The Effects of Pollution on our Water

Did you know that your drinking water could make you ill? Or the water you use to shower every day might be dangerous to you? Like air pollution, water pollution is harmful to our bodies. There are many ways that this can occur, and in this paper I will be discussing the causes, effects, and solutions of water pollution.

First, let me talk about one of the most obvious pollutants. The plastic we use every day can make its way into our oceans, and can also be found in our water supply. Most plastics have a highly durable chemical makeup, which makes them incredibly resistant to natural degradation. As plastic is used commonly, it is also made in large amounts. If this plastic is not properly disposed of, it will eventually make its way into many places. Not only can plastic harm sea life by getting them stuck or getting them to choke on it, it can also be a mild pollutant.

Picture showing plastic in the ocean.

One way to stop plastic from contaminating our water supply or killing innocent animals is to cut down on the amount of plastic we use every day. When we can, we should avoid using plastic cutlery, plastic plates, plastic cups etc. Like 4Ocean's article, "15 ways to reduce plastic use" says, " in just the 30 minutes it took you to get ready for the day, you used 7 plastic items, which could easily be replaced with more sustainable products" However, there are a couple of problems with this solution. For example, plastic is very inexpensive and doesn't need to be constantly washed like ceramic plates and metal cutlery.

Another solution would be to completely dispose of the substance. One way would be to burn the trash from a landfill (including plastic), but that would just create more pollution. Also, plastic by itself takes almost forever to degrade. Not only is plastic resistant to most forms of natural degradation, it is also pretty resistant to water, heat, and other chemicals. However, the best solution would be to recycle the plastic. Instead of throwing away plastic and discarding it, we could shape our old plastic into new things.

There are many things to do with plastic after it's been used. For example, you could use your old plastic bottles for a science experiment, or model. Not only is it efficient to use old plastic materials, once you're done with them, you can recycle those materials so that they make other things. Your plastic can become another plastic bottle, or it can become part another plastic item. Here is a video of recycled plastic bottles being used to make structures and buildings.
https://www.youtube.com/watch?v=cbPt1Jn3YLw

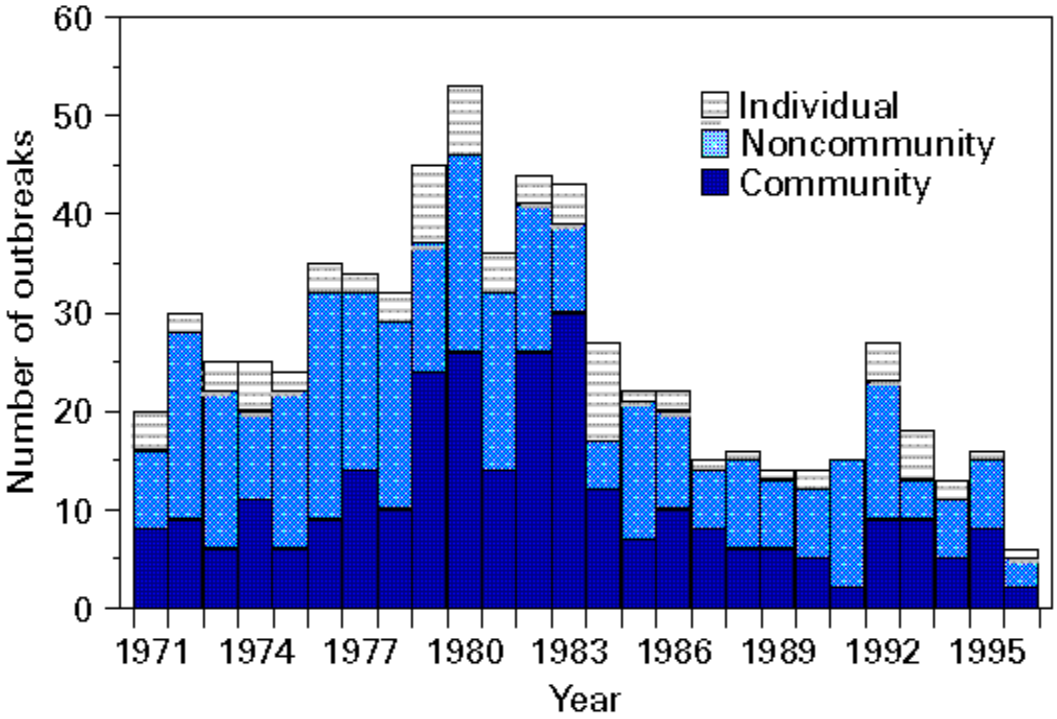
Another pollutant of water is bacteria. Bacteria and viruses that make their way into our water can not only kill fish and birds once they get inside them, but when we drink that water, we can be infected as well. An example of bacteria in water (and other food) is E. coli. E. coli, also known as Escherichia coli, is a virus that typically lives inside intestines of healthy people. Although most strands of the E. coli virus are harmless, some strands can be potentially fatal. From the Mayo Clinic website, "Signs and symptoms include: Diarrhea, which may range from mild and watery to severe and bloody, abdominal cramping, pain or tenderness, Nausea and vomiting, in some people."

One simple way to remove bacteria from your water is to filter it. A filter is commonly used to filter your water so that it is free of bacteria, bugs, and organic material. Once the water is filtered, it is safe to drink. However, how will we get rid of the very harmful bacteria in our oceans? Well, in this day and age, removing small microbes like the E. coli virus will be very difficult. Especially considering that our oceans make up nearly 71% of our earth, and the oceans hold about 96.5% of our water. Right now, our position in technology is just not enough to efficiently remove most of the harmful bacteria in our water.

