, migration routes (if necessary);</p> <p>✓ program of industrial environmental control (monitoring) of the nature of changes in all components of the ecosystem in the construction and operation of the facility, as well as accidents;</p> <p>c) the list and calculation of costs for the implementation of environmental protection measures and compensation payments;</p> <p>in the graphic part</p> <p>d) the situational plan (map-scheme) of the area of construction with indication on it of borders of the parcel of land provided for placement of capital construction object, borders of the sanitary protection zone, the residential territory, recreational zones, water protection zones, zones of protection of sources of drinking water supply, habitats of the animals and plants brought in the Red book of the Russian Federation and red books of subjects of the Russian Federation, and also locations of settlement points;</p> <p>e) the situational plan (map-scheme) of the area of construction with indication of borders of the parcel of land provided for placement of capital construction object, the arrangement of sources of emissions of pollutants into the atmosphere and devices for cleaning of these emissions;</p> <p>(f) schematic maps and summary tables of calculations of atmospheric pollution under adverse weather conditions and emissions by substances and combinations of substances with cumulative harmful effects for industrial facilities;</p> <p>g) the situational plan (map-scheme) of the area with indication of borders of the parcel of land provided for placement of capital construction object, with indication of control points, posts, wells and other objects providing sampling of water from surface water objects, and also underground waters - for objects of production appointment.</p>
<p>On approval of regulations for environmental impact assessment of planned industrial or other activities in the Russian Federation, Decree No. 372, dated 16 May 2000</p>	<p>According to the Decree the development of Environmental Impact Assessment must cover all stages of the design documentation preparation and substantiate the planned industrial (or other) activities.</p> <p>In accordance with the Regulation on Environmental Impact Assessment, the following phases of environmental assessment have been stipulated:</p> <ol style="list-style-type: none"> 1 Notification, preliminary assessment and preparation of terms of reference of an EIA 2 Investigations required for an EIA and preparation of preliminary draft EIA documentation 3 Preparation of the final EIA documentation.

	The Decree states the minimal requirements on EIA development (including mandatory public involvement in making-decision process, considering of alternative options, development of environmental monitoring program)
Guidelines on Environmental Protection Section development to SNiP Norm 11-01-95	The guidelines set out the instructions relating to the preparation of information on environmental protection. As an integral part of the design documentation, the Environmental Protection section should provide a set of proposals aimed at sound and consistent use of natural resources in the course of construction, as well as technical solutions for preventing adverse environmental impact of the planned facilities.
Manual on development of the section “Environmental Impact Assessment” when substantiation of investment for SP 11-101-95	The Manual sets forth the recommendations on EIA development on substantiation of investment stage.
General issues	
On Environmental Protection, No. 7-FZ, dated 10 January 2002	<p>This law is a cornerstone of the environmental legislation. In accordance with the Law “On Environmental Protection” the below nature bodies are liable to protection:</p> <ul style="list-style-type: none"> • Lands, mineral resources, soils; • Surface and underground waters; • Forests and other vegetation, animals and other organisms and their gene pool; • Atmospheric air. <p>This law sets forth constitutional Order 372, introduces in practice a vast range of environmental actions and establishes requirements on the environment quality standardization by:</p> <ul style="list-style-type: none"> • Sanitary-hygienic norms (maximum permissible concentrations (MPE) of pollutants in the atmospheric air and in water bodies and physical impacts); sanitary protection zones and others; • Norms of permissible emissions and discharges (MPE/MPD) set up for stationary and fugitive sources of impact, as well as norms for generation and disposal of industrial and domestic wastes and etc.
On Sanitary and Epidemiological Well-being of Population, No. 65-FZ, dated 30 March 1999	The law describes general requirements to ensuring hygienic and epidemiological well-being of the population, including environmental protection and requirements to waste collection, storage, transportation, disposal and utilization; water bodies protection, establishment of water protection zones along riversides and coasts, MPC of harmful substances in natural water bodies, air quality control in residential areas, working conditions, physical impacts of the process operations on personnel, work with harmful substances, medical examination of personnel.
Ambient Air	
On atmospheric air protection, No. 96 – FZ, dated 4 May 1999	The Law establishes general principles of atmospheric air protection. The law defines the rights of the federal and regional executive bodies to establish Maximum permissible emissions

	(MPE) or tentatively agreed emissions (TAE), issue permits for air emissions, approve plans for air emission reduction, etc., perform inspections and impose fines and other penalties (including the right to stop the operations). Also the law declares the necessity of the sanitary-protection zones.
Russian Federation Government Order “On Harmful (Polluting) Substances Air Emission and Harmful Physical Impact Standards”, No. 183, dated 02 March 2003	The Order defines the procedure of development and approval of standards for harmful substances air emissions and harmful physical impacts.
Hygienic Standards GN 2.1.6.1338-03 “Maximum Permissible Concentrations (MPC) of Air Pollutants in Populated Areas”	The Standards define Maximum permissible concentrations (MPC) of harmful substances in atmospheric air of urban settlements. Total number of substances with fixed MPC is 611 and there are 45 substances prohibited to emit. MPC are used for maximum permissible emissions calculations. Calculations are based on dispersion prevention regime.
SanPiN 2.2.1/2.1.1.1200-03. Sanitary protection zone and sanitary classification of enterprises, facilities and other objects	This SanPiN gives the classification of enterprises belonging to various industries and specifies SPZ requirements for each type respectively.
SanPiN 2.1.6.1032-01. Hygienic requirements for air quality of populated area	This SanPiN specifies the requirements to design and arrangement of sanitary protection zone, hygienic requirements to air quality at the boundary of SPZ (pollutants concentrations, odors, noise, etc.) for new facilities. As for existing plants SanPiN establishes the following requirements: to develop MPC for pollutants in SPZ, to develop and fulfill air emission reduction plans, to provide air quality control in SPZ, to have all innovations, reconstruction etc. approved by the relevant sanitary inspection, to inform the relevant authorities about MPC/MPE exceedances, etc.
Water resources	
Water code, No. 74-FZ, dated 03.12.2006	The Code formulates general requirements to water bodies protection and use, responsibilities and rights of federal and regional authorities regarding water quality assessment and control as well as establishing limits of water consumption and wastewater discharge, water protection zones, etc.
On internal sea water, territorial sea and the adjoining zone, No 155-FZ, dated 31 July 1998	The Law states the legal regime of internal sea water and territorial sea. Also the law specifies the main principles of the activity (e.g. offshore scientific studies, installation of man-made islands, laying of offshore pipelines and cables) within internal sea water and territorial sea.
SanPiN 2.1.4.1110-02. Sanitary Protection Zones of Drinking Water Supply Sources	This SanPiN describes the requirements to establishment and arrangement of water wellhead protection zones.

GN 2.1.5.1315-03 Maximum permissible concentrations (MPC) of chemical substances in the water of the water bodies of sanitary and drinking and cultural and domestic water use”	Define Maximum permissible concentrations of chemical substances in the water of the water bodies of sanitary and drinking and cultural and domestic water use.
List of MPC for water bodies valuable for fishery (Order of the State Committee for Fishery № 96 of April 28, 1999)	Provides the list of maximal permissible concentrations of pollutants for the water bodies
Flora and Fauna	
Forest code, No. 200-FZ, dated 04.12.2006	The Forestry Code of the Russian Federation establishes legal bases for rational use, protection and reproduction of forests, increase of their environmental and resource value
On fauna, No. 52-FZ, dated 24 April 1995	The law regulates relations in the field of protection, use and conservation of fauna
On fishery and aquatic biological resources preservation, No. 166-FZ, dated 20 December 2004	The law formulates requirements to aquatic biological resources protection. Also the law specifies the order of getting permits for fishery.
On the Red Book of the Russian Federation, Decree of the Government of the Russian Federation No. 158, dated 19 February 1996	The Decree states that species of fauna and flora included in the Red Book of the Russian Federation are subject to special protection.
Specially protected areas	
On specially protected nature areas, No. 33-FZ, dated 14 March 1995	The law regulates relations in the field of organization, protection and use of specially protected natural areas with a view of conservation of unique and typical natural habitats and objects, remarkable natural objects, flora and fauna objects, their genetic fund, study of natural processes in the biosphere and monitoring for changes of its state, and environmental education of the population. The law also defines categories and kinds of specially protected natural objects.
On cultural heritage (historical and cultural monuments) of RF population, No. 73-FZ, dated 25 June 2002	The Law regulates relations in the sphere of conservation, use and state protection of cultural heritage. According to the law any construction work is prohibited within cultural heritage territory. The main principles of activity in the area of cultural heritage are defined by the law in Art. 35.
On territories for traditional use of natural resources by indigenous ethnic minorities of the North, Siberia and Far East of the Russian Federation, No.49-FZ, dated 07 May 2001	The Law formulates the requirements to the activity within the territories for traditional use of natural resources by indigenous people of the North, Siberia and Far East of the Russian Federation.
Wastes	
On Production and Consumption Wastes, No.89-FZ dated 24 June 1998	This law is the basic document on waste handling. The law describes general requirements on waste generation, collection, storage, transportation, disposal and minimization. Also this

