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PROBLEMS OF ENVIRONMENTAL POLLUTION DURING OIL REFINING

Associate Professor.1 Ruziyev. I. Kh.
2Mirzakobilov B. Yu.
3 Davronova B. Sh.
1Institute of Biochemistry of Samarkand State University

Sh. Rashidov
2Emergency Situations Office of the Samarkand Region.
Senior Teacher of the Center for Security and Life Learning.

Abstract
In this paper, the effects of oil and oil products on the ecosystem are considered, soil - contaminated with oil products, accidents, accompanied by the release or threat of the release of chemically hazardous substances (HOOV) as a result of explosions that lead to the destruction of technological networks and engineering structures. In addition, tasks in modern conditions are given that minimize undesirable consequences, rationally using natural conditions.

Keywords: Environmental pollution, oil refining, emissions of harmful substances, water and soil pollution, oil waste, atmospheric emissions, waste disposal, exposure to ecosystems, oil spills, and toxic compounds.

Introduction

As you know, in the process of developing oil fields, the most active impact on the natural environment is carried out within the territories of the deposits themselves, primarily main pipelines, in the nearest settlements. In this case, there is a violation of vegetable, soil and snow cover, surface runoff and microrelief of the territory. Such violations lead to shifts in thermal and wet modes of the ground stratum and to a significant change in its general condition, which leads to irreversible consequences. Oil production also leads to a change in deeply losing horizons of the geological environment. Irreversible deformations of the earth's surface occur as a result of the extraction of oil, gas and groundwater from the bowels that support reservoir pressure. In world practice, there are enough examples showing how significant the lowering of the earth's surface during the long -term operation of deposits can be [1].

Environmental emissions of oil hydrocarbons and oil spills are of great danger to the environment. Environmental problems of oil refining originate already at the stage of developing the oil raw materials field and its transportation to oil refineries, since the main environmental pollutants are formed in the process of oil production in the form of hydrocarbons that make up about 50% of the total emission [3].

CO accounts for about 48%, while the share of various solids - 4.2%, taking into account the fact that the share of capturing harmful substances accounts for no more than 2.5%.

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The chemical composition of oil by 57 % consists of aliphatic hydrocarbons, while the content of aromatic hydrocarbons is about 29 %. The remaining 14 % fall on asphalt and other compounds [2].In the process of oil production and processing, about 48 % of hydrocarbons and 44 % of carbon monoxide are formed, which negatively affect the environment, acting as pollutants.

In addition, about 30 different metals are found in oil, which makes oil pollution with a complex and multicomponent phenomenon. This leads to negative consequences for all elements of the ecosystem.The greatest toxicity for living organisms is provided by a light fraction of oil, since it is most mobile and quickly spreads in soil, water and air [2].

A decrease in its content reduces the toxicity of oil, however, the share of aromatic compounds increases, which in turn increases their harmful effects.The effect of oil and oil products on the ecosystem affects its various components. The soil pollution leads to a change in its properties, in particular, air exchange worsens, the flow of water and the necessary nutrients is difficult. As a result, the life of soil microorganisms and plants is disturbed, and the soil loses its fertility. The degradation of the vegetation cover entails further changes in the ecosystem.The soil contaminated with oil products has reduced water resistance, moisture content and hygroscopic humidity compared to clean soils. This reduces their ability to absorb and accumulate moisture, which exacerbates their degradation.

Accidents, accompanied by the release or threat of emission of chemically hazardous substances (HOV), most often occur at chemically dangerous objects as a result of explosions leading to the destruction of technological networks and engineering structures. In such cases, chemicals capable of causing serious harm to people, animals, as well as pollute air, soil, water and various objects fall into the environment [6].

Chemically hazardous substances are used in various industries, including chemical, oil refining, pulp-paper, machine-building, medical and defense.

In addition, they are used at enterprises with refrigerators, such as meat processing plants and warehouses, where ammonia is used as a refrigerant.

