

Environment Impacts and Composition, Properties and Biological Activity - Hydrocarbons

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Abstract

The Paper Aims: To figure out what are Analysis of problems with Composition, Properties and Biological Activity - Hydrocarbon.

By using descriptive method for primary model, synthesis methods and process analysis and analysis of difficulties and discussion, The study of this problem point that, to assess the environmental impact of hydrocarbons on the biosphere, an accurate knowledge of the physical properties and chemical composition of oil and gas. Numerous tragic examples of accidents, such as those associated with a leak hydrogen sulfide gases. Hydrogen sulfide, due to its higher density relative to air settles in the lowlands of the relief, accumulating in calm weather in concentrations up to lethal. This leads to the death of animals and the death of people. The latter could be avoid by going to elevated windward areas, i.e., knowing the physical properties of this toxic gas.

Keywords: Problems, Environment, Hydrocarbon, Composition.

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INTRODUCTION

Anomalous contents of V and a number of other metals are known in the Pudozhgorsk area (Karelia) and Kachkanar (Urals). On the Onega Peninsula in the Medvezhyegorsk region in the 80s in the largest vanadium-uranium deposit was discovered in the basement rocks, relating to uranium reserves (but not standards) to the 5 largest deposits in the world.

The paper presents related studies and analysis with COMPOSITION, PROPERTIES AND BIOLOGICAL ACTIVITY - HYDROCARBON.

Research questions

Question 1: What are related researches and What are analysis with COMPOSITION, PROPERTIES AND BIOLOGICAL ACTIVITY - HYDROCARBON?

METHODOLOGY

Authors have used qualitative and analytical methods, descriptive method for primary model, synthesis and discussion methods in this paper.

We also used historical materialism method.

MAIN FINDINGS

Analysis of Problem

Reference literature on the composition and properties of hydrocarbons is extensive. In the study, the characteristic composition and properties of hydrocarbons is given in the most concise form. The emphasis is on parameters directly related to the research topic: the composition and properties of hydrocarbons, as well as components impurities, including toxic ones, which will be discussed below. Knowledge of the properties of hydrocarbons raw materials is important in predicting the consequences of emergencies.

For example, the Usinsk disaster in 1994 (Komi Republic), associated with a breakthrough oil pipeline Kharyaga-Usinsk, was accompanied by an outpouring of at least 40 thousand tons of oil on surface. The pipeline was operated by JSC Komineft.

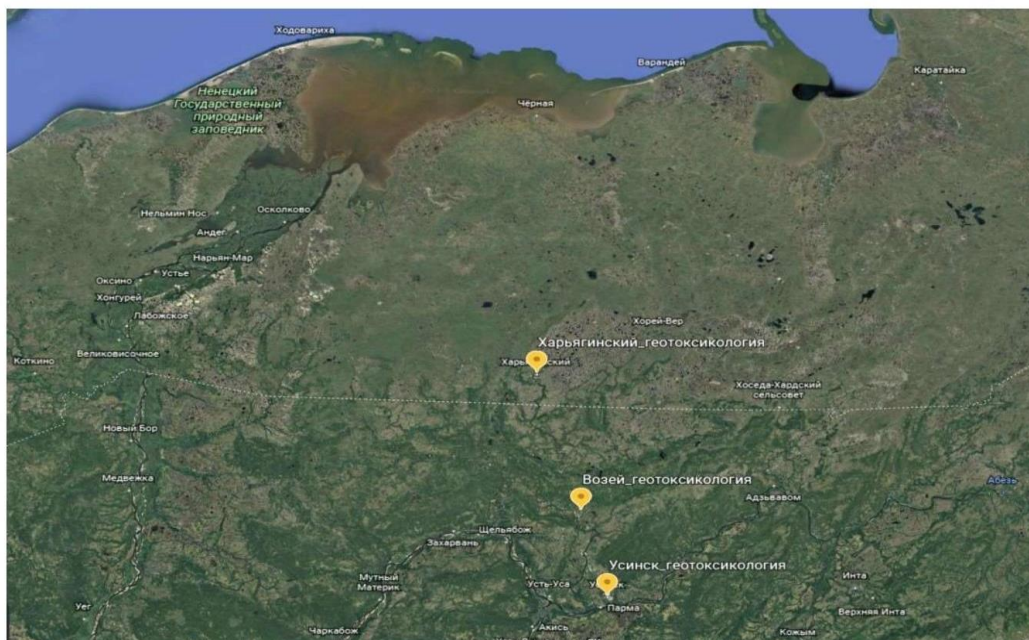


Figure 1. Reference points on the route of the emergency pipeline Usinsk-Vozei-Khar'yaga (mapping service "Yandex")