	law sets the requirements on licensing of hazardous wastes handling.
SN 2.1.7.1386-03 “Sanitary rules for determination of hazardous class of production and consumption toxic wastes”	This classification system is based on a set of factors, which take into account both the impact of wastes on the environment, and the toxic, or related hazardous parameters, which are very significant for assessment of potential harmful impacts on human health (both acute and chronic health risks). Industrial materials and wastes are divided into four classes of hazard (toxicity)
Industrial safety	
"On industrial safety of hazardous production/industrial objects" N 116-FZ dated July 21, 1997	It's a major basic law regulating industrial safety. The law determines legal, economical and social principles and basics for safe operation on hazardous industrial objects. It's aimed at emergency situations and accidents prevention, provision of due preparedness of organizations/companies operating hazardous industrial objects/facilities to localize and liquidate accident consequences. This law is obligatory for any organization/company operating in Russia.
Rules of Registration of Objects/Facilities in the Government Registry of Hazardous Production Objects approved by Gov Decree 1371, On Registration (with amendments of February 1, 2005)	Rules establish a procedure for registration of hazardous objects/facilities operated in the Russian Federation. Such facilities must be registered in the State Register of hazardous objects. This procedure is obligatory for any organization/company operating hazardous facilities in Russia.
Land use	
Land code, No. 136-FZ, dated 25 October 2001	The RF Land Code defines requirements for land protection including those for prevention of chemical contamination.
On subsoil resources, No. 2395-1, dated 21 February 1992	The law defines the key requirements for rational use and protection of subsoil resources. Particularly, it is aimed to “prevent accumulation of industrial and domestic wastes in watershed areas and ground water basins used for potable or process water supply needs”.
On Land Management, No. 78-FZ, dated 18 June 2001	The law regulates land use to provide its rational use and conservation. The main principles of land use documentation development and approval are established.
On reclassification of land from one category to another, No. 172-FZ, dated 21 December 2004	According to the law in case of land reclassification an application should be developed and submitted for approval by the authority. The main requirements on application development and order of its approval are specified by the law.
Sanitary-epidemiological requirements to soil quality, SanPiN 2.1.7.1287-03, dated 17 March 2003	Sanitary rules establish requirements to soil quality of territories used for residential and agricultural purposes.
SanPin 2.1.7.1287-03 – “On sanitary – epidemiologic quality	The document contains sanitary – epidemiologic quality requirements of soil of conglomerates, especially for significant

requirements of soil” (including changes of 25th April 2007) (approved by Decree of Chief State Medical Officer of 17 April 2003 # 53)	territories (zones of high risk) children and educational institutions, sport and play grounds, recreation areas, water bodies protective zones, coastal/literal zones, SPZ. According to the hazard level soil can be divided on: clean, allowed, hazardous, extremely hazardous. According to the document soil sampling should be performed layer wise at depth 0-0,2 m, 0.2-1,0 m, 1,0 –2,0 m from the topsoil and deeper not less than each meter depending on the depth of building foundation, communications and other conditions
Sanitary rules SR 2.1.5.1059-01 “Hygienic requirements for protection of underground waters from pollution” (approved by Decree of Chief State Medical Officer of 21 July 2001)	The SR define hygienic requirements on prevention of negative influence of economic and other activities on underground waters if such activities can lead to decrease of use of such water for drinking, households and medical aims, as well if it may lead negative influence on human health. The document defines system of sanitary protection of underground waters (hygienic requirements to waters, zones of sanitary protection etc), requirements for control on protection of underground waters.
Hygienic normative HN 2.1.7.2041-06 – “On maximal premised concentrations of chemical compounds in soil” (approved by Decree of Chief State Medical Officer of 19 January 2006 # 19)	The normative is valid for whole RF territory for al types of land use. The normative are valid for settlement lands. MPCs of pollutants in soil are given in the normative. For more detailed MPC description for selected substances see tables 2 and 3 below.
Hygienic normative GN 1.1.725-98 “List of chemical compounds, products, industrial processes, natural and domestic factors which are carcinogenic for humans” (approved by Decree of Chief State Medical Officer of 21 July 2001)	The normative describes chemical compounds, products, industrial processes, natural and domestic factors which are carcinogenic for humans, giving MPS for substances.
Methodology of harm to ground water calculation (approve by State Ecology committee of RF, MNR of RF, MinFin RF of 11 February 1998) including changes of 31 May 1999 and 1 June 1999	The methodology is developed for cases of environmental violations and emergency at transport and enterprises when polluted ground waters are affecting other components of environment (soil, flora and fauna, sea waters, surface waters).
Methodology of hygienic evaluation of soil in residential areas of 7 February 1999 # MG 2.1.7.730-99	This methodology is a basis for state sanitary – epidemiologic supervision of settlement lands. Defines principles of soil sampling for sanitary estimation of territory, methodology of summary pollution index definition. Concentration of components which bring soil into waste of certain type of hazard
Procedure of damage calculation from soil pollution by chemical substances issued by Ministry of	The procedure describes order and manner of damage calculation in case of soil pollution by chemical compounds, including case of soil pollution by unorganized industrial waste

natural resources and ecology of 27 December 1993 # 04-25/61-5678	storages, municipal waste storages and other wastes located at all types of land not regarding location and land property form. Indicators of pollution level are provided in the document. For more detailed description for selected substances see tables below.
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Source: Collected by authors

Participants and executors of the EIA

The EIA procedure involves representatives of different parties who perform certain functions depending on their status. There are participants and performers.

The participants include the initiators of the planned activities and the authority, as well as the public.

Initiators of the planned activity - legal entities or individuals who have declared their intention to conduct economic activities, as well as investing in the preparation and implementation of this activity.

A government is an Executive, legislative or representative body. By issuing a permit to the initiator to carry out economic activities, the authorities assume responsibility for the fact that the activities planned by the initiator will not entail unacceptable consequences for the society. In this regard, the authorities perform the following functions:

- make the decision on consent (or refusal) on preparation by the customer of offers on justification of the planned activity;
- determine the boundaries of the affected area, in the territories of which research should be conducted in connection with the possible impact of the future object on the environment;
- establish points and time of public hearings, ways of informing the public and local population about the planned activity;
- inform the population about the decision;
- make the decision on issue of the license for complex nature management.

The public is a part of society that actively participates in the life of this society and expresses the opinion of this part of society. These may be local residents living near the construction site, citizens, etc. public hearings of EIA with their participation should be mandatory.

The executors include the customer and the developer of solutions for the project.

Customer-on behalf of the initiator provides all the necessary preparation for the implementation of the planned activities.

Main functions of the customer:

- preparation of documents within the EIA and timely submission of the package for approval to the relevant authorities;
- organization of the necessary research and studies;
- approval of the project of economic or other activities;

- organization of internal control over the implementation of measures and measures that ensure compliance with environmental requirements and conditions in the implementation of the economic project;
- implementation of measures to identify and take into account the opinion of the population of the affected area on environmental changes resulting from the implementation of the economic project (economic activities).

Developer of solutions for the object-a third-party design or research organization that develops solutions for the object, as well as prepares supporting documentation for the implementation of the planned economic or other activities.

The functions of the developer solutions on the object:

- preparation of application and other documents within the EIA, which are submitted for consideration to the authorities;
- development of fundamental decisions on the object, the definition of General characteristics and expected environmental impacts, the formation and analysis of reasonable alternatives and options to achieve the goals of the initiator;
- analysis of the collected initial information on the proposed location of the future facility, assessment of the overall cumulative impact of the planned activities, taking into account existing and planned to create economic and other facilities in the affected area;
- correction of engineering, technical and other decisions on the object to ensure compliance with the agreed environmental conditions and prevent environmental and related social, economic and other consequences identified in the EIA process;
- preparation of a proposal for the organization of monitoring of environmental changes in the implementation of the economic project.

The responsibility of the participants of the EIA

The customer is responsible for:

- completeness of initial documentation;
- reliability and completeness of the initial data;
- accounting and presentation of the EIA results as part of the pre-project and project documentation to the state control bodies;
- environmental and related consequences of the implementation of the project plan (in the construction of new, reconstruction, expansion, technical re-equipment, operation and liquidation of economic facilities and complexes).

The developer (contractor) of pre-project and project documentation is responsible to the customer for the accuracy, completeness and quality of the results of the EIA based on the initial data.

Organizations and specialists (subcontractors) involved in the EIA are responsible to the developer (contractor) for the accuracy, completeness and quality of the information provided.

State control bodies are responsible to state authorities and management for timely, qualified and objective consideration of pre-project and project documentation containing the results of the EIA.

The EIA procedure

The process of developing an EIA project consists of several stages, for which a certain set of documents is required. At the end of the process, a document should be submitted, which is based on the results of the past operation.

Stage 1. Notice of intent

The project owner sends a notification to the state authorities and management, which describes the planned economic activity, its objectives and conditions of implementation, options for the implementation of activities, etc. at the same stage, the public is notified and the terms of reference for the EIA project are drawn up.

The notification is submitted for the purpose of obtaining consent for further preparation and consideration of proposals for the development of the planned activity at possible sites of its implementation

Thus, during the first stage the customer:

- prepare and submit to the authorities the relevant documentation containing a General description of the proposed activity; the purpose of its implementation; the possible alternatives; a description of the conditions of its implementation; other information prescribed by the applicable regulations of the;
- inform the public in accordance with the PP.4.2, 4.3 and 4.4 Order 372²;
- conducts a preliminary assessment of the main Order 372 of paragraph 3.2.2 Order 372 and documents its results;
- conducts a preliminary consultation to determine the participants in the process of assessing the impact on the environment, including the interested public.

During the preliminary environmental impact assessment, the customer collects and documents the information:

- on the planned economic and other activities, including the purpose of its implementation, possible alternatives, terms of implementation and the proposed location, the affected administrative territories, the possibility of transboundary impact, compliance with territorial and sectoral plans and programs;
- the state of the environment likely to be affected and its most vulnerable components;
- on possible significant environmental impacts (land requirements, waste, loads on transport and other infrastructure, sources of emissions and discharges) and measures to reduce or prevent these impacts.

² Order of Goskomecologiya N 372 of 16 May 2000 "On approval Of the regulation on impact assessment planned economic and other activities on the environment in the Russian Federation"

Based on the results of the preliminary impact assessment, the customer shall draw up the EIA specification (hereinafter referred to as the TOR³), which contains::

- name and address of the customer (contractor);
- timing of environmental impact assessment;
- basic methods of environmental impact assessment, including a plan for public consultation;
- the main objectives of the environmental impact assessment;
- the expected composition and content of materials for environmental impact assessment.

