

POLLUTION OF THE OCEANS WITH OIL AND OIL PRODUCTS

Vinnitsia National Technical University

Анотація

Забруднення Світового океану нафтою та нафтопродуктами – одна з глобальних екологічних проблем. Нафта являє собою в'язку маслянисту рідину, що має темно-коричневий колір та володіє слабкою флуоресценцією. У природних умовах до Світового океану надходить 0,2–2,0 млн. тон нафтопродуктів. Розглянуто їхні джерела.

Ключові слова: нафта, розливи, водойми, гідробіоти, висока полімеризація, нафтопродукти, аварія.

Abstract

Contamination of the World ocean by oil and oil products is one of global ecological problems. Oil is a viscous oily liquid that has an umber color and owns weak fluorescence. In the wild 0,2-2,0 millions tons of oil products come to the World ocean. Their sources are considered.

Key words: oil, overflows, reservoirs, aquatic lives, high polymerization, oil products, accident.

Introduction

Innovative technologies for reducing oil losses during oil transportation are analyzed, their advantages and disadvantages are considered. It is shown that modern innovative technologies of transportation and storage of oil and oil products allow to reduce the number of losses to a minimum.

The use of these methods will allow not only to transport oil without polluting the environment, but also to significantly improve the state of the world's oceans.

It is important to study the volumes of hazardous oil waste generation in order to assess their resource flows and further develop effective methods of handling them.

Research Results

The US Environmental Protection Agency describes the effect of an oil spill as follows: 10 minutes after 1 ton of oil enters the water, an oil slick 10 mm thick forms. Later, the thickness of the film decreases (to less than 1 mm), but the spot expands – 1 ton of oil can cover an area of up to 12 km². Further changes occur under the influence of wind, waves and weather.

The sources of oil in the water are the following:

- it is a receipt from continents with flows (approximately 2 millions t/year);
- it is a receipt from an atmosphere (approximately 0,3 millions t/year);
- it is a natural coil from the bowels (approximately 0,3 millions t/year) of the earth;
- it is the boring drilling on a shelf (approximately 0,05 millions t/year);
- are extrass from ships and emergency .

In order to prevent the pollution of the sea by oil, first of all, it is necessary to improve the technological processes of extraction, transportation, storage, processing, use of oil or oil products, to exclude the discharge of wastewater containing oil. After all, tens of billions of cubic meters of water-oil emulsions are formed annually as a result of technological activity. The methods of cleaning them from oil are expensive and inefficient, so wastewater containing oil is a source of global oil pollution of the hydrosphere, delivering about 75% of oil pollution to the world ocean.

Protection of the marine environment should be carried out in a comprehensive way, while creating new technological processes, methods and means of pollution prevention, as well as creating a regulatory and legal framework for limiting the release of oil and oil products into the sea.

The sources of oil pollution of the marine environment and the factors affecting the form of pollution are very numerous. Therefore the protection of the marine environment should be carried out in a comprehensive

way, while creating new technological processes, methods and means of pollution prevention, as well as adopting laws on limiting the release of oil and oil products in a sea. In order to prevent oil pollution of the sea, first of all, it is necessary to improve the technological processes of extraction, transportation, storage, processing, use of oil or oil products, to exclude the discharge of wastewater, which includes oil.

Conclusions

Considering the above, it can be mentioned that the implementation of new innovative methods of waste disposal does not require significant capital investments and time. People understand the importance of solving this disaster and can offer options to eliminate it, which is very important.

REFERENCES

1. BIOWATT. Переробка відходів в розвинених країнах світу. URL: <http://www.biowatt.com.ua/analitika/pererobka-vidhodiv-v-rozvinenih-krayinah-svitu/> (дата звернення: 14.06.2023).
2. Ishchenko V., Pohrebennyk V. Kochan R., Mitryasova O., Zawislak S. Assessment of hazardous household waste generation in Eastern Europe. 19th International Multidisciplinary Scientific Geoconference SGEM 2019. Vol. 19, Issue 6.1. SGEM2019 Conference Proceedings, June 30 – July 6, 2019. – P. 559-566.
3. Petruk V., Kvaternyuk S., Pohrebennyk V. et al. Experimental studies of phytoplankton concentrations in water bodies by using of multispectral images. Water Supply and Wastewater Removal : monograph / editors: Henryk Sobczuk, Beata Kowalska. Lublin : Lublin University of Technology, 2016. – P. 61–171.
4. Petruk V. G., Kvaternyuk S. M.; Denysiuk Y. M. et al. The spectral polarimetric control of phytoplankton in photobioreactor of the wastewater treatment. Proc. SPIE. Vol. 8698, 86980H. – 2012.

Гут Іван Сергійович – студент групи ЕКО-21б, факультет будівництва, цивільної та екологічної інженерії, Вінницький національний технічний університет, м. Вінниця, e-mail: casper2124688@gmail.com

Науковий керівник: Слободянюк Алла Анатоліївна – старший викладач кафедри іноземних мов, Вінницький національний технічний університет, м.Вінниця, e-mail: a.allavin@gmail.com

Hut Ivan Serhiyovich – student, Faculty of Construction, Civil and Environmental Engineering, Vinnytsia National Technical University, Vinnytsia, e-mail: casper2124688@gmail.com

Scientific supervisor: Slobodianiuk Alla Anatoliivna – Senior Lecturer of the Foreign Languages Department, Vinnytsia National Technical University, Vinnytsia, e-mail: a.allavin@gmail.com