Ecotoxicant Determination Research in Waste Formed in the Oil Industry

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Abstract. In the modern world, the rapid development of industry, the aggravation of the demographic situation, has led to the excessive use of natural resources by the environment. Against this background, the oil and gas industry has a special role in the use of energy resources. As a result of the rapid development of the oil and gas industry, a large number of substances with ecotoxic effects are released into the environment. Research on ecotoxic substances is one of the most important factors. Therefore, using physicochemical, biological and bioindication methods, we conducted research to assess the possible adverse effects of mercaptans on the environment, living things and finally humans, hydrogen-sulfide, hydrogen chloride, naphthenic, polycyclic hydrocarbons with ecotoxic effects.

Keys words: *Ecotoxicant, oil, ecology, wastewater, gas mixture*

Determination of the impact of ecotoxicants on the environment, depending on the composition and volume of wastes generated in the oil and gas industry, is currently considered one of the most important research topics in ecology and environmental chemistry, biology and physics. Thus, even the smallest amount of all wastes, even if they are released into the atmosphere not only in accordance with environmental standards, but also in small quantities below the sanitary standards, have a long-term negative impact on all living things in the environment and human health. That is why, in connection with the purpose of our research work, research has been conducted in several areas to determine the toxic substances in the oil industry, ie in the waste generated in oil production and refining enterprises.

Determination of the impact of ecotoxicants on the environment depending on the composition and volume of wastes generated in the oil and gas industry is currently considered to be one of the most important research topics in ecology and ecological chemistry, biology and physics. Thus, even when the smallest amount of all wastes is released into the atmosphere, even in the smallest amount of these harmful substances, even if they are released below the sanitary norms, they have a long-term negative impact on all living things in the environment and human health. That is why, in connection with the purpose of our research work, research has been conducted in several areas to determine the toxic substances in the oil industry, ie in the composition of wastes generated in oil production and refining enterprises.

In particular, as noted in the previously mentioned literature, we first conducted research to determine the content of ecotoxicants in the oil and gas industry and their source. As a continuation of this work, we conducted research in several areas to determine which ecotoxicants are in the liquid waste, ie industrial wastewater generated in the oil industry. Thus, during the analysis of ecotoxicants and other harmful substances in water samples taken from the oil refining industry, it was found that in some cases, the composition of industrial wastewater, which always changes, is mainly H2S gas, HCL, PH3 gas, NH3 mercaptans, naphthenic and the same. polycyclic aromatic hydrocarbons have been identified.

In particular, as previously mentioned in a new literature, we first conducted research to determine the content of ecotoxicants in the oil and gas industry and their source. As a continuation of this work, we conducted research in several areas to determine which ecotoxicants are in the liquid waste, ie in the industrial wastewater generated in the oil industry. Thus, the identification of ecotoxicants and other harmful substances in water samples taken from the oil refining industry. During the analysis, it was determined that in some cases, the composition of industrial wastewater, which always changes, contains mainly H2S gas, HCL, PH3 gas, NH3 mercaptans, naphthenic and polycyclic aromatic hydrocarbons.

Thus, the amount of harmful substances in the treated water, even in ecological norms, after analyzing the amount of organic compounds in the water, ie the mixture of oil and oil products waste, and determining the amount of organic compounds released by us on the basis of primary chemical methods and extraction. identified in many ways. It can be said that complete analysis of wastewater generated in the oil refining industry was carried out both before and after treatment. Our experience has shown once again that H2S gas, as well as HCL and other organic compounds, which are dissolved in untreated industrial wastewater entering treatment plants, are separated from these waters in a short period of time, ie evaporated and released into the environment.

Thus, during the evaporation of these harmful substances in the flask in open special containers at room temperature as well as at a temperature of 35-40 degrees in the laboratory under the suction cupboard with the help of well-known boiler analyzers Multivari, Testo 350XL, DRAGER and other devices. The analysis showed that as the temperature increased, the concentration of these harmful substances, mainly H_2S, HCl, as well as naphthenic hydrocarbons and other hydrocarbons, increased several times.

Thus, after analyzing the amount of organic compounds in the samples, ie the mixture of oil and oil product wastes, and determining the amount of organic compounds released by us on the basis of primary chemical methods and at the same time by extraction, the amount of harmful substances in the treated water is the same. identified in many ways. It can be said that complete analysis of wastewater generated in the oil refining industry was carried out both before and

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At the same time, during our research, it was determined that even a large amount of H2S in the treated industrial wastewater, even with an average value of 5-6 mg per 1 m3 of air, was released into the air. At the same time, HCL was determined to be about 0.7-1, and the amount of NH was also determined to be the same. As it is known, the composition of water in the oil refining industry changes at any time, and it is impossible for these waters to always have the same composition as a result of changes during technological processes.

