

Water Pollution

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Clean water the one thing we can't live without, but have to.

For: Mr. Ruttan

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Preface

The purpose of this report is to inform the population about water pollution.

People are killing our earth and our selves by expelling such high amounts of water pollution into our fresh and salt water.

Water pollution is the contamination of any body of water due to any foreign liquids, or objects, making the water harmful or unsafe to drink, including if it is unsafe to humans, animals, birds, and fish. Water pollution is mainly caused by sewage waste being dumped into waters or by runoff of pesticides on crops and lawns. Since the ground is being saturated by the chemicals in the pesticides are percolating into our ground water.

Water pollution may not seem like an urgent problem right now if you live in a first world country, but it is only becoming a bigger problem over time, so it should be taken care of now before it gets out of control. Humans pour pesticides and waste into our oceans every second of the day and it is slowly killing us. In the Middle Ages we were already polluting but not to the extent that we are right now. Back then we just polluted with human waste. After WW2 industries started using synthetic materials like plastics, polychlorinated

biphenyls, also known as PCBs, and inorganic pesticides like dichlorodiphenyl trichloroethane, also known as DDT. These materials are toxic, and build up in our environment because they are not biodegradable. These chemicals are increasing the rates of cancer, mental and physical and many other health problems. The daily requirement per person for clean water is two to four liters, but it takes two thousand to five thousand liters of water to produce one person's daily food. Just to produce one kilo of rice requires one thousand to three thousand liters of water and a kilo of grain fed beef requires thirteen thousand to fifteen thousand liters of water. (much)

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Summary

Water pollution is a major problem around the world, not only in developing countries but in first world countries as well. Water pollution has a long history but yet is still a problem today. Water pollution needs to be solved and this book provides solutions, examples of how it affects you and why you should care. Through thorough research acquired from books and the internet information is available which will help to make a change.

Background

In the ancient times rivers, lakes, and streams were the sources of fresh drinking water, but they were also the same water systems that the ancient peoples used to get rid of their human waste, which made the water undrinkable. The ancient peoples then made aqueducts to obtain clean water to drink.

The next time period was the Medieval Times. Considering there were no scientists in these times, no one was aware of the harmful effects of some substances, so mercury was often dumped into the water supply. Other things that were put freely into the water include human waste, farm waste, and

garbage. In the mid 1800s it has been noted that people ingested radium and lead believing it was healthy. However as an effect of the digestive system went into the water as well (History). The industrial revolution did not seem to be very environmentally conscious. All of the waste and chemicals that were pumped into the water were a result of ignorance rather than carelessness. People in this time had no idea that they could affect ecology.

After World War Two there were even more water pollution problems. Not only was there human waste, fertilizers, leather tanning, and butchering waste, but industrial waste was also freely dumped into the rivers and lakes. This polluted the water even more and caused large amounts of damage to living organisms using those waters. (Pollution)

In 1969, it was found that fires on the Cuyahoga River were caused by oil slicks and flammable industrial waste dumped into it (Issue). Oil slicks are another major water polluter. The American president Nixon started studies after this was discovered that led to the enactment of the 1972 Clean Water Act (onlineearning). After this act there have been large scale clean-ups occurring but it is still not enough.

Today, water pollution is an issue the world is facing. Therefore it is important for the public to be educated about the issue at hand, and how people

are getting diseases, illness and otherwise damaging their bodies with polluted water.

Expert

Augusta Goldin, a water pollution activist, presents many interesting points in her book, Water, Too Much, Too Little, Too Polluted. Goldin points out that water pollution has always been a problem and people have only recently acknowledged that it needs to be dealt with. Goldin also points out that we have tried to fix water problems in the past by cleansing our water with chlorine (Water page 128), but then it was found that chlorine promotes the formation of trihalomethanes, such as chloroform which is a carcinogenic. So now not only are we putting toxins and spreading disease through our water system but we are spreading carcinogens, increasing the likelihood of cancer in today's youth, and future generations.

According to Goldin, the governments in every country control what goes in and out of their waters, including pollution. Governments get paid money by big companies so they are able to dump their waste into the ocean and other water bodies. The companies win here because they get rid of their waste and the government of said countries win because they are making money, but the

people in these countries are not winning. The people in these countries are getting poisoned and sick from the toxins in their water just because it is easier to dump waste than take care of it properly. The companies should not be allowed to dump pollutants in the water for any amount of money. Instead the people should be able to have clean drinking water, not water laced with toxins, pesticides and their own waste. People care about the things they put in their bodies, and the companies that are ruining our earth should recognize that, especially it is their families that are also drinking the water.

