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A Step Closer To Stopping Ocean Pollution

“The solution to pollution is dilution” (Marine). This is the catchphrase of many companies who think it is correct to dump their toxic chemicals into the ocean. The consequences of dumping toxic chemicals, sewage, and pesticides into the ocean are severe to it and all other ecosystems around it. Humans are indirectly affected by this dumping because we eat fish and other sea-dwelling creatures that have consumed these chemicals and garbage. Due to a lack of awareness about ocean pollution, the world’s oceans continue to suffer the consequences of some of humanity’s major mistakes.

Ocean pollution can be defined as the intentional (point) and unintentional (non-point) dumping of household, agricultural, and industrial products into the ocean (Buzzle). This problem began when the Romans disposed of human waste in the Tiber River (History). As time progressed, the problem got worse with the spread of major diseases such as “cholera and typhoid”. The bubonic plague was also a major disease spread during the early 1300s. In the 1800s, people began to recognize the need for clean cities and water; this led to more city control and stricter regulations. At the turn of the 19th century, however, the pollution problem worsened due to industrial and factory waste (Brief). Factories began to use and produce synthetic material such as “plastics” and “inorganic pesticides.” In the United States, the Cuyahoga River was saturated with flammable substances dumped by factories, and as a result, caught fire several times since the 1930s. The Clean Water Act (CWA) was then passed to “prohibit pollutants' discharge into navigable waterways” (History).

Today, marine animals and ecosystems are suffering because of everything that is dumped into the ocean. About two thirds of marine life is considered threatened because of toxic chemical dumping. All the chemicals and oils do not allow the proper sunlight to shine through to get to the plants. This depletes the plants of the light, therefore, prohibiting photosynthesis. Due to the ignorance of humans, garbage, such as six-pack can rings, is thrown into the ocean and can be consumed by the animals and suffocate them. They can also become entangled in them, and this can cause death (Effects). The dumping of millions of gallons of oils and chemicals every year this can also deprive the ocean-dwelling organisms of reproduction and can cause abnormal mutations in those who can reproduce. This will cause changes in the food chain because some of the smaller species of fish that the larger predators prey on will die off, starving the predators (Ehow). Marine animals are not the only ones being severely affected by pollution, however.

“Over 80% of marine pollution comes from land-based activities” (Panda). Humans are greatly affected when consuming fish and other marine animals. Both “physical disabilities” and “psychological and behavioral disorders” can occur in people (Tropical). Humans and other land animals rely on fish for nutrients. If half of the fish humans and other animals eat are intoxicated, they will not be able to be consumed because they contain chemicals harmful to the rest of the land creatures (Controlling). If the fish are consumed like this, humans can become ill through food poisoning. Certain plant fertilizers and pesticides cause the production of marine plants such as algae to grow in very large amounts, causing red tide. When exposed to, humans can contact “various types of gastrointestinal, respiratory, and neurological disorders” (Red). Paralysis can develop after consuming animals exposed to red tide (Shorecrest). Humans themselves are the main cause of their own sicknesses by allowing land-based activities affect the ocean. These land-based activities are “industrial, agricultural, and residential” (Buzzle).

The industrial polluting of oceans comes from the chemicals, toxins, oils, and acids that are dumped by factories and transportation ships (Eschool). Oil spills are perhaps the most common of industrial based pollution. About “706 million gallons of waste oil” enter the ocean every year, and approximately 5.6 percent of these gallons are due to transportation accidents [ships] (Impact). Oils can contain poisonous elements such as “PCBs, mercury, and dioxins” that cause animals to die (Causes). When in the water, oils form a thick layer. This in turn makes it extremely difficult for light to shine through enough for plants to photosynthesize (Eschool).