When drawing up the TOR, the customer takes into account the requirements of specially authorized bodies for environmental protection, as well as the opinions of other participants in the environmental impact assessment process. TOR is sent to the participants of the process of assessing the impact on the environment according to their needs and available to the public during the entire time of the evaluation of the impact on the environment.

TOR for the impact assessment on the environment is part of the materials for the assessment of the impact on the environment.

Stage 2. Research and preparation of a preliminary version of the EIA materials

The customer (contractor) is conducting research to assess the impact on the environment in accordance with the statement of work, consideration of alternatives implementation, activity goals, ways to achieve them, and prepared a preliminary variant of materials on environmental impact assessment on the environment.

Studies to assess the environmental impact of the proposed economic and other activities include the following (p.3.2 Order 372):

- determination of the characteristics of the planned economic and other activities and possible alternatives (including abandonment);
- analysis of the state of the territory, which may be affected by the planned economic and other activities (the state of the natural environment, the presence and nature of anthropogenic load, etc.);
- identification of possible impacts of the planned economic and other activities on the environment, taking into account the alternatives;
- assessment of environmental impacts of the planned economic and other activities (probability of risk, degree, nature, scale, area of distribution, as well as forecasting of environmental and related social and economic consequences);
- identification of measures to reduce, mitigate or prevent negative impacts, assessment of their effectiveness and feasibility;
- assessment of the significance of residual environmental impacts and their consequences;
- comparison of the expected environmental and related socio-economic consequences of the alternatives under consideration, including the option of abandonment of activities, and justification of the option proposed for implementation;

³ Terms of reference

- development of proposals for the program of environmental monitoring and control at all stages of the planned economic and other activities;
- development of recommendations for post-project analysis of the implementation of the planned economic and other activities;
- preparation of a preliminary version of the materials on environmental impact assessment of the planned economic and other activities (including a summary for non-specialists)

Stage 3. Preparation of the final version of the EIA materials.

The final version of the EIA materials is prepared on the basis of the preliminary version of the materials, taking into account the comments, suggestions and information received from the participants of the EIA process at the stage of discussion in accordance with section 4 of the Regulation.

If in connection with the received comments and proposals it is necessary to make changes, then the project is adjusted.

Information should be included in the final version of the environmental impact assessment materials:

- about the account of the arrived remarks and offers;
- minutes of public hearings (if any).

The final version of the EIA materials is approved by the customer, submitted for use in the preparation of supporting documentation and in its composition is submitted to the state ecological expertise, as well as to the public ecological expertise (if any).

Public participation in EIA can be carried out:

- at the stage of submission of initial information;
- at the stage of EIA and preparation of supporting documentation.

For the planned investment activity the customer carries out the above stages of EIA at all stages of preparation of documentation on the planned economic and other activities submitted to the state ecological expertise.

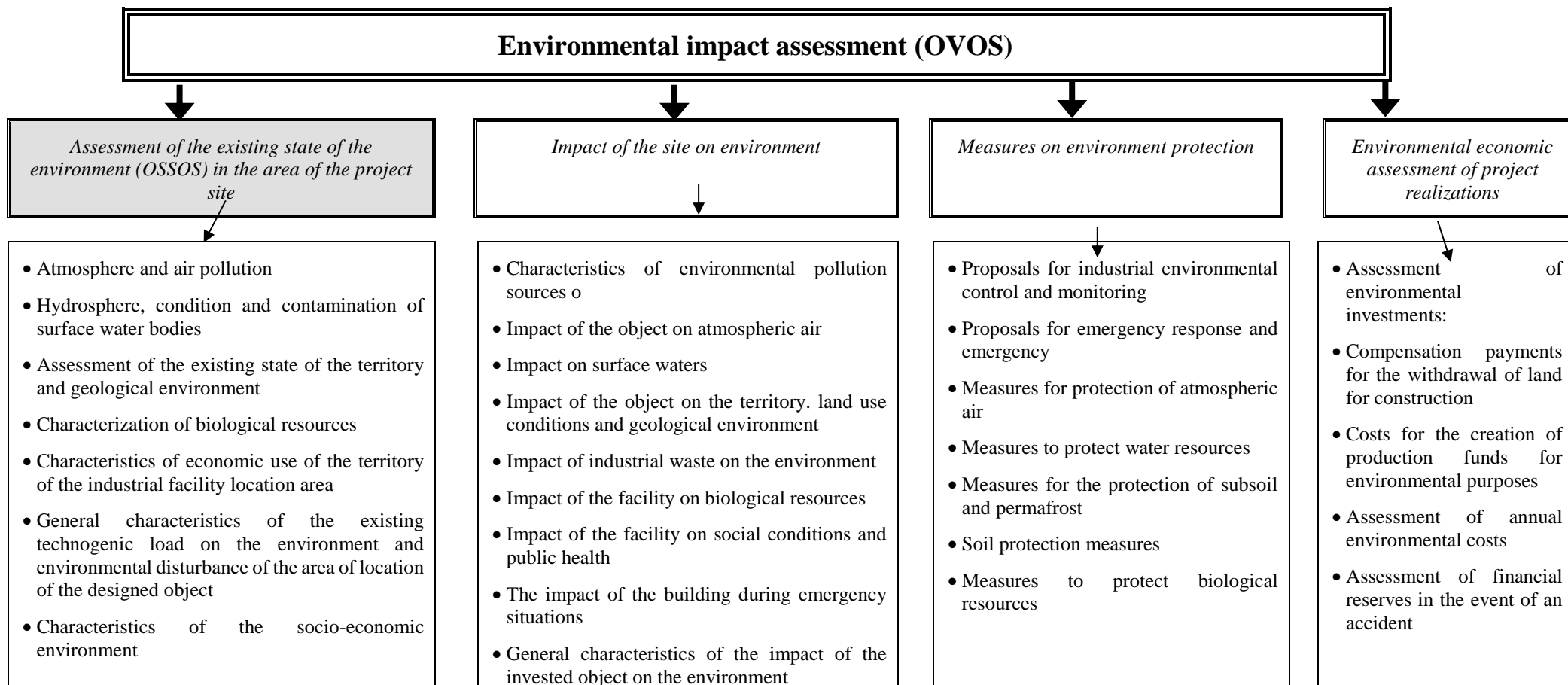
The results of the EIA

The result of the EIA is information on the nature and extent of the environmental impact of the proposed activity, alternatives to its implementation, assessment of environmental and related social, economic and other consequences of this impact and their significance, the possibility of minimizing impacts.

As EIA reviewed in previous chapter EIA is rather similar in different countries by the content. For example, Environmental Impact assessment according to EU standards can be found in guideline documentation⁴

⁴ Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (Electronic resource)
http://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf

Picture 1.1. Recommended content of OVOS /EIA sections as a part of project documentation



Typical content of OVOS / PMOOS report

Introduction

1. Basic engineering solutions

1.1. General information

1.2. Site description

1.7. Organization of construction

2. Laws for environmental management and environmental protection (brief review)

2.1. Related International laws

2.2. Legislative acts of the Russian Federation

3. Results of environmental impact assessment

3.1. Results of atmospheric air impact assessment

3.1.1. Period of construction

3.1.2. Operation period

3.2. Results of water resources impact assessment

3.2.1. Construction period

3.2.2. Operation period

3.3. Results of evaluation of physical effects

3.3.1. Construction period

3.3.2. Operation period

3.4. Results of soil-vegetation cover impact assessment

3.4.1. Construction period

3.4.2. Operation period

3.5. Results of vegetation impact assessment

3.5.1. Construction period

3.5.2. Operation period

3.6. Results of subsoil and geological environment impact assessment

3.6.1. Construction period

3.6.2. Operation period

3.7. Results of fauna impact assessment

3.7.1. Construction period

3.7.2. Operation period

- 3.8. Results of waste handling impact assessment
- 3.9. Results of social-economic conditions impact assessment
 - 3.9.1. Impact on indigenous peoples (if any)
 - 3.9.2. Impact on social-economic conditions
- 3.10. Public engagement
4. Environmental protection measures
 - 4.1. Measures to reduce emissions of pollutants into the atmosphere
 - 4.2. Physical factors impact mitigation measures
 - 4.3. Water resources impact mitigation measures
 - 4.4. Reclamation of disturbed lands
 - 4.5. Measures to protect vegetation cover
 - 4.6. Measures on protection of geological environment
 - 4.7. Measures to protect fauna
 - 4.8. Measures of waste impact mitigation
 - 4.8.1. General requirements for design solutions on minimization of adverse impact on environment and basic engineering design solutions
 - 4.8.2. Additional organizational measures
 - 4.9. Measures on interaction with indigenous population
5. Measures to minimize probable emergency situations and their impact mitigation
 - 5.1. Study of principal reasons for emergency situations
 - 5.2. Brief description of scenarios of the most probable accidents and most hazardous ones
 - 5.3. Results of accidents risk assessment
 - 5.4. Evaluation of environmental impact in case of emergency
 - 5.4.1. Impact on atmospheric air
 - 5.4.2. Impact on water bodies
 - 5.4.3. Impact on soil mantle and grounds
 - 5.4.4. Impact on biological resources
 - 5.5. Prevention and mitigation measures for probable emergency situations and their environmental consequences in the region
6. List and calculation of costs for environmental measures and compensatory payments
 - 6.1. Calculation of costs related to compensation of damage to vegetation cover
 - 6.2. Evaluation of damage to fauna

- 6.3. Justification of cost for reclamation of lands
- 6.4. Calculation of payments for usage of water bodies
- 6.5. Cost of land plots lease
- 6.6. Industrial environmental monitoring
- 6.7. Payment for pollution of atmospheric air
- 6.8. Payment for pollutants discharge
- 6.9. Payment for production and consumer waste disposal
- 6.10. Cost of waste delivery
- 6.11. Environmental insurance
- 6.12. Summary figures of environmental costs and payments
- 6.13. Reserving of financial means for emergency response and elimination of consequences

Conclusion

Let's review some examples of economic calculations related to EIA incl. environmental impact fee calculation

Calculation of payments for usage of water bodies

Calculation of payment for usage of water bodies is carried out in accordance with the Tax Code of RF See Annex 3 for details.

