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THE INFLUENCE OF FUEL OIL ON THE ENVIRONMENT AND THE HUMAN BODY

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Nowadays it is impossible to imagine a world without energy: electric, thermal, nuclear, etc. Our world depends on all sorts of energy to power utilities, be it fossil fuels, renewables or kinetic energy sources. Our energy needs have increased greatly since the Industrial Revolution and the existence of power plants has allowed people to freely use these types of energy for their own needs. This is an unconditional progress in the development of mankind, but today's energy industry cannot be called absolute perfection, because it causes a variety of problems related to environmental violations, with effects on the human body and health, with a shortage of energy resources and competition for them.

Reserve fuel plays an important role in power plants, so that the stations can operate smoothly. One of the types of such fuel is fuel oil. The latter has a high density and a lower heat of combustion compared to other fuels, so burning in small sizes allows you to generate a large amount of electricity.

Despite the advantage of generating large amounts of electricity, fuel oil has a number of disadvantages. It is a residual product of oil refining and, like any petroleum product, has a negative impact on human beings and nature [1].

According to the degree of exposure, fuel oil is a low-hazard substance for humans and belongs to the 4th hazard class of petroleum products. However, fuel oil vapors are highly toxic and have a poisonous effect on the human body. The combustion products of fuel oil contain carbon dioxide, nitrogen and carbon oxides, sulfur and methane. Vapors enter through the respiratory system, irritate the mucous membranes and eyes. They act like narcotic substances and affect the central nervous system: increase excitability, cause general weakness and dizziness, raise the heart rate. Other symptoms include the appearance of cough, runny

nose, chest and throat pain. Also, fuel oil harms the human body and in contact with the skin degrades and dries, which leads to dermatitis.

As mentioned earlier, fuel oil has a negative effect not only on the human body, but also on nature. At the time of combustion, a large amount of sulfur and other chemical elements are released into the environment, which contributes to environmental disruption. For example, fuel oil has a negative effect on the soil because it destroys and hurts living organisms, significantly changes the structure and chemical composition of the soil, especially its properties as a nutrient medium for plants, which is why their roots do not receive enough moisture. For reservoirs, fuel oil is also dangerous, because when fuel oil gets on the surface of the water, a specific film forms on it, which disrupts any exchange of matter, energy and moisture with the atmosphere. In addition, fuel oil gives the water a peculiar smell that causes disruption of the vital activity of aquatic inhabitants.

To solve the problems of pollution, some power plants are already being modernized in order to minimize the use of fuel oil and even its complete absence. The modernization makes it possible to increase the efficiency of heat and electric energy production and completely switch the plant to using natural gas as fuel. Such reconstruction was carried out at Chelyabinsk CHP-1 and had a positive effect on the environment: emissions of pollutants into the atmosphere were reduced by 4,500 tons per year, the volume of wastewater significantly decreased [2].

Fuel oil has good indicators as a burned fuel, however, one should not forget about the risks arising from the combustion of this substance. The solution to this problem will be to use as little fuel oil as possible, since abandoning it and switching to a full gas cycle will be the most progressive way to improve environmental performance. It will reduce risks and at the same time ensure the reliability of energy supply to consumers and increase the efficiency of generation.

References

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