The oil pipeline was built in 1975 with gross technological violations, e.g. no cathodic protection of the pipe, no oil treatment plant Vozeyskoye deposit. Ignoring the microcomponent composition of the Vozeiya and Usinsk oil, aggressive to the metal of the pipeline and at the same time being a source of PTE. That is, in fact, it was a slowly developing man-made disaster, as a result irresponsible technical solution and the use of initially infield pipeline as a main pipeline, after connecting the Kharyaga section, figure The first large-scale leaks of oily liquid from the pipe, 15 tons, according to Institute "PechorNIPIneft", were recorded in 1988. In the summer of 1990, according to of the same institute, as a result of pipeline corrosion, 15 tons of oil. In 1992, two large accidental spills were recorded on the oil pipeline with pollution of the rivers Kolva, Mustache,

Pechora. In June and August 1992, as a result of two accidents in 400 and 290 tons of oil got into the environment from the pipeline (data from Komineft) 2000 tons in terms of pure oil (inspection certificate of the State Committee for Nature Protection of the Republic of Komi, July 1992). In August-September 1994, there was already a massive depressurization pipeline, numerous fistulas, an accident and oil ingress into the Kolva River. According to official data, 14 thousand tons of oil spilled onto the ground, according to unofficial data - about 100 thousand tons.

All were stopped oil fields that pumped oil through an emergency pipe. "Spilled oil covered an area of 79 hectares with a layer from several centimeters to one meter. This territory became unsuitable for the growth of all plant species and the life of most species animals".



Figure 2. The actual zone of destruction of the OS during the accident at the Usinsk field in 1994 year (mapping service "Yandex")

The pumped and spilled oil is paraffinic, and the end of summer and autumn of 1994 are cold.

Oil quickly settled on the surface, having lost its migration ability. This made it easy how collection, and rough cleaning

of the territory. The zone of actual damage was, according to different estimated 67-79 ha - Figure 3 and 4. As a result, the state of 1999 from oil pollution 400 hectares had to be cleared.



Figure 3. Pechora Bay (Sergey Yakutseny ©)

However, it is necessary to take into account the secondary pollution by oil, its decay products and PTE oil. The emergency oil pipeline crosses 12 large and local watercourses. Characteristic for Usinsk region, autumn rains led to the washout of oil and the spread of hydrocarbons and PTE oil along the riverbed zones of the Kolva and Usa rivers. According to Department of Defense environment and natural resources of the Republic, Komi in autumn 1994 on fishing networks were stained with oil products, and from residents of settlements in the area of the accident complaints were received, the caught fish acquired the smell and taste of kerosene.

It was found that r. Kolva is polluted for 30-40 km along the entire width of the river (100-150 m); the Usa river was polluted for 20 km along the entire width of the river (250-300 m); down the river Pechora, an oil film 250 m wide stretched from the village of Ust-Usa to the village of Shchelyabozh.

The total area of water areas subjected to oil pollution exceeded 20 km². Content oil products in the water of the Kolva River in October ranged from almost 200 MPC (maximum permissible concentrations) in the area of the accident up to 20 MPC in the mouth zone of the river

[materials Department of Environmental Protection of the Republic of Kazakhstan]. Obviously, the soil-vegetation complex, lake-marsh ecosystems of the floodplain part of the river systems will be restored many decades. In 1995, the World Bank provided JSC Komineft with a loan of 99 million US dollars, and a little later, a loan of 25 million was given to oilmen and European Bank for Reconstruction and Development. The total environmental damage to the environment was valued at \$400 million.

Under other climatic conditions or other physical and chemical composition of oil, the removal zone and damage to the natural environment of the north along the tributaries of the Kolva and Usa rivers into the Pechora River, and then into Barents Sea and Arctic Ocean, Figure 4.