Example calculation for water consumption from water body – Volga river in Northern Economic region:

$441.012 \text{ thous. m}^3 \setminus \text{period} * 300 \text{ RUR per } 1 \text{ thous. m}^3 = 132303.6 \text{ RUR / for period of construction.}$

$1095.800 \text{ thous. m}^3 \setminus \text{year} * 300 \text{ RUR per } 1 \text{ thous. m}^3 = 328740 \text{ RUR / year for period of operation.}$

Calculation of fees for negative impact on environment (emission, discharge, wastes disposal)

Payment for pollution of atmospheric air

The payments are calculated with the use of standard fee rates approved by the RF Government Decree of 13 September 2016 N 913 On rates of the payment for negative impact on environment and additional coefficients

Example calculations provided below in tables 1-2 and 1-3

Table 1-2. Payment for emissions of pollutants into atmospheric air for the 1st year of construction

Name of substance	Total emission of substance (t/period)	Standard fee rate for emission of 1 ton of pollutant, RUR	Coefficient for 2019	Payment for emissions of pollutants into atmosphere, RUR / period
Manganese	0,00515900	5473,5	1,04	29,37
Nitrogen dioxide (nitrogen dioxide (IV))	13,38011125	138,8	1,04	1931,45
Nitrogen oxide (oxide of nitrogen (II))	2,17421233	93,5	1,04	211,42
Sulfur dioxide (sulphurous anhydride)	1,65191080	45,4	1,04	78,00
Saturated hydrocarbons C ₁₂ -C ₁₉	1,67050300	10,8	1,04	18,76
Inorganic dust 70 – 20 %	0,01973050	56,1	1,04	1,15
Inorganic dust to 20%	2,90181933	36,6	1,04	110,45
Total				2380,60

Table 1-3. Payment for emissions of pollutants into atmospheric air for exploitation

Name of substance	Total emission of substance (t/year)	Standard fee rate for emission of 1 ton of pollutant, RUR	Coefficient for 2019	Payment for emissions of pollutants into atmosphere, RUR /year
Manganese	0,33325300	5473,5	1,04	1897,02
Nitrogen dioxide (nitrogen dioxide (IV))	73,53158200	138,8	1,04	10614,43
Nitrogen oxide (oxide of nitrogen (II))	11,95889400	93,3	1,04	1160,40
Total				13671,85

Payment for pollutants discharge

The payments are calculated with the use of standard fee rates approved by the RF Government Decree 913 – in table 1-4 and 1-5 fees for pollutants discharge in period of construction and exploitation.

Table 1-4 Payment for discharge of pollutants with sewage waters during construction

Name of substance	Total discharge of substance (t/year)	Standard fee rate for emission of 1 ton of pollutant, RUR	Coefficient for 2019	Payment for discharge of pollutants, thous. RUR/year
Suspended substance	4,931	977,2	1,04	5011,32
Petrochemicals	0,056	14711,7	1,04	856,81
BOD _{tot}	3,331	243	1,04	841,81
Total				6709,94

Table 1-5 . Payment for discharge of pollutants with sewage waters during operation

Name of substance	Total discharge of substance (t/year)	Standard fee rate for emission of 1 ton of pollutant, RUR	Coefficient for 2019	Payment for discharge of pollutants, thous. RUR/year
Methanol	276,282	7355,9	1,04	2113594,87
Suspended substance	53,236	977,2	1,04	54103,11
Ammonium nitrogen (N)	0,13	1190,2	1,04	160,92
Nitrites	10,233	7439	1,04	79168,22
Nitrates	90	14,9	1,04	1394,64
Phosphates	0,13	3679,3	1,04	497,44
Total				2248919,20

Payment for production and consumer waste disposal

Production and consumer wastes, industrial and domestic sewage waters should be given over to licensed organizations for processing. Wastes for disposal are also given to contractor and additional fee for the state is calculated and paid according 913 Decree. Waste disposal fee is calculated in the tables below for period of construction and period of exploitation (each year). Example calculation is given below in tables 1-6 and 1-7

Table 1-6 Amount of payment for waste disposal for the whole period of construction

Hazard class of waste	Quantity, t	Standard fee rate, RUR/t	Additional coefficient for 2019	Amount, RUR / period
Waste of the 4 th class	793,322	663,2	1,04	547176,40
Waste of the 5 th class	4206,589	17,3	1,04	75684,95
Total				622861,35

Table 1-7 Amount of payment for waste disposal for the period of operation, year

Hazard class of waste	Quantity, t	Standard fee rate, RUR/t	Additional coefficient for 2019	Amount, RUR / year
Waste of the 4 th class	512,039	663,2	1,04	353167,64
Waste of the 5 th class*	58,499	17,3	1,04	1052,51
Total				354220,15

* - remember rate is different for different industries

For sample calculations see Annex 3 Decree 913 in addition to it one should know that there is additional coefficient for 2019 – 1.04 entered into force with RF Decree of 29 June 2018 N 758 On rates of the payment for negative impact on environment at placement of solid municipal waste of the IV class of hazard (low-hazardous) and modification of some acts of the Government of the Russian Federation

And some substances are missing in this decree and one should follow recommendation of Ministry of Natural resources while calculating fees for pollution – emissions of such substances as abrasive dust, carbon (soot), iron oxide, by their physical properties related to solid pArt.s, it is advisable to take into account in the emissions as suspended substances according the Ministry of natural resources and environment of the Russian Federation (explanation letter dated January 16, 2017 # AC-03-01-31/502

Regarding additional coefficient 2 (which will we not use for calculations) see MNR letter of 16 December 2016 N ОД-06-01-31/25520 On additional coefficient 2

2. Tasks for individual solution

Calculation of emission fee

Please, calculate environmental fees for following parameters using annex. In prices 2016, 2017, 2018, 2019 make a graph comparing price change

Calculate fee for emission according legal requirements (Annex 1 and examples provided in the chapter 1)

Table 1. Emission for construction period

Name of substance	Total emission of substance (t/period)
Ferric oxide	0,05025425
Manganese	0,00515900
Nitrogen dioxide (nitrogen dioxide (IV))	13,38011125
Nitrogen oxide (oxide of nitrogen (II))	2,17421233
Carbon black (soot)	2,57633800
Sulfur dioxide (sulphurous anhydride)	1,65191080
Carbon monoxide	23,53129130
Gaseous fluorides	0,00398950
Insoluble fluorides	0,00701050
Hexane	0,57243500
Methane	1,54884900
Amylenes	0,05722100
Benzene	0,05264400
Xylene	1,70201100
Toluene	0,04966700
Ethylbenzene	0,00137300
Benz-(a)-pyrene (3,4-benzapyrene);	0,00000099
Formaldehyde	0,01147500
Benzine	0,42556867
Kerosene	4,73501930
White spirit	0,34537500
Saturated hydrocarbons C12-C19	1,67050300
Particulate matter	0,74250000
Inorganic dust 70 – 20 %	0,01973050
Inorganic dust to 20%	2,90181933
Total	58,22115997

Table 2. Emission for construction

Name of substance	Total emission of substance (t/period)
Ferric oxide	0,05025425
Manganese	0,00515900
Nitrogen dioxide (nitrogen dioxide (IV))	13,38011125
Nitrogen oxide (oxide of nitrogen (II))	2,17421233
Carbon black (soot)	2,57633800
Sulfur dioxide (sulphurous anhydride)	1,65191080
Dihydrosulphide (hydrogen sulfide)	0,00469125
Carbon monoxide	23,53129130
Gaseous fluorides	0,00398950
Insoluble fluorides	0,00701050
Hexane	0,57243500
Methane	1,54884900
Amylenes	0,05722100
Benzene	0,05264400
Xylene	1,70201100
Toluene	0,04966700
Ethylbenzene	0,00137300
Benz-(a)-pyrene (3,4-benzapyrene);	0,00000099
Formaldehyde	0,01147500
Benzine	0,42556867
Kerosene	4,73501930
White spirit	0,34537500
Saturated hydrocarbons C12-C19	1,67050300
Particulate matter	0,74250000
Inorganic dust 70 – 20 %	0,01973050
Inorganic dust to 20%	2,90181933
Total	58,22115997

Table 3. Emission of construction

Name of substance	Total emission of substance (t/period)
Ferric oxide	0,40771500
Manganese	0,04309000
Nitrogen dioxide (nitrogen dioxide (IV))	40,34796000
Nitrogen oxide (oxide of nitrogen (II))	8,54088325
Hydrochloric acid	0,27216000
Carbon black (soot)	5,56296900
Sulfur dioxide (sulphurous anhydride)	6,99440550
Dihydrosulphide (hydrogen sulfide)	0,00469175
Carbon monoxide	54,50868100
Gaseous fluorides	0,31144950
Insoluble fluorides	0,04253250
Hexane	0,57243500
Methane	1,54884900
Amylenes	0,05722100
Benzene	0,05264400
Xylene	44,85890100
Toluene	0,04966700
Ethylbenzene	0,00137300
Benz-(a)-pyrene (3,4-benzapyrene)	0,00001942
Formaldehyde	0,18232500
Benzine	0,75967000
Kerosene	12,71740500
White spirit	14,69398500
Saturated hydrocarbons C12-C19	1,67063300
Particulate matter	21,70290000
Inorganic dust >70%	0,29836800
Inorganic dust 70 – 20 %	0,19141350
Inorganic dust to 20%	4,64261300
Total	221,0369594