Dumping sewage sludge and other waste materials is also among the most common and most dangerous causes of ocean pollution and human ignorance. Most of this sewage sludge, industrial waste, dredged material, and radioactive waste can come by physically dumping it or from sewers, drains, and from run-off (Dumping). At the Roundhouse Aquarium in Manhattan Beach, CA, about 70% to 80% of the 15,000 students that visit each year do not know that drains lead to the ocean and how harmful it is (Gill). These forms of dumping can contain heavy metals like cadmium, chromium, and mercury. As a result of all these harmful, toxic chemicals, marine creatures can suffer from poison effect and seafood can thus become contaminated. The sewage can also clog the gills of fish and suffocate them. Treatment centers tend to dump their sludge into the ocean because it more expensive to treat it when contaminated (Ocean). The sewage has certain microbes that use up most of the dissolved oxygen in the water, and this makes it difficult for other organisms to live (Dumping). This creation of an oxygen-poor environment is called eutrophication (Ocean). Nitrogen and phosphorus are available at a natural rate, but, when eutrophication occurs, the excess organic material can deplete the oxygen from the water (Eutrophication). In the 1990’s, there were approximately 12 million tons of sewage dumped into the ocean (Ocean).

Material, such as plastic bottles and six-pack rings, get thrown into the ocean very

regularly. Marine life can become cut or entangled in these plastics. Since plastics are not biodegradable, plastic bottles float around in the water, break down into smaller particles and these chemical-prone particles trickle down the water column to be consumed (Gill). It is said that a plastic bottle takes approximately 450 years to break down and a plastic bag takes about 10 to 20 years to break down (Prevention). Sea turtles that mistake plastic bags for sea jellies suffocate from trying to consume the plastic bags (Dumping). If plastic bags drift into the open water, the plastic can attach itself to the animals and disrupt their swimming (Sea). Animals such as pelicans often confuse plastic debris for smaller fish and consume it. The consumption of this plastic can cause the animals to feel full and will eventually stop eating the food they need to survive. This can in turn cause digestion problems, “malnutrition, and dehydration” because the plastic cannot be broken down (Prevention).

Highly toxic and radioactive chemicals are often introduced into the ocean. Toxic waste can ruin sea bed communities and also poison the marine animals (Dumping). Radioactive (nuclear) waste, however, remains radioactive for many years and is contained in drums to keep it from spreading when it reaches the ocean floor. When this waste is burned, however, they result in harmful fumes that can still end up in the ocean in form of acid rain (Ocean). Most acid rain is caused by human activities and contains evaporated chemicals like nitric and sulfuric acid (Acid). Every time humans use cars, the harmful fumes and exhaust is absorbed and also brought into the ocean through acid rain (Life).

The usage of agricultural materials such as pesticide and fertilizers also enter the ocean. When pesticides are used for ridding plants of disease, farmers must be very careful of how they are disposed. If an excess of pesticide is sprayed, it can be absorbed by the soil and become runoff when it rains. This runoff is then carried off into the ocean by the rain. Along the way, the runoff also “picks up and carries pollution” (Agricultural). The nutrients carried into the ocean

by the runoff can then cause harmful algae blooms. These harmful blooms then cause “dead zones”, areas of the ocean where life can not be sustained because of a lack of oxygen, which also lead to rapid algae death (Green). Certain pesticides such as “DDT, lindane, endosulfan, and chlordane” have been banned because they have been classified as “Highly Hazardous” to the environment (Worst). These dangerous and harmful chemicals are still being used by “middle- to lower- income countries” (Worst). The insecticide DDT was initially used to kill mosquitos and lice that carried malaria and typhus and was not considered very toxic toward mammals. It was then discovered that the chemical was “highly toxic toward fish” (DDT).

Fertilizers also drain into the ocean by means of rain fall. A certain chemical that is common in fertilizer mixtures is ammonia. Ammonia is only present in small quantities but can grow large when it is combined with other small quantities of ammonia (Chemical).

Pollution does not only come from huge industries or farms; it also comes from a less subtle location: home. Things such as weed killers, fungicides, “pet droppings”, and household cleaners all become runoff and lead into the ocean (Residential). Common toxic chemicals found in weed killers are glyphosate, diquat bromide, and 2,4-D. These chemicals are very harmful to humans if ingested or inhaled (Weedkiller). “Inert” chemicals in weed killer mixes might also contain chlorine, which stays in the environment and in the ocean for long periods of time. If marine creatures consume some of these toxic chemicals, things such as genetic deformities, cancer, lesions, and reproductive failures may occur. Marine plants will also not be able to grow due to the high toxicity (Seaweb). Pet droppings carried into the ocean introduce foreign nutrients and can have microbes and bacteria harmful to sea dwellers and marine plants. Common household cleaners such as drain cleaners and oven cleaners contain lye, sulfuric acid, sodium hydroxide, and potassium hydroxide that are as harmful to marine life as they are to humans if inhaled or consumed (Toxic). PCBs are also a major source of domestic pollution.