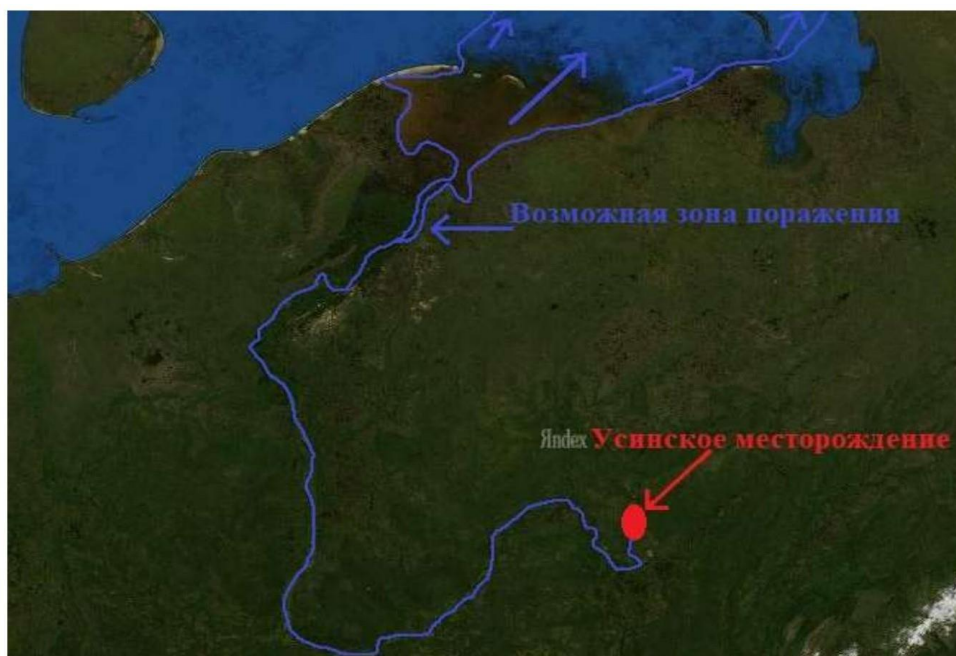


Figure 4. Possible affected area in case of an accident at the Usinskoye field (mapping service "Yandex").

This could have an extremely negative impact on the state of the environment of countries Arctic Basin. In addition, the Pechora River basin is unique and is a spawning site various types of fish, including salmon. In the river delta there are numerous nesting places for birds. Oil pollution on such a scale is in a position to worsen the natural environment for decades.

Next, Brief description of the composition and properties of natural hydrocarbons. Oil and condensates physical properties. Oil is a viscous liquid that varies in color from light amber to even milky to deep black. The heavier the oil, the darker the color. Condensates practically colorless.

According to the stabilized density, oil varies from very light to extra heavy (g/cm^3)

- Very light - less than 0.80
- Light - 0.80-0.87
- Medium - 0.87-0.90
- Heavy - 0.90-1.00
- Superheavy - more than 1.00

According to the classification adopted in the USA, the boundary between medium and heavy oil is drawn according to the density value - 0.920 g/cm^3 .

These density intervals characterize oil under standard temperature conditions - 4 or 200°C at atmospheric pressure. In the depths it is different and is determined by the degree of their heating, gas saturation value, oil composition, etc. In

DISCUSSION AND CONCLUSION

In other words, to assess the environmental impact of hydrocarbons on the biosphere, an accurate knowledge of the physical properties and chemical composition of oil and gas.

addition to the above other gradations of density intervals are also used.

The most common in terms of reserves is light oil with condensates (g/cm^3)

- 5% - less than 0.80;
- 60% - 0.800 - 0.870;
- 10% - 0.870-0.90;
- 25% - more than 0.90.

This statistic is violated in individual NGOs. Regional deviations are natural

For example, in the Western Canadian Basin, due to the presence of reserves of bituminous giants of the zone Athabasca becomes predominant heavy and super-heavy oil. In Persian and Western Siberian NGP - light and medium. International market for commercial standard calculations take "light Arabian" oil - 0.850 g/cm^3 .

Heavy oil occupies a special place among the oil, differing both in properties and in composition. Heavy oil is dominated by tar-asphaltene compounds with heavy molecular weight, consisting of complex polycyclic molecular systems, often enriched with PTE. By the early 1990s, proven reserves of heavy oil and natural bitumen in the world exceeded the reserves of conventional oil by 1.6-1.8 times.

Numerous tragic examples of accidents, such as those associated with a leak hydrogen sulfide gases. Hydrogen sulfide, due to its higher density relative to air settles in the lowlands of the relief, accumulating in calm weather in concentrations up to to lethal. This leads to the death of animals and the death of people. The latter could be avoid

by going to elevated windward areas, i.e., knowing the physical properties of this toxic gas.

We also note that since the subsoil is a single geochemical environment in which the physical chemical interaction and reaction of rocks, groundwater and hydrocarbons occurs at all stages ontogenesis, it would be advisable to give a brief assessment of the enrichment of the interest for the study of impurity components in the entire environment where natural hydrocarbons, with which the PTE is in contact in the course of geological history. But debatability and uncertainty of the geological history of the interaction of hydrocarbons, groundwater and host rocks makes such an analysis impossible. This information will be provided only in those sections. and to the extent that such analysis is possible and necessary.

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CONFLICTS OF INTEREST

There is no conflict of interest.

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