Table 4. Emission for construction

Name of substance	Total emission of substance (t/period)
Ferric oxide	3,11880900
Manganese	0,35193300
Nitrogen dioxide (nitrogen dioxide (IV))	120,46254900
Nitrogen oxide (oxide of nitrogen (II))	27,51317100
Hydrochloric acid	1,08864000
Carbon black (soot)	13,82096100
Sulfur dioxide (sulphurous anhydride)	22,71381800
Dihydrosulphide (hydrogen sulfide)	0,00469100
Carbon monoxide	164,15312800
Gaseous fluorides	1,16293100
Insoluble fluorides	0,02430100
Hexane	0,57243500
Methane	1,54884900
Amylenes	0,05722100
Benzene	0,05264400
Xylene	72,85899600
Toluene	45,17868700
Ethylbenzene	0,00137300
Benz-(a)-pyrene (3,4-benzapyrene)	0,00004152
Butyl alcohol	0,46200000
Ethylene glycol	0,11550000
Ethylcarbitol	0,11550000
Ethyl cellosolve	0,61332000
Butyl acetate	8,71452000
Formaldehyde	0,28580000
Acetone	19,60264000
Benzine	4,67017600
Kerosene	29,43368400
White spirit	42,19694000
Saturated hydrocarbons C12-C19	1,67043800

Name of substance	Total emission of substance (t/period)
Particulate matter	55,59036000
Inorganic dust >70%	0,88704000
Inorganic dust 70 – 20 %	0,43091600
Inorganic dust to 20%	5,15484500
Total	644,6288575

Table 5 Emission for construction

Name of substance	Total emission of substance (t/period)
Ferric oxide	3,11880900
Manganese	0,35193300
Nitrogen dioxide (nitrogen dioxide (IV))	112,05128400
Nitrogen oxide (oxide of nitrogen (II))	26,14634000
Hydrochloric acid	1,08864000
Carbon black (soot)	12,24041000
Sulfur dioxide (sulphurous anhydride)	21,72733200
Dihydrosulphide (hydrogen sulfide)	0,00469100
Carbon monoxide	154,88712200
Gaseous fluorides	1,16293100
Insoluble fluorides	0,02430100
Hexane	0,57243500
Methane	1,54884900
Amylenes	0,05722100
Benzene	0,05264400
Xylene	72,85899600
Toluene	45,17868700
Ethylbenzene	0,00137300
Benz-(a)-pyrene (3,4-benzapyrene)	0,00004152
Butyl alcohol	0,46200000
Ethylene glycol	0,11550000
Ethylcarbitol	0,11550000
Ethyl cellosolve	0,61332000

Name of substance	Total emission of substance (t/period)
Butyl acetate	8,71452000
Formaldehyde	0,28580000
Acetone	19,60264000
Benzine	4,61598900
Kerosene	27,10991700
White spirit	42,19694000
Saturated hydrocarbons C12-C19	1,67043800
Particulate matter	55,59036000
Inorganic dust >70%	0,88704000
Inorganic dust 70 – 20 %	0,43091600
Inorganic dust to 20%	5,15484500
Total	620,6397645

Table 6. Emission for construction

Name of substance	Total emission of substance (t/period)
Ferric oxide	2,95739400
Manganese	0,33325300
Nitrogen dioxide (nitrogen dioxide (IV))	73,53158200
Nitrogen oxide (oxide of nitrogen (II))	11,95889400
Carbon black (soot)	11,56793100
Sulfur dioxide (sulphurous anhydride)	9,43577100
Dihydrosulphide (hydrogen sulfide)	0,00469100
Carbon monoxide	97,51851600
Gaseous fluorides	0,01317100
Insoluble fluorides	0,02318100
Hexane	0,57243500
Methane	1,54884900
Amylenes	0,05722100
Benzene	0,05264400
Xylene	61,69257600
Toluene	48,93046700

Name of substance	Total emission of substance (t/period)
Ethylbenzene	0,00137300
Benz-(a)-pyrene (3,4-benzapyrene)	0,00003053
Butyl acetate	9,46080000
Formaldehyde	0,27750000
Acetone	20,49840000
Benzine	1,71946800
Kerosene	24,41692100
White spirit	40,35806000
Saturated hydrocarbons C12-C19	1,67043800
Particulate matter	42,30480000
Inorganic dust >70%	0,88704000
Inorganic dust 70 – 20 %	0,42962600
Inorganic dust to 20%	0,88162500
Total	463,1046575

Table 7. Emission for construction

Name of substance	Total emission of substance (t/period)
Ferric oxide	2,71094450
Manganese	0,30548192
Nitrogen dioxide (nitrogen dioxide (IV))	54,55252550
Nitrogen oxide (oxide of nitrogen (II))	8,86479092
Carbon black (soot)	8,65145233
Sulfur dioxide (sulphurous anhydride)	6,86745675
Dihydrosulphide (hydrogen sulfide)	0,00430008
Carbon monoxide	66,44984133
Gaseous fluorides	0,01207342
Insoluble fluorides	0,02124925
Hexane	0,52473208
Methane	1,41977825
Amylenes	0,05245258

Name of substance	Total emission of substance (t/period)
Benzene	0,04825700
Xylene	47,96052800
Toluene	31,16177808
Ethylbenzene	0,00125858
Benz-(a)-pyrene (3,4-benzapyrene)	0,00001992
Butyl acetate	6,02250000
Formaldehyde	0,18104167
Acetone	13,04875000
Benzine	1,13077617
Kerosene	17,22934675
White spirit	28,57255500
Saturated hydrocarbons C12-C19	1,53123483
Particulate matter	30,98315000
Inorganic dust >70%	0,57657600
Inorganic dust 70 – 20 %	0,29033583
Inorganic dust to 20%	0,55440000
Total	329,7295867

Table 8. Annual emission for operation period (maximal emission)

Name of substance	Total emission of substance (t/year)
Ferric oxide (in ferrum equivalent)	0,018238
Manganese and its compounds (expressed as manganese oxide (IV))	0,000466
Sodium carbonate	0,0031
Nitrogen dioxide (nitrogen dioxide (IV))	717,439155
Nitrogen oxide (oxide of nitrogen (II))	122,766059
Hydrochloric acid	0,591214
Sulfuric acid (H ₂ SO ₄ molecule)	0,000082
Carbon black (soot)	463,634587
Sulfur dioxide (sulphurous anhydride)	5,067355
Dihydrosulphide (hydrogen sulfide)	17,029929

Name of substance	Total emission of substance (t/year)
Carbon monoxide	6109,402309
Gaseous fluorides	0,612596
Insoluble fluorides	0,003332
Hexane	59,214007
Methane	1857,405563
Benzene	0,0083
Dimethylbenzene (xylene) (o-, m-, p-isomeric mixture)	0,801897
Methyl benzene (toluene)	1,314082
Ethylbenzene	0,172212
Benz-(a)-pyrene (3,4-benzapyrene)	0,000006
Methanol (methyl alcohol)	2590,682397
Ethylene glycol	0,000009
Formaldehyde	0,1758
Benzine (low-sulfur) (in carbon equivalent)	0,502755
Kerosene	0,322499
Mineral oil	0,000015
Saturated hydrocarbons C12-C19	0,241795
Emulsol	0,000143
Particulate matter	4,15584
Inorganic dust: 70-20% SiO ₂	0,000708
Abrasive dust (White corundum)	0,001022
Dust of vulcanized rubber	0,023289
Di(2-hydroxyethyl) methylamine (methyldiethanolamine)	2,516876
Total	

Calculation of discharge fee

Calculate fee for discharge according legal requirements (Annex 1 and examples provided in the chapter)

Fee for discharge

Table 9. Discharge during construction

Name of substance	Total discharge of substance (t/period)
Suspended substance	4,931
Petrochemicals	0,056
BOD _{tot}	3,331
Total	

Table 10. Discharge during operation

Name of substance	Total discharge of substance (t/year)
Methanol	276,282
Amines	16,45
Salts	5302,331
Hydrocarbons	51,94
Suspended substance	53,236
Ammonium nitrogen (N)	0,13
Nitrites	10,233
Phosphates	0,13
Chlorides	90,799
Dissolved oxygen	0,13
Total	

Table 11. Discharge during operation

Name of substance	Total discharge of substance (t/year)
Suspended substance	4,931
Petrochemicals	0,056
BOD _{tot}	3,331

Calculation of fee for waste disposal

Calculate fee for waste disposal according legal requirements (Annex 1 and examples provided in the chapter)

Fee for waste disposal**Table 12. Waste disposal during operation**

Hazard class of waste	Quantity, t
Waste of the 4 th class	793,322
Waste of the 5 th class	4206,589

Table 13. Waste disposal during operation

Hazard class of waste	Quantity, t
Waste of the 4 th class	793.322
Waste of the 5 th class	4206.589
Total	

Table 14. Waste disposal during operation

Hazard class of waste	Quantity, t
Waste of the 4 th class	512.039
Waste of the 5 th class	58.499
Total	

Calculation of fee for water consumption

Please, calculation fee for water consumption for 3 different rivers in 3 different regions for years 2019 -2025. Amount of consumed water in each case is 67890345, 12 m3. Make in excel graph comparing prices change by region and year.

In addition one can take own values and perform the calculation of environmental fee.