At the same time, during our research, it was determined that even a large amount of H_2S in the treated industrial wastewater, even with an average value of 5-6 mg per 1 m3 of air, was released into the air. At the same time HCl is about 0.7-1, as is NH. As it is known, the composition of water in the oil refining industry changes at any time, and it is impossible for these waters to always have the same composition as a result of changes during technological processes.

Therefore, during the experiments, we conducted several experiments and found that the amount of harmful substances in the water samples taken at different times was very different from each other. During the experiments, the harmful substances in the wastewater, mainly in the form of wastewater, should be monitored in the first place to determine their impact on the environment. think.

Thus, during the analysis of the composition of industrial waters, we used infrared spectrophotometry as well as luminescence methods. At the same time, in the oil email industry, the evaporation of ecotoxicants into the environment over time, their subsequent impact on other areas, is often their primary concern. carried out and so on. As mentioned earlier, we have also determined that large amounts of phenol are present in industrial effluents during evaporation into the atmosphere.

Therefore, during the experiments, we conducted several experiments and found that the amount of harmful substances in the water samples taken at different times was also very different from each other. During the experiments, the harmful substances in the wastewater, mainly in the form of wastewater, should be monitored in the first place to determine their impact on the

environment. think. Thus, during the analysis of the composition of industrial waters, we used infrared spectrophotometry as well as luminescence methods. At the same time, in the petroleum industry, the ecotoxicants that remain in the wastes are mainly released into the environment over a period of time. and so on. As mentioned earlier, the presence of large amounts of phenol in industrial effluents during evaporation into the atmosphere has also been identified by us.

However, when we determined the release of all harmful wastes into the atmosphere, ie phenol-type compounds, H_2S, HCl, naphthenic-type compounds, as well as Sr-containing compounds, it was once again determined that the results of such analyzes which in many cases meet environmental standards, and their negative impact on the environment as a whole and on human health have been identified more extensively in biological objects than in other research studies. Therefore, in general, the determination of the composition of the generated waste and in-depth analysis can be considered as one of the most important environmental requirements. If the amount of harmful substances in the waste is not determined in depth, the waste goes into the environment and it is impossible to determine.

However, when we determined the release of all harmful wastes into the atmosphere as ecotoxicant wastes, ie phenolic compounds, H_2S, HCl, naphthenic compounds, as well as Sr-containing compounds, it was once again determined that according to the results of such analyzes, , in many cases meet environmental standards, and their negative impact on the environment as a whole and on human health has been identified more extensively in biological objects than in other research studies. Therefore, in general, the determination of the composition of the generated waste and in-depth analysis can be considered as one of the most important environmental requirements. if the amount of harmful substances in the waste is not determined in depth, the waste will be released into the environment and it will be impossible to determine it.

Therefore, in comparison with the results of research conducted in other enterprises before us, we have determined that the composition of the waste, primarily in powder, liquid and solid form, formed in the oil production and refining industry, and at the same time quantitative indicators and volume are very different. The composition of wastes generated in the oil industry is very different from the composition of wastes generated in the oil refining industry.

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Thus, we have once again proved that all wastes generated in the oil refining industry contain a lot of ecotoxicants. However, in the oil extraction

industry, different results were obtained based on the analysis of wastewater samples taken during the treatment of oil from water and mechani rocks in tanks, as well as in determining the atmosphere around the tank farm. Thus, the composition of all types of waste generated in the oil production industry, both radiation-hazardous and radioactive substances, the composition of wastes generated during the processes carried out in several stages in the oil refining industry was much more complex than the composition of wastewater generated in oil production.

Therefore, one of the most important issues of the day is the control of the formation of wastes in the oil industry by physical and chemical methods, or rather by physical and chemical methods, as well as biological methods. Thus, in several laboratories and other laboratories we cooperate with, we are primarily concerned with the direct release of these harmful substances into the soil, as well as air pollution, and the determination of air pollution. Ecological assessment of the impact, first of all, physical and chemical analysis, and simultaneous biological research in our cooperating laboratories have been confirmed.

Thus, we have determined that the biotest method plays a special role in determining the results of more in-depth environmental monitoring. Thus, both physical and chemical biological analysis to determine the atmospheric environment, as well as biological methods and bioindication to determine the degree of water pollution, as well as the natural classification and analysis of all types of wastewater generated in the oil industry. We consider it reasonable. Biotest analysis of these waters is almost one of the main conditions.

We value the determination of ecotoxicants through the biotesting of drilling products and oil sludge and the application of bioindication methods.

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