

arresting the Torrey Canyon's sister ship, the Lake Palourde, when she put in for provisions at Singapore, four months after the oil spill. A young British lawyer, Anthony O'Connor, from a Singaporean law firm, Drew & Napier, was deputed to arrest the ship on behalf of the British government by attaching a writ to its mast. O'Connor was able to board the ship and serve the writ as the ship's crew thought he was a whisky salesman. The French government, alerted to the Lake Palourde's presence, pursued the ship with motor boats, but crew were unable to board and serve their writ.

The disaster led to many changes in international regulations, such as the International Convention on Civil Liability for Oil Pollution Damage (CLC) of 1969, which imposed strict liability on ship owners without the need to prove negligence, and the 1973 International Convention for the Prevention of Pollution from Ships[1].

#### References

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### **AEROSOL POLLUTION AS A CHALLENGING ENVIRONMENTAL PROBLEM OF THE MODERN WORLD**

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At all the stages of evolution a human was closely connected with environment. With the appearance of a highly industrial society dangerous human intervention into the nature has harshly increased, the size of this intervention has become varied, and now it threatens to become a global danger for the mankind.

Let's start with the review of the factors that lead to deterioration of a state, one of the most important biosphere's constituents. People have been polluting the atmosphere for millennia. Firstly, it was the fire use in order to heat the cave and to cook a meal. It was necessary to reconcile with the smoke, which disturbed breath and laid down by a black cover on a ceiling and walls of the dwelling. The received heat was more important for people than clean air and incomplete walls of a cave. Then more serious types of pollution have come on stage.

There are several kinds of pollution such as air pollution, water pollution, etc. In general, three main resources of atmosphere pollution can be enumerated: industry, household boiler rooms, transport. The share of each of these sources in general air pollution is very different, and it depends on the place. Industrial production is looking for solutions in the sphere of air pollution. The sources of pollution are as follows: thermal power plants, which throw out sulphurous and carbon dioxide together with the smoke into the air; metallurgical enterprises, especially, nonferrous metallurgy, which throws out

nitric oxide, hydrogen sulphide, chlorine, fluorine, ammonia, the compounds of phosphorus, the particles and compounds of mercury and arsenic, chemical and cement plants. Harmful gases get to the air as a result of fuel burning for industrial needs, heating of dwellings, transport, burning and processing of the household and industrial wastes.

As people have already known, the humanity interferes into the economy of biosphere more and more, and this is the part of planet where life exists. The biosphere is exposed to growing anthropogenic influence. Chemical pollution of environment with unusual substances of chemical nature is the most large-scale and significant nowadays. Special attention should be paid to chemical substances called "aerosols". Here the characteristics of aerosol are presented.

Aerosol consists of solid or liquid particles, which have suspension state in the air. In a number of cases, solid components of aerosols are especially dangerous for the organism, provoking specific illnesses. Aerosol pollution in the atmosphere occurs in the form of smoke, fog, mist or gauze. The essential part of aerosols is formed in the atmosphere while interacting solid and liquid particles with each other or with water steam. An average size of aerosols particles is 1/5 micrometers. Every year nearly 1 cubic km of flour particles of artificial origin comes into the atmosphere of the Earth. A large amount of flour particles are produced also during the industrial activity of people.

Aerosols can be divided according to their typology. Originally aerosols are subdivided into natural and artificial ones. The first aerosols appeared in natural conditions without people interference. They passed to the troposphere more seldom than to the stratosphere with the volcanic eruption, combustion of meteorites, forest and steppe fires, appearance of dust storms, which elevated soil particles and mining rocks from the Earth.

The state of the air polluted by several substances is observed in the atmosphere by means of a complex pollution indicator. For example, aerosol pollution by nitric oxide and sulfur, dust and carbon monoxide can be observed in Frunze and Omsk, respectively. The air pollution level is in direct relation to the industrial development of many countries or cities.

All polluting materials bring negative effects on people's health. These substances penetrate into the organism of a person predominantly through the breathing system. Respiratory organs suffer from air pollution directly as far as near 50 % of impurity particles with a radius of 0.01-0.1 micrometer sediment in lungs. For example, the cases of severe air contamination in London became famous, because they were followed by many fatal outcomes.

In conclusion, it is necessary to note that there problem of aerosol pollution should be solved. Protection of nature is the problem of our century, the urgent issue that has become a social one. Again and again we hear about dangerous threats to the environment, but still the majority of people consider them to be unpleasant, but inevitable civilization emanations. They assume that it is possible to cope with all the arisen difficulties.

However, the impact of a person on the environment has been increasing in the menacing proportions. To improve the situation it is necessary to conduct purposeful and thought-over actions. Responsible and effective environmental politics will be possible only in the case if we keep and save reliable data about the modern state of environment, reasonable knowledge of important ecological factors interaction. Also, the reasonable solution of the problem is to develop new methods of reduction and prevention of the harm produced by people. Everybody should remember about our nature and environment, and protect it from pollution, because the Earth is the only place for human living.

## References

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**THORIUM-POWERED VEHICLES: NUCLEAR POWER AS AN ALTERNATIVE TO FOSSIL FUELS****S. Yu. Glushkov**Scientific advisor associate professor A.B. Strelnikova  
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Environmental issues affect every person on our planet. As increasing evidence supports the devastating effect humans have on the environment, more people are taking steps to protect the environment and educate others about environmental problems. Among top five environmental concerns is air pollution. One of the main causes for this problem is carbon emissions produced by numerous cars. The present paper covers a currently discussed topic of thorium-powered vehicles, as such cars will definitely contribute to mitigation of negative impact on the air. The aim of the paper is to provide reliable scientific foundation for thorium-powered cars potential.

Currently, many people over the world are still reluctant to drive an electric car, though the number of car enthusiasts is constantly increasing. In this regard, the concept of a car powered by thorium could be the ultimate in sustainable transportation, due to the fact it would only need to be re-fueled every 100 years [5]. This concept is introduced by Laser Power Systems (founded in 2007, Connecticut, USA), who claim to take the radioactive element and use it to generate a laser beam that in turn heats water, producing steam and powering the vehicle's engine.

Thorium, discovered in 1828, is abundant in the earth and has been used since in industrial processes. Not only that, thorium just might underlie the future of a plentiful and widespread prosperity on earth, make wars over scarce fossil fuels obsolete, eliminate the release of choking and poisonous pollutants into the atmosphere and make the debate over global warming and climate change a moot point.

The reason uranium won out over thorium at the dawn of the Atomic Age was its ability to undergo fission and provide material for atomic weapons. Thorium was safer, cleaner and more abundant than uranium, but because nuclear weapons could not be built from it, it was relegated to a footnote in atomic energy journals for the past half century.

Today, fossil fuel resources are estimated at today's market rates as having a value of over \$40 trillion. The only way to live in the ground is to find a source or sources of fuel that will undercut fossil fuel prices, making them uneconomical. The recent boom in fracking, which also was of great environmental concern, has put a temporary damper on the use of coal in the United States but this is not the case in other parts of the world where coal is being used.

Every new idea creates resistance and *opposition, and the struggle between its supporters and opponents is inevitable*. The supporters' arguments are simple and obvious - re-fueling once per age is amazing, and what is more, there is no negative environmental impact [3]. Today, it is proved that thorium can be used as a source of thermal energy, almost the same way as uranium is [1], though there is no experience in using the system