Annex 1. Decree of RF Government of 13 September 2016 N 913 On rates of payment for negative impact on the environment and additional factors**Rates of payment for negative impact on the environment ***
(changes of 29 June 2018)

(RUR)

Name of pollutant	Payment rates for 1 ton of polluting substances (production and consumption wastes)		
	Year 2016	Year 2017	year2018
Rates of payment for emission into ambient air from stationary sources			
1. Nitrogen dioxide	133,1	138,8	138,8
2. Nitrogen oxide	89,6	93,5	93,5
3. Nitric acid	35,1	36,6	36,6
4. Ammonia	133,1	138,8	138,8
5. Ammonium nitrate (ammonium nitrate)	19,2	20	20
6. Barium and its salts (in terms of barium)	1061,9	1108,1	1108,1
7. Benz (a) pyrene	5247490,6	5472968,7	5472968,7
8. Boric acid (orthoboric acid)	263,7	275	275
9. Vanadium pentoxide	2624	2736,8	2736,8
10. PM10 suspended particles	89,6	93,5	93,5
11. PM2.5 suspended particles	174,8	182,4	182,4
12. Suspended substances	35,1	36,6	36,6
13. Hydrogen bromide (hydrobromide)	53,8	56,1	56,1
14. Arsenic hydrogen (arsine)	2624	2736,8	2736,8
15. Phosphorous hydrogen (phosphine)	5248	5473,5	5473,5
16. Hydrogen cyanide	524,8	547,4	547,4
17. Sulfur hexafluoride	0,3	0,3	0,3
18. Dialuminium trioxide (in terms of aluminum)	424,4	442,8	442,8
19. Dioxins (polychlorinated dibenzo-p-dioxins and dibenzofurans) in terms of 2,3,7,8-tetrachlorodibenzo-1,4-dioxin	12,8	13400000000	13400000000
20. Diethyl mercury (in terms of mercury)	17492,5	18244,1	18244,1
21. Iron trichloride (in terms of iron)	1313,3	1369,7	1369,7
22. Solid fuel ash	14,5	15,1	15,1
23. Ash TPP fuel oil (in terms of vanadium)	2121,8	2214	2214
24. Cadmium and its compounds	14144,3	14759,3	14759,3

25.	Sodium carbonate (disodium carbonate)	133,1	138,8	138,8
26.	Terephthalic acid	5248	5473,5	5473,5
27.	Cobalt and its compounds (cobalt oxide, cobalt salts in terms of cobalt)	4243,5	4428	4428
28.	Nickel, nickel oxide (in terms of nickel)	5248	5473,5	5473,5
29.	Nickel soluble salts (in terms of nickel)	26237,4	27364,8	27364,8
30.	Magnesium oxide	43,5	45,4	45,4
31.	Manganese and its compounds	5248	5473,5	5473,5
32.	Copper, copper oxide, copper sulfate, copper chloride (in terms of copper)	5248	5473,5	5473,5
33.	Methane	103,5	108	108
34.	Methyl mercaptan, ethyl mercaptan	52474,9	54729,7	54729,7
35.	Arsenic and its compounds, other than hydrogen arsenic	1748,5	1823,6	1823,6
36.	Ozone	174,8	182,4	182,4
37.	Inorganic dust containing silica in percent:			
	above 70 percent	105	109,5	109,5
	70-20 percent	53,8	56,1	56,1
	below 20 percent	35,1	36,6	36,6
38.	Mercury and its compounds, except diethyl mercury	17492,5	18244,1	18244,1
39.	Lead and its compounds, excluding tetraethyl lead (in terms of lead)	17492,5	18244,1	18244,1
40.	Hydrogen sulphide	657,9	686,2	686,2
41.	Carbon disulfide	1049,6	1094,7	1094,7
42.	Sulphuric acid	43,5	45,4	45,4
43.	Sulfur dioxide	43,5	45,4	45,4
44.	Tellurium dioxide	10496	10947	10947
45.	Tetraethyl lead	131187,2	136824,2	136824,2
46.	Carbon oxide	1,5	1,6	1,6
47.	Phosgene	1748,5	1823,6	1823,6
48.	Phosphoric anhydride (diphosphorus pentoxide)	105	109,5	109,5
49.	Fluorides gaseous (hydrofluoride, silicon tetrafluoride) (in terms of fluorine)	1049,6	1094,7	1094,7
50.	Solid fluorides	174,1	181,6	181,6
51.	Hydrogen fluoride, soluble fluoride	524,8	547,4	547,4
52.	Chlorine	174,1	181,6	181,6

53.	Hydrogen chloride	28,7	29,9	29,9
54.	Chloroprene	2624	2736,8	2736,8
55.	Chrome (6+)	3497	3647,2	3647,2
56.	Hydrocarbons lower paraffin C1-C5 (excluding methane)	103,5	108	108
57.	Hydrocarbons lower paraffin C6-C10	0,1	0,1	0,1
58.	Hydrocarbons lower paraffin C12-C19	10,4	10,8	10,8
59.	Cyclohexane	3,1	3,2	3,2
60.	Amylenes (mixture of isomers)	3,1	3,2	3,2
61.	Butylene	6,4	6,7	6,7
62.	1,3-Butadiene (divinyl)	6,4	6,7	6,7
63.	Hepten	89,6	93,5	93,5
64.	Propylene	1,5	1,6	1,6
65.	Ethylene	1,5	1,6	1,6
66.	Alpha methylstyrene	133,1	138,8	138,8
67.	Benzene	53,8	56,1	56,1
68.	Dimethylbenzene (xylene) (a mixture of meta-, ortho- and para isomers)	28,7	29,9	29,9
69.	Isopropyl benzene (cumene)	376,3	392,5	392,5
70.	Methylbenzene (toluene)	9,5	9,9	9,9
71.	Furniture thinner (AMP-3) (toluene control)	9,5	9,9	9,9
72.	1,3,5-trimethylbenzene (mesitylene)	53,8	56,1	56,1
73.	Phenol	1748,5	1823,6	1823,6
74.	Ethylbenzene	263,7	275	275
75.	Ethylene benzene (styrene)	2624	2736,8	2736,8
76.	Naphthalene	1748,5	1823,6	1823,6
77.	Bromobenzene	174,8	182,4	182,4
78.	1-Bromheptan (heptyl methyl)	524,8	547,4	547,4
79.	1-Bromdecane (methyl decyl)	524,8	547,4	547,4
80.	1 -Brom-3-methylbutane (isoamyl methyl)	524,8	547,4	547,4
81.	1-Bromo-2-methylpropane (isobutyl methyl)	524,8	547,4	547,4
82.	1-Bromopentane (amyl bromide)	524,8	547,4	547,4
83.	1-Bromopropane (propyl methyl)	524,8	547,4	547,4
84.	2-Bromopropane (isopropyl bromide)	524,8	547,4	547,4

85.	Dichloroethane	10,4	10,8	10,8
86.	Dichlorofluoromethane (freon 21)	20,7	21,6	21,6
87.	Difluorochloromethane (freon 22)	0,5	0,5	0,5
88.	1,2-Dichloropropane	45,5	47,5	47,5
89.	Methylene chloride	2,1	2,2	2,2
90.	Tetrachlorethylene (perchlorethylene)	89,6	93,5	93,5
91.	Tetrafluoroethylene	12,8	13,4	13,4
92.	Trichloromethane (chloroform)	174,1	181,6	181,6
93.	Trichlorethylene	10,4	10,8	10,8
94.	Tribromomethane (bromoform)	43,5	45,4	45,4
95.	Carbon tetrachloride (carbon tetrachloride)	9,5	9,9	9,9
96.	Chlorobenzene	53,8	56,1	56,1
97.	Chloroethane (ethyl chloride)	28,7	29,9	29,9
98.	Epichlorohydrin	28,7	29,9	29,9
99.	Hydroxymethylbenzene (cresol, a mixture of isomers: ortho-, meta-, para-)	263,7	275	275
100.	Amyl alcohol	524,8	547,4	547,4
101.	Butyl alcohol	53,8	56,1	56,1
102.	Isobutyl alcohol	53,8	56,1	56,1
103.	Isooctyl alcohol	35,1	36,6	36,6
104.	Isopropyl alcohol	9,5	9,9	9,9
105.	Methyl alcohol	12,8	13,4	13,4
106.	Propyl alcohol	19,2	20	20
107.	Ethanol	1	1,1	1,1
108.	Cyclohexanol	89,6	93,5	93,5
109.	Terephthalic acid dimethyl ester	524,8	547,4	547,4
110.	Dinil (a mixture of 25% diphenyl and 75% diphenyloxide)	524,8	547,4	547,4
111.	Diethyl ether	15,3	16	16
112.	Methylal (dimethoxymethane)	35,1	36,6	36,6
113.	Ethylene glycol monoisobutyl ether (butyl celloslose)	19,2	20	20
114.	Butyl Acrylate (Acrylic Acid Butyl Ester)	350,7	365,8	365,8
115.	Butyl acetate	53,8	56,1	56,1
116.	Vinyl acetate	35,1	36,6	36,6

117.	Methyl acrylate (methylprop-2-enoate)	424,4	442,8	442,8
118.	Methyl acetate	76,8	80,1	80,1
119.	Ethyl acetate	53,8	56,1	56,1
120.	Acrolein	174,1	181,6	181,6
121.	Aldehyde oil	350,7	365,8	365,8
122.	Acetaldehyde	524,8	547,4	547,4
123.	Formaldehyde	1748,5	1823,6	1823,6
124.	Acetone	15,9	16,6	16,6
125.	Acetophenone (methylphenyl ketone)	1748,5	1823,6	1823,6
126.	Methyl ethyl ketone	53,8	56,1	56,1
127.	Wood alcohol brand A solvent (acetone ether) (acetone control)	44,5	46,5	46,5
128.	Wood alcohol brand E solvent (ethereal acetone) (acetone control)	76,8	80,1	80,1
129.	Cyclohexanone	133,1	138,8	138,8
130.	Maleic anhydride (vapor, aerosol)	102,4	106,8	106,8
131.	Acetic anhydride	174,1	181,6	181,6
132.	Phthalic anhydride	53,8	56,1	56,1
133.	Dimethylformamide	174,1	181,6	181,6
134.	Epsilon-caprolactam (hexahydro-2H-azepin-2-one)	89,6	93,5	93,5
135.	Acrylic acid (prop-2-enic acid)	133,1	138,8	138,8
136.	Valerian Acid	524,8	547,4	547,4
137.	Kapron acid	1049,6	1094,7	1094,7
138.	Oil acid	524,8	547,4	547,4
139.	Propionic acid	350,7	365,8	365,8
140.	Acetic acid	89,6	93,5	93,5
141.	Formic acid	43,5	45,4	45,4
142.	Isopropyl benzene hydroperoxide (cumene hydroperoxide)	350,7	365,8	365,8
143.	Propylene oxide	66,6	69,4	69,4
144.	Ethylene oxide	174,1	181,6	181,6
145.	Dimethyl sulfide	66,6	69,4	69,4
146.	Aniline	174,1	181,6	181,6
147.	Dimethylamine	1049,6	1094,7	1094,7
148.	Triethylamine	38,4	40,1	40,1