Religious Connection

Not only are the people polluting themselves but they are polluting earth, the planet which makes it able for use to be alive. In the First Nations religion, it is believed that we are all connected to our mother earth, and by putting all of this pollution into our water supply we are poisoning our mother and our brothers and sisters that drink and swim in the water. In the Buddhist religion reincarnation is believed in; this means if we are putting toxins in our water our ancestors that are now living as fish and such in the water are getting killed by us, making us all murderers. In the Christian religion we are thought to be God's creatures on god's earth. So really no matter which of the many religions someone is they can look into including the ones listed above, we are hurting

someone or something when we pollute our waters, so we all should be a little more conscious of what we are doing when we pollute our water.

Case Study 1: Honduras

Honduras is a country in Central America that has been inhabited ever since the Mayan people in the beginning of the second century. Honduras now has a population of almost eight million people, with fifty percent of its habitants below the poverty line. Honduras is a democratic country that has trade agreements with the United States and is the third poorest country in the western hemisphere (Factbook).

Water Pollution is a very big problem in Honduras, since the population is so big but the country is so poor there really isn't anything productive being done about their contaminated water. The government has many organisations trying to clean the water. They have: municipalities in most urban areas, a private utility under concession by the municipality of San Pedro Sula, National Autonomous Water and Sewerage Service, which operates approximately half of the urban water supply and sanitation systems of Honduras, and about 5 000 water boards in rural areas. Yet with all of these water cleaning areas, in 2000,

ninety-eight percent of Honduras's water systems provided water for only an average of six hours a day; with only 51 percent of urban water systems drinking water being disinfected. In rural areas, only 3 percent of the wastewater being treated. This service from companies is very poor. In rural areas, it is estimated that only one third of the systems provided continual service and less than 14 percent of the systems delivered disinfected water in 2004. In 2006 only 75 percent of the drinking water in urban areas was disinfected and only 10 percent of the waste water that was collected received treatment (Honduras). In conclusion, there is still much to do in Honduras; the government needs to find the funds to be able to clean all of the wastewater before it is just discarded or recycled through the drinking water system. The government also needs to make sure all of the drinking water is disinfected to prevent excess visits to hospitals because of disease and sickness due to poor drinking water quality. Even though this government has so many people helping the country to have clean drinking water, the government is not stopping all of the polluting sources. The government has put a fine on mining companies such as Entremares for polluting the water with cyanide (used to extract gold from mined ore and arsenic). Yet the government does not stop them from mining and polluting the water. They simply impose fines over and over which clearly is not making a difference. NGO's such as the Global Water Challenge are stepping in and trying to enforce the laws because the government will not. The government is too focused on

making money for the economy and the government gets money in the economy from the mining and from the fines they are enforcing (Mining).

Case Study 2: India

India has been inhabited since at least the second millennia B.C. The Golden Age brought the science, art, and culture of India. After colonization by the British and the resistance led by Gandhi, India finally reached independence in 1947. India split into India and Pakistan because of religious differences and have fought three wars since the separation. India is run by a federal republic but with 25 percent of the people below the poverty line the country and people are suffering from a lack of funds to make sure everyone in India is safe (world).

The people in India are suffering from many sicknesses due to unhealthy living conditions, a lack of money, and a lack of resources. There are many major infectious diseases that are of high risk. The ones from contaminated water consist of: bacterial diarrhea, hepatitis A and E, and typhoid fever. All of these illnesses are preventable with proper water treatment. No large city in India has full-day water supply and most cities supply water only a few hours a day. In 2003 it was thought that only 27 percent of India's wastewater was being

treated and the rest was just flowing into rivers, canals, groundwater or the sea (India). In India there is not always a toilet available so people are openly excreting in the streets. India's government is trying hard to rectify this problem by finding organisations to help put in wells and proper piping into the cities but with a lack of resources and funds it is hard to maintain anything put into action. Even the sacred rivers in India are not safe from all of bacteria and disease. The Ganges River is infested with diseases and in some places becomes black and littered with half cremated bodies and enshrouded babies from Hindu ceremonies. There is also the sacred Yamuna River that has 10 000 times over the safety standard's limit of fecal bacteria causing the river to look like a river of black sludge. This river causes cases of cholera. The World Health Organization said that around 700 000 people would die each year from diarrhea. Also people will suffer from chronic diseases, respiratory problems, skin disorders, allergies, headaches, and eye infections. In conclusion, the governments and heads of state need to take a new approach to what they are doing because too many people of their country are dying from preventable problems, and it is not surprise that something has to be done about it.

Case Study 3: South Africa

South Africa is a republic in the most southern part of Africa. South Africa is under a democratic government and goes by Dutch and English law brought

there over years of Dutch and English rule. Even though the Dutch and English are well off in their own countries and tried to colonize South Africa it is still poor and has 50 percent of its habitats under the poverty line and 24 percent unemployed.