Another cause of pollution in our water is human, and sometimes other animal's waste products. Any animal can simply defecate in a body of water, and for us, our waste can make its way into those bodies of water threw the sewer. Once we go to the bathroom and flush the toilet, our waste used to go straight into the ocean at high tide. Thankfully, our waste now usually ends up in a water treatment plant. However, in places where sewers are not made properly, or the sewers are very old, the waste can make its way out of the pipes and into the ocean.

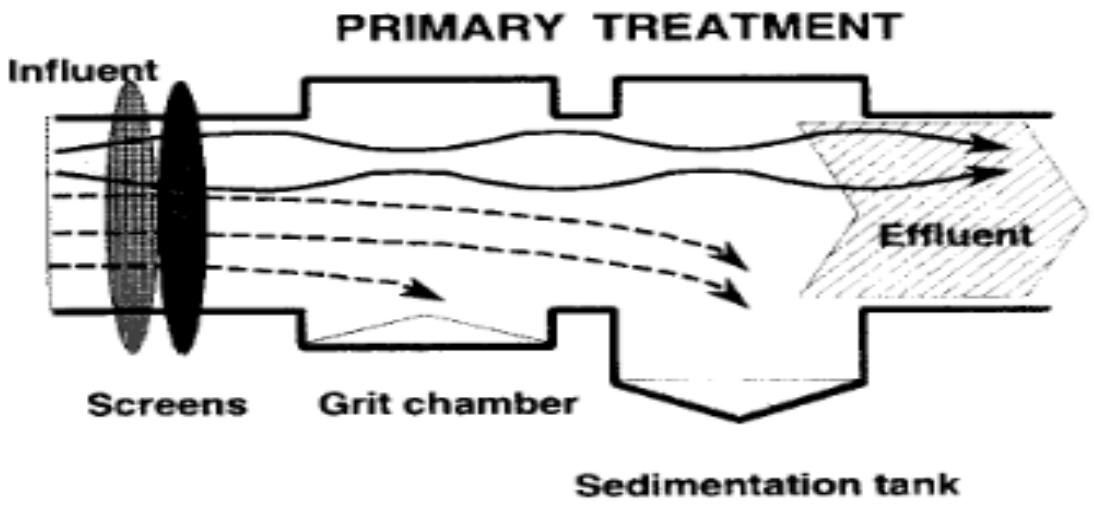
There is a solution to this problem. First, we need to keep our sewer systems up to date. We shouldn't try to use old methods, such as letting the waste go straight to the ocean. Now that we have more up to date methods, we can stop our water from gaining harmful materials and causing us to develop nasty diseases.

FIGURE 5. Number of waterborne-disease outbreaks associated with drinking water, by year and type of water system — United States, 1971–1996 (N = 674)



Picture of water-related diseases, 1971-1996.
https://www.cdc.gov/mmwr/preview/mmwrhtml/00055820.htm

One of those water-treatment solutions are water-treatment plants. Water-treatment plants are where your waste now goes to be filtered of harmful materials and then put back in the ocean. Some of this water is later used to make drinking water, after it has been further filtered. Water-treatment plants work by removing harmful materials from the top of the water and also skimming the hard to get sludge on the bottom of the tanks. As the graph above shows, starting around the 1970s people began to be worried more about industrial sludge and other harmful things, including bacteria, being abundant in our water. As you can see, water borne illnesses eventually became less frequent as our technology evolved.



A picture showing the primary treatment of water in water treatment plants. The screens remove large solid objects like rags and twigs. https://www3.epa.gov/npdes/pubs/bastre.pdf

In conclusion, our water is no doubt a precious material that we need to stay alive. Although our planet is mostly made of water, a lot of that water is saltwater, that we can't drink. Only a small amount of that water, mostly ground water, is freshwater, and it can easily be polluted with hazardous materials. Thankfully, we have many ways to stop these materials from ruining our water including, recycling of plastic, filtering of harmful bacteria and microbes, and removal of harmful sludge from the water. We have advanced immensely as a human society, so we should be able to do amazing things to keep our water fresh.

Bibliography:

https://www3.epa.gov/npdes/pubs/bastre.pdf

https://www.lenntech.com/history-water-treatment.htm

http://theconversation.com/curious-kids-where-does-my-poo-go-when-i-flush-the-toilet-does-it-go-into-the-ocean-78254

https://water.usgs.gov/edu/earthhowmuch.html

https://www.cdc.gov/healthywater/drinking/travel/backcountry_water_treatment.html

https://www.mayoclinic.org/diseases-conditions/e-coli/symptoms-causes/syc-20372058

https://water.usgs.gov/edu/bacteria.html

https://www.lenntech.com/water-pollution-faq.htm

https://www.freedrinkingwater.com/water_quality/quality1/1-pollution-and-effects-on-your-water.htm

http://www.gogreenacademy.com/causes-and-effects-of-water-pollution/

https://en.wikipedia.org/wiki/Plastic_pollution

https://4ocean.com/blogs/blog/15-ways-to-reduce-plastic-use

http://blog.nus.edu.sg/plasticworld/2016/09/06/x-methods-of-plastic-waste-disposal-and-possible-complications/