149.	Nitrobenzene	657,9	686,2	686,2
150.	Acrylonitrile	174,1	181,6	181,6
151.	N, N1-Dimethylacetamide	896	934,5	934,5
152.	Toluene diisocyanate	263,7	275	275
153.	Gasoline (petroleum, low-sulfur in terms of carbon)	3,1	3,2	3,2
154.	Shale gasoline (in terms of carbon)	105	109,5	109,5
155.	Kerosene	6,4	6,7	6,7
156.	Mineral oil	43,5	45,4	45,4
157.	Turpentine	6,4	6,7	6,7
158.	Solvent naphtha	28,7	29,9	29,9
159.	White Spirit	6,4	6,7	6,7

Fee rates for discharge of pollutants into water bodies

1.	Acrylonitrile (acrylic acid nitrile)	70522,9	73553,2	73553,2
2.	Aluminum	17630,7	18388,3	18388,3
3.	Alkylbenzylpyridinium chloride	814545	849960	849960
4.	Alkylsulfonates	1142,6	1192,3	1192,3
5.	Ammonium ion	1140,6	1190,2	1190,2
6.	Ammonia	14105,6	14711,7	14711,7
7.	Aniline (aminobenzene, pheniamine)	5702454,6	5950387,4	5950387,4
8.	Sodium acetate	1766,4	1842,3	1842,3
9.	Acetaldehyde	1900,3	1982,9	1982,9
10.	Acetone (dimethyl ketone, propanone)	14105,6	14711,7	14711,7
11.	Acetonitrile	814,5	850	850
12.	Barium	814,5	850	850
13.	Beryllium	1900943,1	1983592,8	1983592,8
14.	Benz (a) pyrene	70523113	73553403	73553403
15.	Benzene and its homologs	1413,1	1473,8	1473,8
16.	Boron	41484,8	43267,4	43267,4
17.	Boric acid	41484,8	43267,4	43267,4
18.	Bromodichloromethane	19008,8	19835,3	19835,3
19.	Bromide anion	640	667,5	667,5
20.	Butanol	19008,8	19835,3	19835,3
21.	Butyl acetate	1900,3	1982,9	1982,9

22.	Butyl methacrylate	705231,4	735534,3	735534,3
23.	Vanadium	705231,4	735534,3	735534,3
24.	Vinyl acetate	70522,9	73553,2	73553,2
25.	Vinyl chloride	71280864	74380032	74380032
26.	Bismuth	7052,8	7355,9	7355,9
27.	Tungsten	712808,6	743800,3	743800,3
28.	Hexane	1413,1	1473,8	1473,8
29.	Hydrazine hydrate	1900943,1	1983592,8	1983592,8
30.	Glycerin (propane-1,2,3-triol)	706,6	736,9	736,9
31.	Dibromochloromethane	19008,8	19835,3	19835,3
32.	1,2-Dichloroethane	7052,8	7355,9	7355,9
33.	1,4-dihydroxybenzene (hydroquinone)	705231,4	735534,3	735534,3
34.	2,6-dimethylaniline	19008,8	19835,3	19835,3
35.	Dimethylamine (N-methylmethanamine)	141056	147117	147117
36.	Dimethyl mercaptan (dimethyl sulfide)	70523113	73553403	73553403
37.	2,4-dinitrophenol	7052311	7355340	7355340
38.	Dimethylformamide	1900,3	1982,9	1982,9
39.	o-dimethyl phthalate (dimethylbenzene-1,2-dicarbonate)	1140,6	1190,2	1190,2
40.	1,2-Dichloropropane	14105,6	14711,7	14711,7
41.	Cis-1,3-dichloropropene	141056	147117	147117
42.	Trans-1,3-dichloropropene	70522,9	73553,2	73553,2
43.	2,4-Dichlorophenol (hydroxydichlorobenzene)	7052311	7355340	7355340
44.	Dodecylbenzene	7052311	7355340	7355340
45.	Dichloromethane (methylene chloride)	70,7	73,7	73,7
46.	Iron	5702,9	5950,8	5950,8
47.	Cadmium	141045,8	147106,3	147106,3
48.	Potassium	15,9	16,6	16,6
49.	Calcium	3,1	3,2	3,2
50.	Caprolactam (hexahydro-2H-azepin-2-one)	70522,9	73553,2	73553,2
51.	Urea (urea)	9,5	9,9	9,9
52.	Cobalt	70522,9	73553,2	73553,2
53.	Silicon (silicates)	70,7	73,7	73,7
54.	o-Cresol (2-methylphenol)	190088,1	198352,8	198352,8

55.	p-Cresol (4-methylphenol)	176307,2	183882,9	183882,9
56.	Xylene (o-xylene, m-xylene, p-xylene)	14105,6	14711,7	14711,7
57.	Ligninsulfonic acids	706,6	736,9	736,9
58.	Lignosulfonates	706,6	736,9	736,9
59.	Lithium	7127	7436,9	7436,9
60.	Magnesium	14,3	14,9	14,9
61.	Manganese	70522,9	73553,2	73553,2
62.	Copper	705231,4	735534,3	735534,3
63.	Methanol (methyl alcohol)	7052,8	7355,9	7355,9
64.	Methyl acrylate (methylprop-2-enoate, acrylic acid methyl ester)	705231,4	735534,3	735534,3
65.	Methanethiol (methyl mercaptan)	3527680	3679260	3679260
66.	Methyl acetate	1900,3	1982,9	1982,9
67.	Methol (1-hydroxy-4- (methylamino) benzene)	950405,3	991727,3	991727,3
68.	Molybdenum	587694,1	612946,6	612946,6
69.	Monoethanolamine	70522,9	73553,2	73553,2
70.	Arsenic and its compounds	14105,6	14711,7	14711,7
71.	Sodium	6,4	6,7	6,7
72.	Naphthalene	176307,2	183882,9	183882,9
73.	Oil products (oil)	14105,6	14711,7	14711,7
74.	Nickel	70522,9	73553,2	73553,2
75.	Nitrate anion	14,3	14,9	14,9
76.	Nitrite anion	7129,1	7439	7439
77.	Nitrobenzene	70522,9	73553,2	73553,2
78.	Tin and its compounds	5092,2	5313,6	5313,6
79.	1,1,2,2,3-pentachloropropane	705231,4	735534,3	735534,3
80.	Pentachlorophenol	70522,9	73553,2	73553,2
81.	Pyridine	70522,9	73553,2	73553,2
82.	Polyacrylamide	7127	7436,9	7436,9
83.	Propanol	1900,3	1982,9	1982,9
84.	Rodanide ion	5702,9	5950,8	5950,8
85.	Rubidium	7052,8	7355,9	7355,9
86.	Mercury and its compounds	70523113	73553403	73553403
87.	Lead	95039,9	99172,1	99172,1

88.	Selenium	285121,8	297518,4	297518,4
89.	Silver	14105,6	14711,7	14711,7
90.	Carbon disulfide	706,6	736,9	736,9
91.	ASPAV (anionic synthetic surfactants)	1142,6	1192,3	1192,3
92.	KSPAV (cationic synthetic surfactants)	1142,6	1192,3	1192,3
93.	NSAID (non-ionic synthetic surfactants)	1142,6	1192,3	1192,3
94.	Turpentine	3527,7	3679,3	3679,3
95.	Styrene (ethenylbenzene, vinylbenzene)	7052,8	7355,9	7355,9
96.	Strontium	1426,2	1488,2	1488,2
97.	Sulfate anion (sulfates)	5,8	6	6
98.	Sulphides	114048,7	119007,4	119007,4
99.	Sulfite anion	300,2	313,2	313,2
100.	Antimony	14105,6	14711,7	14711,7
101.	Thallium	7052311	7355340	7355340
102.	Tellurium	190088,1	198352,8	198352,8
103.	1,1,1,2-tetrachloroethane	70522,9	73553,2	73553,2
104.	Tetrachlorethylene (perchlorethylene)	3525,1	3676,6	3676,6
105.	Carbon tetrachloride (carbon tetrachloride)	705231,4	735534,3	735534,3
106.	Tetraethyl lead	70523113	73553403	73553403
107.	Thiocarbamide (thiourea)	706,6	736,9	736,9
108.	Thiosulfates	190	198,3	198,3
109.	Titanium	9503,4	9916,6	9916,6
110.	Toluene	1413,1	1473,8	1473,8
111.	Trilon B (ethylenediaminetetraacetic acid disodium salt)	1413,1	1473,8	1473,8
112.	Triethylamine	706,6	736,9	736,9
113.	Trichlorobenzene (sum of isomers)	705231,4	735534,3	735534,3
114.	1,2,3-Trichloropropane	141056	147117	147117
115.	2,4,6-Trichlorophenol	7052311	7355340	7355340
116.	Trichlorethylene	70522,9	73553,2	73553,2
117.	Acetic acid	70522,9	73553,2	73553,2
118.	Phenol, hydroxybenzene	705231,4	735534,3	735534,3
119.	Formaldehyde (methane, formic aldehyde)	7052,8	7355,9	7355,9
120.	Phosphates (phosphorus)	3527,7	3679,3	3679,3

