

# Bioaccumulation: water pollution and united states assignment



There used to be a saying which was common, " The solution to pollution is dilution. Eventually it was found that dilution was really not the solution. Not only does fasciculation affect marine life, it also has a huge impact on how land mammals survive. Namely, birds, seals; even humans. Sewage released into marine systems due to inadequate sanitation will cause disease.

Fertilizers used in agriculture cause transportation. Oil spills from tankers smother animals. Pesticides used in agriculture and by health services also causes problems in reproductive organs of animals.

There are two types of ways pollutants enter the ocean, non-point sources and point sources. Non-point sources are caused by agriculture, construction, and arbitration. When it rains the water runoff collects the pollutants from the surface and carries them into the streams. This, in turn, leads to the oceans making it hard to tell where the problem is. Point sources, however, are sewage over flows, out-pipes from factories and oil spills. We can determine where these pollutants come from. The major convenience of a point source is that it is easier to regulate since it is coming from one spot.

It is also easier to determine an approximate amount of how much of a pollutant is entering the ocean. However ocean pollution does not effect just the area where the source is, it effects much of the ocean due to the ocean conveyer belt, which is ocean circulation that involves wind and thermopile currents. The ocean conveyor belt starts in Europe, settles to the bottom, circles around on the bottom making its way through the Indian ocean and comes out by Alaska after traveling through the Pacific ocean. After it comes

out in Alaska it travels down the west coast of North and South America where it cycles over.

What happens when the water gets polluted? Once sewage and fertilizers get into the water there becomes a high level of nutrients which encourages the growth of algae and plants blocking light that is needed in deep water, known as eutrophication. However, this results in a discouragement in the process known as photosynthesis, where green plants take in carbon dioxide to produce oxygen. Concordantly, an accumulation of organic materials, which are dumped in the ocean, causes oxygen levels to decrease because an extensive amount is being used up to decompose them.

Bioaccumulation also occurs, the process in which sewage and toxins, such as mercury, get stored in the fatty tissues of fish. This, in turn, results in disrupting the marine food chain, as well as what humans intake from seafood. "The AOC- HUMAN, which is a model of organic chemical bioaccumulation of trophic levels and food chains, was very similar model of chemical fate in the physical environment and parameterized for conditions in southern Sweden" (Cub and McClellan). This is a serious problem because in the oceans, as well as in rivers and lakes, there are trophic levels, which are roughly an organism's feeding status in an ecosystem.

Naturally, the top trophic level is impacted the most by such pollutants. An example of this would be seagulls becoming contaminated with PCB and DDT. Such birds which have had an intake of these pesticides produce eggs which have an exceptionally soft shell, if it's even considered one, and are unable to become living embryos. The use of DDT and output of PCBs into bodies of

water have been, since, banned because of this. Many of the pollutants mentioned above can be eliminated or moderately regulated. However, some incidences are not so predictable, such as oil spills. One major problem with all spills, no matter their size or type, is that the oil can remain in the environment for a long time. Several lines of evidence point to continued exposure of marine organisms to oil spilled by the Exxon Valued" (Arabians); killing thousands of animals, and caused millions of dollars in damages. Exxon Valued has been recorded as the largest oil spill off of America. When an animal gets trapped in an oil spill the oil envelops its body reducing the natural water repellent characteristics and its ability to insulate.

The animals soon become water logged and they drown or could even freeze. The Exxon Valued oil spill occurred on March 4, 1989, and there are still noticeable problems occurring from it. One obvious problem is that oil does not dissolve easily in water. Once the oil sinks and settles to the bottom of the water it will take decades to naturally withdraw from the environment. Besides oil spills, run off and sewage are problems. Urban runoff is a threat to human health and the health of coastal ecosystems. More than 90% of all marine species are concentrated over the continental shelf.

The continental shelf is most effected by run off and sewage because it's where most of the sediments accumulate. This makes us exposed to ungenerous pathogens, bacteria and viruses. " I believe that our oceans will continue to deteriorate due to the facts of oil spills, urban runoff, improper sewage disposal, and other ocean pollution related activities" (Bergman).

Run off and sewage are believed to be the cause of gastroenteritis, hepatitis, respiratory illness, and ear, nose and throat problems. Less impossible to <https://assignbuster.com/bioaccumulation-water-pollution-and-united-states-assignment/>

stop this runoff because there are too many of us, so it is considered non-point.

If this problem is potentially going to be stopped, then it would take an enormous amount of effort only because it's almost impossible to regulate lions of people at a time. If there were other ways of dumping our wastes maybe this world would be a cleaner place, but the fact of the matter is that eventually and uncontrollably, no matter how much we regulate and reduce or wastes, they will still end up in the ocean. " Roger Reveille, former director of Scripps Institution of Oceanography stated very large amounts of wastes can be safely disposed of at sea" (German, 132).

However, just because that this concept is uncontrollable, there is a threshold for human health. As long as there is a threshold we can safely deposit regulated amounts of wastes into the oceans based on human tolerance limits. Marine debris are probably the hardest to regulate as the sources for these pollutants are practically indefinite. Some examples include, intentional dumping from ships and accidental discharge from ships. It can also come from polluted rivers and streams, and runoff from beaches littered with trash. Marine debris affect living organisms by killing organisms that either eat or get tangled in it. " (German 9) and many other animals die from plastic bags or fishing gear. Sea turtles will mistake a plastic bag for a jelly fish and eat it. This, in turn, kills the turtle. The plastic bag gets stuck in their stomachs blocking the digestive track. Resin pellets, which are an industrial raw material for the plastic industry, look like fish eggs. These pellets are also eaten by animals and have the same effect as a plastic bag.

Probably the most ironic of all pollutants is radioactive. Many illnesses are treated with radiation such as cancer, however the disposal of radioactive material in the ocean causes many problems; dumping this substance in the ocean kills more animals than lives it saved. Radionuclides are stored in the body and continue to cause damage. The first occurrence of water pollution was believed to be in Constantinople. Once a sewage system was common pollution became a major problem. At first it the pollution didn't have a negative effect on the ocean.

It would create blooms of plankton but that about it. The first international treaty to contain provisions for marine pollution was signed in 1942" (German 55). This was signed by the United Kingdom and the United States. In 1972 the United States established the Clean Water Act. This Act established the basic structure for regulating discharges of pollutants into the waters of the United States. During the Clinton administration, there was created a clean-up project which will take place all the way through 2012.

This project began after Clinton took a trip to the Assuaged Island National Seashore and announced the beginning of a project that is planned to improve the cleanliness of their oceans. He had directed the Environmental Protection Agency to take the issues of ocean pollution to a higher limit. In addition, he also called on Congress to approve his Lands Legacy Initiative, which allows the president to have excess money for protecting our oceans and its coasts. Unfortunately, it is unknown if the Bush Administration will continue with these actions.

William H. Role Jar. , a professor at Cal Ploy Pomona and other universities in Brazil, has been studying ways to help treat ocean pollution. He and his team of students have been trying to persuade farmers and other agricultural workers to use storm water as a water supply for their crops. Some other projects have been costing around \$1. 2 million dollars. It is obvious that pollution will never be eliminated as long as humans are dominant animals. Most of our manmade chemicals are created to last long. Since they are manmade nature cannot break them down.