



Pharmaceutical Pollution in Water

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In an average American household, a sick child might take a dose of cough medication, the mother might take a pill to cure her migraine, and the father might take a pain reliever to ease a toothache. If this is typical, then millions of Americans are taking drugs. The major issue then becomes: where do all the drugs eventually end up?

The answer is most likely the water supply. In order to maintain the quality of water that is safe for drinking, proper disposal of trash and pharmaceuticals in particular must not be compromised. It is of vital interest to deal with these polluted waters because everyone's life is at risk of potential contamination. Public awareness and proper education on the issue of safe drinking water is essential to mitigating the pharmaceutical pollution problem. Pharmaceutical pollution in water will continue to pose harm to our health and environmental sustainability unless actions are taken now to minimize the environmental impacts.

Foremost, pharmaceutical pollution is the contamination caused by drug disposal into the environment. Sources of the pollution include the drug makers (pharmaceutical manufacturers), their distributors, and the consumers. Pharmaceutical pollution is a relatively new field of study because "chemicals have not been regulated nationally and have not traditionally been recognized as water pollutants" (Guidotti, par. 14). There has to be stricter regulations concerning the pollution of drugs in water because the current situation has gone beyond the scope of the legal system.

When pharmaceuticals are released into the water systems, it is done legally, and so far in the United States, there has been "at least 271 million pounds of pharmaceuticals into the waterways that often provide drinking water" (Donn, par. 1). Since waterways are vast, this enormous amount of legal pharmaceutical pollution has yet to captivate the widespread attention it deserves. Major drug makers are not required to conduct studies of the impacts of the trace concentrations of pharmaceuticals that leave their facilities (Don, par. 7).

According to the National Center for Health Statistics (NCHS), the National Health and Nutrition Examination Survey "found a 13 percent increase between 1988-1994 and

1999-2000 in the proportion of Americans taking at least one drug and a 40 percent jump in the proportion taking three or more medicines." If so many Americans are taking medication, when these medications are disposed of what happens to the environment? While water pollution from excretion of medication may be deemed unavoidable, the dumping of expired or unused medication in the toilet is truly inexcusable.

When it comes to responsibility, companies and individuals are accountable for the pharmaceutical pollution that ends up in the drinking water. The millions of pharmaceuticals that pollute the water are staggering, but are only the beginning of a needed long-term study over its effects. Even though "there are no confirmed human risks associated with consuming minute concentrations of drugs," there is no reason to doubt the severity of the health complications that may result from highly contaminated water (Donn, par. 14).

The trace levels of drugs in the water have shown to have great impact on wildlife, and humans are threatened as well. Consumption of tainted water or of food that has been contaminated with the water has its dangers. Contamination has been found to harm aquatic species, and over many more years, an increase in the levels of contamination may pose greater harm to humans (Donn, par. 13). Indirectly through biological magnification, humans whose diet consists of the drugged animals will face the toxic consequences at a higher level. The problems surrounding drug-contaminated waters are deep; it will require a nationwide effort to be committed to water treatment in order to avoid such perils.

Meghan McGee, from Minnesota University conducted a study on how fish would be affected by antidepressants and found that the exposure resulted in fish with impaired responses (Raloff 15). Fish treated with antidepressants had a slower reaction time when a predator was simulated (Raloff 15). Other research has shown factors like "skewed gender ratio and abnormal female fish, downstream of treatment plants and pollution-control equipment" evidently as a result of nearby source contaminants (Eisenstadt, par. 9). These scientific studies provide ample reasoning to conclude that pharmaceutical pollution can affect the performance of those affected by the contaminated water. For the benefit of every individual and wildlife, more research needs to be compiled before any possible health factors can be established from drug-tainted water.

Since pharmaceutical companies are the main source responsible for the massive pharmaceutical pollution, the cost of the water treatment should be funded from their revenues. If they choose to pollute, they must take action to offset the

environmental impacts. For treatment plants considering pharmaceutical pollution control, reverse osmosis, which “stops non-water molecules—including viruses and pharmaceuticals,” is a hopeful method of water treatment (Walsh, par. 5). Through the advanced chemical process, the filtered water is sterilized with hydrogen peroxide, and undergoes the penetration of ultraviolet light (Walsh, par. 5). While reverse osmosis is an effective method of waste-water treatment, it is very costly (Eisenstadt, par. 14). Chemical treatment is another method of removing contaminants that have dissolved (Elder Miller, Powers 5). Protected drinking watersheds are vital for the reduction of contamination in water (Elder, Miller, Powers 3). Water can always be treated, but decreasing the amount of pollution that goes into it is equally important. Though it will take time, more research and development needs to be completed before a more cost-effective method of treatment can be designed.

The U.S. Environmental Protection Agency (EPA) has been taking action to combat pharmaceuticals disposal issues through commissioned studies and advice. “The EPA is seeking more information on the practices of the health care industry to inform future potential regulatory actions, and identify best management and proper disposal practices” (Jones, par. 1). The EPA’s assistant administrator for water has noted that EPA is working to improve the understanding of drugs in the water by initiating information collection. They are working towards a clearer knowledge of the environmental impacts of pharmaceutical pollution, and from the scientific evidence that is being gathered, the EPA will be as informative about its efforts as possible.

Similarly, the Office of National Drug Control Policy has recommended the following: “do not flush prescriptions down the toilet or drain unless the label or accompanying patient information specifically instructs you to do so. Take advantage of community take-back programs...that collect drugs at a central location for proper disposal” (“Proper Disposal of Prescription Drugs”). Take-back programs are helpful in reducing the pollution because they allow drugs to be disposed of in an accessible and protected way in order to stop improper disposal (Guidotti, par. 9). In the case of an unavailable collection program, taking steps to ensure that the drugs are properly disposed of in a sealed container before ending up in the trash can be done (“Proper Disposal of Prescription Drugs”). For consumers, community programs that offer waste recycling and such disposal are useful when dealing with pharmaceuticals.

Guidelines behind water safety are also the basis for safe water consumption. According to the World Health Organization, there cannot be a universal approach to having quality drinking water standards because of different

legislations, forms of governments, and health policies (WHO 3). In the United States, the EPA is a key proponent in water safety standards and regulations. Health problems can be attributed to contamination from its water sources. The quality of drinking water is important to all people who consume it, and it is necessary to take measures that ensure everyone’s safety.

Remarkably pharmaceutical pollution in water is a growing problem yet it is only in its early stages of community concern. Before the drug contamination in water starts to become more blatant in public health, action must be taken to guarantee that our waterways are cleaner and safer. Education is step one. When the public is educated about the matter, there is a less likely chance of larger biological and environmental ramifications from pharmaceutical pollution. Public awareness on the situation will also lead to government involvement which is crucial to enact laws that will improve water safety regulations and policies thereby initiating long-term sustainability for the delicate ecosystem. It is important to know that the land is not a dumpsite for drugs to spill over but for its inhabitants to coexist with nature and nurture it.

When contaminants enter our water systems, harm is not only posed to humans, but also to the surrounding environment. Pharmaceutical companies and individuals who oppose efforts and understate the increasing concern surrounding pharmaceutical pollution by inaction or apathy are not cognizant of the global good. Taking the initiative to propose clearer guidelines for proper disposal of pharmaceuticals, establishing proper disposal sites, and conducting responsible research and development on the issue encourages greater support for water safety. Creating the change for improved regulations in safer drinking water is needed for the lives that depend on it for survival; this includes all of us. After all, isn’t it better that we take care of our waters today than to face potentially irreparable conditions tomorrow?

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