

концентрации сорбированного метана или, что практически то же самое, степень снижения газонасыщенности пласта при его пневмообработке. Заменяя в уравнении Лэнгмюра равновесную концентрацию её значением, уменьшенным в 10 раз, получим формулу для определения относительного уменьшения газонасыщенности угольного пласта при пневмообработке:

$$\delta X = \frac{a_{M_0} - a_{M.ИСХ}}{1,1a_{M_0} - a_{M.ИСХ}} \cdot 100\%, \quad (3)$$

где соответствующие индексы относятся к начальному состоянию и к состоянию исходящей смеси.

Результаты исследования изменения химической активности угля подтверждают возможность уменьшения её практически до безопасных пределов. В типичных условиях цикличная пневмообработка позволила за 150 суток уменьшить средний по обрабатываемой зоне показатель химической активности с 0,06 мл/г.час (максимальное значение для каменных углей) до 0,012 мл/г.час или на 80 %, что обеспечивает перевод пласта в категорию малоопасных по самовозгоранию [2]. При этом повышение температуры составило: максимальное по обрабатываемой зоне – 8°, среднее – 3°. Температура пласта на отточной скважине, замеряемая в натуральных экспериментах, практически не повышалась.

**Выводы.** Предложенные аналитические зависимости позволяют провести предварительный расчет параметров технологии и дать оценку эффективности пневмообработки.

В типичных условиях цикличная пневмообработка угольного пласта в течение 150 суток приводит к снижению его газонасыщенности на 60%.

#### *Список литературы*

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### **MODERN ECOLOGICAL PROBLEMS**

У даній статті представлені основні екологічні проблеми сучасності, які в нашому світі притягують все більше і більше уваги. Так само наведено ряд факторів, дослідженням яких займається величезна кількість вчених по всьому світу.

В данной статье представлены основные экологические проблемы современности, которые в нашем мире притягивают все больше и больше внимания. Так же приведен ряд факторов, исследованием которых занимается огромное количество ученых по всему миру.

Main environmental problems of nowadays, that are attracting more and more attention, are presented in the article. There are also a number of factors which are researched by huge amount of scientists all over the world.

**The problem and its relation to scientific and practical problems.** Identification and distribution of major environmental issues facing humanity. Search and rational methods of resolving the problems in identified areas. Call for more productive activities among the youth and society in general.

**Raising of task** Definition of environmental issues in society

**Presentation of the material and results.** The Earth is the only planet in the solar system where there is life. If you look down at the Earth from plane you will see how wonderful our planet is. You will see blue seas and oceans, rivers and lakes, high snow-capped mountains, green forests and fields and other fine places. For centuries man lived in harmony with nature until industrialization brought human society into conflict with the natural environment. Today, the contradictions between man and nature have acquired a dramatic character. With the development of civilization man's interference in nature has increased. Every year the world's industry pollutes the atmosphere with millions of tons of dust and other harmful substances. The seas and rivers are poisoned with industrial waste, chemical and sewage discharge from plants and city transport and by the increasing noise level which is as bad for human health as lack of fresh air and clean water. We have a lot of problems.

Among the most urgent problems are the ozone layer, acid rains, global warming(the greenhouse effect), toxic pollution of atmosphere, disappearance of forests, contamination of underground waters by chemical elements, destruction of soil in some areas, threat to some flora and fauna representatives, etc., etc., etc...

Nowadays the most important problems are the reduction of the ozone layer and global warming. These problems are densely connected. Global warming is caused by an increase in the greenhouse effect. The greenhouse effect is not a bad thing by itself - it's what allows Earth to stay warm enough for life to survive. Although it's not a perfect analogy, you can think of the Earth sort of like your car sitting out in a parking lot on a sunny day. You've probably noticed that your car is always much hotter inside than the outside temperature if it's been sitting there for a while. The sun's rays enter through your car's windows. Some of the heat from the sun is absorbed by the seats, the dashboard and the carpeting and floor mats. When those objects release this heat, it doesn't all get out through the windows. Some is reflected back in. The heat radiated by the seats is a different wavelength than the light of the sun that made it through the windows in the first place. So a certain amount of energy is going in, and less energy is going out. The result is a gradual increase in the temperature inside your car. Scientists believe that Global Warming will lead to a weaker Ozone layer, because as the surface temperature rises.

Another important problem is air pollution. Cars and factories pollute the air we use. Their fume also destroys the ozone layer which protects the Earth from the dangerous light of the sun. Aerosols create large holes in the ozone layer round the

earth. Burning coal and oil leads to global warming which may bring about a change in the world's climate.

From atmosphere problems we go to another one. It is the problem of ocean pollution. Many ships sail in the ocean water – fishing ships, some ships carrying people, some carrying oil. If a ship loses some of the oil in the water, or waste from the ships input into the ocean, the water becomes dirty. Many sea birds die because of the polluted water. Many fish are dying in the seas, others are getting contaminated. Fishermen catch contaminated fish which may be sold in markets, and people may get sick from eating them. Lakes and rivers are becoming polluted too. Some beaches are dangerous for swimming.

The other problem is that our forests are dying from acid rains. Deforestation, especially destruction of tropical forests, affects the balance of nature in many ways. It kills animals, changes the climate and ecosystem in the world. We don't respect our planet!

There are a lot of places on our planet that need immediate help. Our country is not exception. The nuclear accident at Chernobyl, which took place on April 26, 1986, has seriously aggravated the ecological situation in Belarus, Ukraine and Russia. That catastrophe can be considered as the largest disaster on the 20th century. As the result of that accident 18% of territories of our country were contaminated by radioactive elements. The agriculture of our country suffered great losses. More than 20% of population is also suffered. A death rate among the children increased considerably. Everyone understands that this catastrophe is a threat to health of our nation, and though years have already passed, the results will be shown on the future generations.

Also I'd like to say a few words about animals in danger of extinction. Nowadays there is a great number of species of wild animals that are on the threshold extinction. Such animal as a blue whale is the largest animal which has ever lived. There were over 200000 of these animals. But today there are fewer than one thousand of these animals left, because they are still hunted for their oil and meat. And it is not the only example. There is a great number of situations when humanity is terribly treating to the nature of our planet. There is only one way to save wild animals and wild habitats – conservation. That means protecting animals in danger by law, opening more national parks, building fewer new roads, planting more new forests, cutting pollution. If there won't be any positive actions, many wild animals will soon have just one habitat – the Zoo. Everybody have to understand that.

**The output:** We have a great number of problems, but we still can help. We still to be a great family of humanity and have to realize all these global problems. Together we have to find the most rational ways of our future life and stop living like there is only one day to live. For the better future, let's save the Earth, to save our lives, because the world is in our hands!