121.	Fluoride anion	942,1	982,6	982,6
122.	Furfural	70522,9	73553,2	73553,2
123.	Free chlorine, dissolved and organochlorine compounds	70523113	73553403	73553403
124.	Chlorate anion	14105,6	14711,7	14711,7
125.	Chlorobenzene	705231,4	735534,3	735534,3
126.	Chloroform (trichloromethane)	141056	147117	147117
127.	Chlorophenols	7052311	7355340	7355340
128.	Chloride anion (chlorides)	2,3	2,4	2,4
129.	Trivalent chromium	8145,5	8499,6	8499,6
130.	Chromium hexavalent	28512,2	29751,8	29751,8
131.	Cesium	706,6	736,9	736,9
132.	Cyanide anion	14105,6	14711,7	14711,7
133.	Cyclohexanol	705231,4	735534,3	735534,3
134.	Zinc	70522,9	73553,2	73553,2
135.	Zirconium	8145,5	8499,6	8499,6
136.	Ethanol	70522,9	73553,2	73553,2
137.	Ethyl acetate	2852,5	2976,5	2976,5
138.	Ethylbenzene	705231,4	735534,3	735534,3
139.	Ethylene glycol (glycol, ethanediol-1,2)	2821,1	2942,3	2942,3
140.	Aldrin (1,2, W, 10,10-hexachloro-1,4,4a, 5,8,8a-hexahydro-1,4-endoexo-5,8-dimethanonaphthalene)	70523113	73553403	73553403
141.	Atrazine (6-chloro-N-ethyl-N ² -(1-methylethyl)-1,3,5-triazine-2,4-diamine)	141045,8	147106,3	147106,3
142.	Hexachlorobenzene	705231,4	735534,3	735534,3
143.	Hexachlorocyclohexane (alpha, beta, gamma isomers)	70523113	73553403	73553403
144.	2,4-D (2,4-dichlorophenoxyacetic acid and derivatives)	7065,6	7369,2	7369,2
145.	Dieldrin (1,2,3,4,10,10-hexachloro-exo-6,7-epoxy-1,4,4a, 5,6,7,8,8a-octahydro-1,4-endo, exo- 5,8-dimethanonaphthalene)	70523113	73553403	73553403
146.	Dioxins	70523113	73553403	73553403
147.	Captan (3a, 4, 7, 7a-tetrahydro-2 - [(trichloromethyl) thio] -1n-isoindole-1, 3 (2n) -dione)	950405,3	991727,3	991727,3
148.	Karbofos (diethyl (dimethoxyphosphonothionyl) tiobutanedionate)	70523113	73553403	73553403

149.	4,4'-DDT (p, p'-DDT, 4,4'-dichlorodiphenyltrichloromethyl)	70523113	73553403	73553403
150.	4,4'-DDD (dichlorodiphenyldichloroethane)	70523113	73553403	73553403
151.	Prometrin (2,4-Bis (isopropylamino) -6-methylthio-simm-triazine)	14105,6	14711,7	14711,7
152.	Simazine (b-chloro-N, N'-diethyl-1,3,5-triazines-2,4-diamine)	352768	367926	367926
153.	Polychlorinated biphenyls (PCB 28, PCB 52, PCB 74, PCB 99, PCB 101, PCB 105, PCB 110, PCB 153, PCB 170)	70523113	73553403	73553403
154.	Trifluralin (2,6-dinitro-N, N-dipropyl-4-(trifluoromethyl) aniline)	2350771,2	2451780,9	2451780,9
155.	THAN (sodium trichloroacetate, TCA)	20149,8	21015,6	21015,6
156.	Fozalon (O, O-diethyl- (S-2,3-dihydro-6-chloro-2-oxobenzoxazol-3-ylmethyl) -dithiophosphate)	23507706,9	24517803,7	24517803,7
157.	BOD total.	233	243	243
158.	Suspended solids	937	977,2	977,2
159.	Solid (dry) residue	0,5	0,5	0,5

Remark.

The rate of payment for discharges of suspended solids is applied using a coefficient defined as the reciprocal of the amount of permissible increase in the content of suspended solids when discharging wastewater to the background of the water body and the background concentration of suspended substances in the water of a water body adopted when establishing standards for maximum permissible discharges of pollutants.

Fee rates for waste disposal

1.	I class of hazard wastes (extremely hazardous)	4452,4	4643,7	4643,7
2.	II class of hazard wastes (highly hazardous)	1908,2	1990,2	1990,2
3.	III class of hazard wastes (prevention regimerately hazardous)	1272,3	1327	1327
4.	IV class of hazard wastes (low hazard) (excluding solid municipal wastes of IV class of hazard (low hazard)	635,9	663,2	663,2
5.	V class of hazard wastes(virtually harmless):			
	exploration industry	1	1,1	1,1
	Processing industry	38,4	40,1	40,1
	other	16,6	17,3	17,3

Annex 2 Water tax (Extract form Tax Code of RF)

Chapter 25_2 Water Tax.

Tax for water consumption

Economic region	Basins of lakes and rivers	Tax rate in RUR for 1000 m3 of water consumed	
		From surface water bodies	From subsurface water bodies
Northern	Volga	300	384
	Neva	264	348
	Pechora	246	300
	northern Dvina	258	312
	Other rivers and lakes	306	378
North-West	Volga	294	390
	Western Dvina	288	366
	Neva	258	342
	Other rivers and lakes	282	372
Central	Volga	288	360
	Dnieper	276	342
	Don	294	384
	Western Dvina	306	354
	Neva	252	306
	Other rivers and lakes	264	336
Volgo -Vyatka	Volga	282	336
	northern Dvina	252	312
	Other rivers and lakes	270	330
Central- Chernozymny	Dnieper	258	318
	Don	336	402
	Volga	282	354
	Other rivers and lakes	258	318
Povoljsky	Volga	294	348
	Don	360	420
	Other rivers and lakes	264	342
North- Caucasus	Don	390	486
	Kuban	480	570
	Samur	480	576

	Sulak	456	540
	Terek	468	558
	Other rivers and lakes	540	654
Urals	Volga	294	444
	Ob	282	456
	Ural	354	534
	Other rivers and lakes	306	390
North - Siberian	Ob	270	330
	Other rivers and lakes	276	342
East - Siberian	Amur	276	330
	Yenisei	246	306
	Lena	252	306
	Ob	264	348
	Lake Baikal and its basin	576	678
	Other rivers and lakes	282	342
Far East	Amur	264	336
	Lena	288	342
	Other rivers and lakes	252	306
Kaliningrad region	Neman	276	324
	Other rivers and lakes	288	336;

the territorial sea of the Russian Federation and internal sea waters within the established quarterly (annual) limits of water use:

Sea	Tax rate in RUR for 1000 m3 of sea water
Baltic	8,28
White	8,40
Barents	6,36
Azov	14,88
Black	14,88
Caspian	11,52
Kars	4,80
Laptev's	4,68
East-Siberian	4,44
Chukotka	4,32
Bering	5,28
Pacific ocean (within the territorial sea of the RF)	5,64

Okhotsk	7,68
Japanese	8,04;

2) when using the surface water bodies (lakes and rivers) :

surface water bodies, except for wood alloy in rafts and pouches

Economic district	Tax rate (thousand RUR per year) per 1 sq km of waters used
North	32,16
Northwest	33,96
Central	30,84
Volga-Vyatka	29,04
Central chernozyomny	30,12
Povolzhsky	30,48
The North Caucasus	34,44
Ural	32,04
West Siberian	30,24
East-Siberian	28,20
Far-East	31,32
Kaliningrad region	30,84;

territorial sea of the Russian Federation and inland sea waters:

Sea	Tax rate (thousands of RUR per year) per 1 sq km of waters used
Baltic	33,84
White	27,72
Barents	30,72
Azov	44,88
Black	49,80
Caspian	42,24
Kars	15,72
Laptev's	15,12
East-Siberian	15,00
Chukotka	14,04
Bering	26,16
Pacific ocean (within the territorial sea of the RF)	29,28
Okhotsk	35,28
Japanese	38,52;

Note: Tax rates are applied in 2019-with a coefficient of 2.01, in 2020-with a coefficient of 2.31, in 2021-with a coefficient of 2.66, in 2022-with a coefficient of 3.06, in 2023 - with a coefficient of 3.52, in 2024 - with a coefficient of 4.05, in 2025 - with a coefficient of 4.65.

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Environmental impact fee calculation in Russia for EIA – modern practices

Учебное пособие издано в авторской редакции

Главный редактор – Кирсанов К.А.

Вёрстка – Кирсанов К.К.

Ответственный за выпуск - Алимова Н.К.

Учебное издание

Системные требования:

IBM PC с процессором Pentium 2; ОЗУ 128 Мб; операц. система Windows XP; программа Adobe PDF Reader; CD-ROM дисковод, мышь.

Режим доступа: <https://izd-mn.com/PDF/20MNNPU19.pdf>, свободный. – Загл. с экрана. - Яз. рус., англ.

ООО «Издательство «Мир науки»

«Publishing company «World of science», LLC

Адрес:

Юридический адрес — 127055, г. Москва, пер. Порядковый, д. 21, офис 401.

Почтовый адрес — 127055, г. Москва, пер. Порядковый, д. 21, офис 401.

<https://izd-mn.com>

**ДАННОЕ ИЗДАНИЕ ПРЕДНАЗНАЧЕНО ИСКЛЮЧИТЕЛЬНО ДЛЯ ПУБЛИКАЦИИ НА
ЭЛЕКТРОННЫХ НОСИТЕЛЯХ**