One of the most common toxic substances in industry is chlorine.

It is used to whiten tissues and cellulose at textile plants, disinfect water at watering stations, as well as when disinfecting warehouses.Every day, through roads, railway tracks and trunk pipelines, hundreds of tons of chemically dangerous substances in tanks, cylinders and bottles are transported, which increases the risk of accidents.By the level of danger of exposure to a person, chemicals are divided into four classes:

* I class - extremely dangerous,
* II class - highly hazardous,
* III class - moderately dangerous,
* IV class - low -hazardous.

According to the clinical classification, HOV is divided into six groups, depending on their effects on the human body:

1. Putings with a predominantly suffocating effect (for example, chlorine).
2. Temninity of a common action (hydrogen sulfide, nitrogen oxides).
3. Supplies with a suffocating and general -coded effect (phosgen).

4. Neurotropic poisons (serowlerod).
5. Surients with a suffocating and neurotropic effect (ammonia).
6. Metabolic poisons (ethylene oxide).

In the modern world, there are many methods aimed at effective environmental protection from oil pollution and oil products.

Among the most common, mechanical, chemical, physical, physicochemical and microbiological methods are distinguished [4].

In addition, new cleaning technologies are constantly being developed, such as the biosorption method, ozoning of water, the use of magnets, fleet-quoting cleaning, the use of magnetic nanoparticles, biological cleaning and other innovative approaches [5].

The solution to this problem requires primarily the deepening of oil refining, which will lead to its rational use and improve the state of the environment.

In our republic, environmental justifications are created to ensure environmental safety, organizational, legal, economic issues.

The main task in modern conditions is to minimize undesirable consequences, rationally using natural conditions.

To improve the environmental situation, the oil industry of our country should fulfill the following conditions:

make up for hydrocarbons and develop new oil and gas provinces in remote areas;

increase the level of professional training of personnel and apply technologies in order to most effectively conduct reconnaissance and development of new oil and gas fields;

improve the state of the environment, as well as compensate or eliminate the environmental consequences of the activities of oil companies for the environment;

Use oil gas.

To solve the problem of processing and disposal of waste, it is necessary to constantly improve technologies and methods. This includes processes such as recycling, heat treatment and use of neutralization methods, which helps to reduce the negative impact on the environment. In addition, it is important to introduce strict regulatory and legislative measures that are obliged by companies engaged in oil refining, comply with environmental standards and comply with the requirements to reduce waste emissions and disposal.

Effective cooperation between the government, industrial enterprises and the public also plays a key role in solving environmental problems of oil refining.

To prevent oil spills, enterprises adhere to a number of rules:

* Control the state of the oil pipeline, taking into account its service life, and timely carry out the necessary work on its maintenance;
* Strictly follow the established standards of fence and fuel pumping;
* Prepared for possible changes in weather conditions, such as spring floods.

However, enterprises are not always responsible for leakage of oil.

Sometimes spills occur due to abandoned deposits.

The introduction of new standards and technologies, as well as the use of energy-saving and more environmentally friendly solutions will reduce the negative impact on the environment

when using oil and gas chemistry in industry and everyday life. This will benefit the companies themselves, including thanks to the expansion of sales markets.

In addition, compliance with international environmental safety standards strengthens the positions of Russian companies in the world market, allowing them to declare themselves as an environmentally responsible business.

The coverage of the problem and the increase in public awareness about the importance of environmentally stable oil refining methods are also necessary.

Public pressure can stimulate companies to introduce more environmentally friendly technologies and practices, as well as support the introduction of legislative measures to protect the environment.

In general, oil refining is inevitably related to some environmental problems, but with the right approach and joint efforts of society, government and industry, significant progress in reducing their impact on the environment can be achieved.

Innovations, strict compliance with standards and the active participation of society are key factors that can help in solving this important problem and ensure a more stable future for our planet.

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