Polychlorinated biphenyl, more commonly known as PCB, was used in car compressors and in electronics, such as televisions, from 1929 to its banning in 1979 (Basic). Lacking the proper knowledge, people would dump their televisions into bodies of water and the PCBs would leak out (Gill). This would then harm aquatic creatures by giving them cancer and causing damage to the reproductive system. PCBs can still be released from electrical manufactures due to the carelessness of humans (Basic).

Though there are many factors that worsen the ocean's situations, there are also many ways to improve it. To keep excess industrial waste out of the ocean, government can be stricter and regulate the companies' disposal methods (Solutions). The government can also ban the dumping of "residential, agricultural, and industrial chemicals" all together (Finding). Limitations and regulations can be placed on pesticides and insecticides (Solutions). The government can encourage "proper sewage treatment" and ban direct release of sludge directly into the ocean (Solutions). Plastic usage is not needed; less plastic can be used in the manufacturing of bottle or other plastic materials. Plastic bags can be made biodegradable or can have a ban placed on them to prevent them from ending up in the ocean. Organizations and agencies can be set up to educate citizens about the damage that is being done to the ocean and ways to prevent ocean pollution from worsening in the future (Finding).

People themselves can also make small changes at home that will help prevent further polluting. When shopping, one can carry a "reusable shopping bag"; this will promote less plastic usage and fewer bags will become litter (Solutions). Recycling and littering less can also be of great importance when trying to protect the ocean because fewer bags will be produced (Finding). One can be better informed of what cleaning chemicals are being used around the house. These hazardous chemicals will not become runoff and lead to the ocean if they are properly disposed of. Also, organic cleaners can be a better choice when picking cleaners.

Medication should not be flushed down the toilet because it can be toxic to marine life. Cars and boats can be checked for oil leaks and can be fixed if the problem emerges. This will prevent the oils from entering sewers and draining into the ocean (Finding). Oil-based paint bushes can be cleaned with thinner and the thinner can be disposed of at a “Household Hazardous Waste facility” (Brea). One can also volunteer to clean up beaches and promote tourism to beaches simply by visiting them or donate to an ocean conservation organization (Solutions). The cleaning of beaches is especially important to prevent ocean pollution because of the five gyers. These gyers are slow-rotating whirlpools in currents where garbage can accumulate (5gyers). The gyers regurgitate the garbage approximately every 7 to 10 years and suck back part of what is on the sand. If the beach is clean, there will be no trash for the gyers to suck back into the ocean (Gill).

Since 80% of pollution is land-based, humans are the ones to blame. Many factories dump waste products from manufacturing because they do not know or care about what it does to the environment (Dumping). Farmers do not check the ingredients of their fertilizers and use an excessive amount of it. Many others simply litter because they do not see the negative affect it will have on them (Gill). Some efforts have been made to prevent pollution and become more informed about it in the 20th century.

The Clean Water Act of 1972 set limitations on the things that could be discharged into water (Brief). The burning of the Cuyahoga River prompted the Great Lakes Water Quality Agreement to set up environment protection agencies (Brief). These acts and agreements were not fully enforced because there is still illegal dumping today and many that litter because they are unaware of the level of damage pollution can cause.

As time progresses, it seems as if ocean pollution is worsening and many are not doing enough to prevent it. It may not seem as if humans are being affected by ocean pollution, but

what many do not know is that it is indirectly affecting human kind by letting toxic chemicals enter a highly important and very common source of protein. To put a halt to marine pollution, one can report any illegal activity, such as dumping sewage, toxic and radioactive chemicals, and oils, to authority. Humans are affected by ocean pollution when swimming in red tide, consuming fish, and swimming amongst other garbage and toxic chemicals. The ocean does not need to suffer the consequences for what human kind has done on land. Chemicals and oils are ruining the earth by killing all sorts of life forms. If marine pollution is not prevented, the ocean will forever remain unclean, killing everything and anything that dwells in it. Not only is water important to drink, but it is home to millions of creatures and plants that help humans survive. The ocean also supplies us with about 80% of the air we breathe. The companies who are dumping their toxicity into the ocean are depleting themselves and everyone else of oxygen. If we killed the ocean, we would be killing ourselves.

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