3. Petroleum Hydrocarbons

The word petroleum was formed from the Latin words "petra" meaning stone and "oleum" meaning oil.

Petroleum is composed of a mixture of various hydrocarbons and does not always have a constant chemical composition. Therefore, the content of crude oil varies according to the region in which it is found

The effects of Petroleum and its derivatives on the environment can be grouped into two groups: acute and chronic. Although there is not much detailed information about its chronic effects, its acute effects are fairly well known.

Acute effects occur mostly in the form of coating the surface (of the living thing or water) or by leaving it airless and poisoning.

Coating the water surface with oil, even when its toxic effects are ignored acts as a physical barrier that prevents the light permeability of water and oxygen passage to the water, even when its toxic effects are ignored.

Petroleum and its derivatives, multi-ring hydrocarbons **(PAH= polycyclic aromatic hydrocarbons**), are pollutants that leak into the environment as a result of oil accidents and the complete non-combustion of fossil fuels. Because these pollutants are resistant to decomposition, they can remain in aquatic and terrestrial ecosystems for long periods of time.

PAHs with hydrophobic properties are not water-soluble, they only disperse and wrap water in the form of spouted particles. They can reach very high amounts in lakes, rivers, river mouths and ocean bottoms with sediments in aquatic environments. Pah concentration in marine sediments may be as high as 0.1 mg/g of sediment.

Volatile organic compounds (VOC) is a generic name given to easily evaporating organic compounds. They may include carbon, hydrogen, oxygen, chlor, brom, sulphur and nitrogen.

VOCs may occur during the combustion of gasoline, wood, coal or natural gas, exhaust gas, oil exploration sites, as well as solvents, paints, adhesives for industrial and domestic consumption, etc. it is also used as such products.

5. Nitrogen and phosphorous compounds

Compounds containing nutritive elements such as nitrogen and phosphorus are treated as an important group of pollutants with adverse effects on water quality, leading to the acceleration of the eutrophication process in lakes at high concentrations.

Nutrients seeping into the soil are washed and drained by rainfall and reach lakes and seas via superficial streams or groundwater. These elements are essential for critical functions such as plant development, cell proliferation, and protein synthesis, but at high concentrations, they have undesirable effects on the ecosystem.

6. Drug Residues and Cosmetic Substances

Although the use of certain drugs, such as antibiotics, is wanted to be controlled, still a significant decline has not been recorded. Diabetic drugs, antipsychotic drugs, birth control drugs, and other hormonal therapy drugs exceed the metabolism of humans or animals and reach sewage and lakes, rivers and seas that are the receiving environment. Aside from the problems that these substances will create in terms of drinking water, it is certain that they will also pose threats to the life cycles of aquatic organisms.

For example, **selective serotonin reabsorption inhibitors (SSRIs)**, which are antipsychotic drugs, are frequently used, so they have an important place in this context. Because most of the biological functions of vertebrates and especially invertebrates depend on the serotonin effect; reproduction, metabolism, shell change and behavior. A study found that the behavior of a marine amphipod type (*Echinogammarus marinus*) varies depending on this drug.

https://www.the-scientist.com/news-opinion/effects-of-antidepressants-span-three-generations-in-fish-65193

Effects of Antidepressants Span Three Generations in Fish

Effects of Antidepressants Span Three Generations in Fish

Fluoxetine dampened stress responses in zebrafish embryos exposed to the drug—and their descendants.

Dec 10, 2018
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