In South Africa just like in India and Honduras there is not enough money available to fund water purification. Everything is about priorities and water does not seem to be the top one in these cases. In South Africa people are dieing form the same diseases as there were in the previous case studies; bacterial diarrhea, hepatitis a and thyroid fever. Funding and a lack of proper maintenance is holding South Africa back from having a proper system that can provide clean water and cleaning of waste water. The water and sanitation sector in South Africa is organized in three different tiers. The national government is represented by the Department of Water Affairs, as a policy setter; Water Boards, which provide primarily bulk water, but also some retail services and operate some wastewater treatment plants, in addition to playing a role in water resources management; Municipalities, which provide most retail services and also own some of the bulk supply infrastructure. Also banks, private operators, and the Water Research Commission play an important role in the sector by doing research on how to improve South Africa's water system, which will continuously help them open new doors to better water. Therefore, South Africa, just like the other countries, needs to put more funding into their drinking water and wastewater sanitation. The more money they put into this the less

they will need to spend on health care because their people will be healthier with better water. The government in South Africa does not treat its native residents with the same respect as it does with tourists and white residents. White residents in South Africa mostly have running water and all around better quality of living, but the native Africans are left with a pump well if they are really lucky. Most South Africans have to walk several miles to a dirty unhealthy river where people also wash clothes, themselves, and also excrete body fluids.

International Organisations

Everywhere in the world is suffering from water pollution, but thankfully there are organizations out there to help. The governments of all the countries can only do so much so there are people like Global Water Challenge (GWC) who created the SWASH program that is helping Central American countries have a sustainable water supply, sanitation infrastructure, and hygiene education in schools to 58 schools in 25 municipalities. SWASH received their funding from GWC supported by Cargill and the coca cola company foundation. Other organizations that are helping in Central America and around the world include: MWA CARE, Catholic Relief Service, UNICEF, and Water for People.

In India there are also programs offered to help them and their situation. There is "The Water Project" which is partnered with Wells for Life to help bring

clean water to the poorest communities in India. They are also working with a NGO known as DWPA. Not only are these programs providing clean water but they are providing more water for more people because water is becoming scarce. Another organization called "Drinking Water for India" is a fundraising group that is also building wells in India. One well costs nine hundred dollars but it can supply water to hundreds of people for many years. Ten wells will be built supplying thousands of people with clean water, but this is still not enough. Water.org is also a program that provides safe drinking water and adequate sanitation facilities to the families in rural and urban Indian communities in five states (Andhra Pradesh, Karnataka, Madhya Pradesh, Orissa, and Tamil Nadu.)

South Africa also has the support of NGOs on top of government support, but not as much as some other places like India and Central America. South Africa has one main NGO called the "Mvula Trust" which is a well known water supply and sanitation organization. This organization has disbursed over 300 million rands (South African currency) to water service programs and projects and has given water to over a million people who previously had no access to water or sanitation. There are a few other NGO's that help South Africa but Mvula Trust is the largest.

Canada

In Canada there is a great amount of water being used compared to Europe and other developed places. Canada has an abundant amount of water and an immaculate water sanitation system that cleans all of our drinking water and even adds things such as fluoride into the water to help the Canadian people. While Canada cleans its drinking water very thoroughly they do not clean all of their wastewater before dumping it into the oceans which then pollutes our waters and kills our wildlife. Canada fails to sanitize many of their cities and communities wastewater. In some of Canada's cities and communities the wastewater treatment is either insufficient or non-existent. And many communities are dumping untreated or poorly treated liquid waste into the natural water systems. 15 percent of inland communities only receive primary level wastewater treatment; and coastal communities only have primary treatment or none at all (Crap). Even in big cities where proper water treatment is available there are still issues such as storm water causing sewer systems to over flow allowing raw sewage to run right into the rivers, lakes, and oceans surrounding them. Considering Canada's reputation for the cleaning of drinking water there have been cases of people getting sick from then water, such as the 2000 Walkerton Tragedy which happened because of E.coli bacteria in the drinking water from cattle farm waste run off into the water. There was also the 2001 outbreak in North Battleford, Saskatchewan which was caused by the protozoan Cryptosporidium; this outbreak affected at least 5800 people

(outbreak). In conclusion, Canada needs to not just think about there people and think they are protecting them by cleaning their drinking water, if they want to protect everyone they need to make sure they are also cleaning their waste water. In northern Canada the First nation's people have Northern Affairs Canada and Health Canada providing the north with cleaning drinking water and proper waste management systems.

Solutions

The world needs to solve its water pollution crisis; too many people have died for so long because of negligence to earth's water. Some solutions include things as easy as eating organic food or preserving the natural wetlands to things like the new oil eating bacteria that clean up oil spills in the ocean or getting the governments to update all of the water sanitization units and many more great innovative ideas.

Things as simple as buying organic food can really help the earth's water system. Buying only organic food that means there will be no pesticides or other harmful contaminants used in the growing of our food; the pesticides seep into the soil and down into our ground water. The pesticides also run into nearby streams and rivers when it rains or floods. Of course organic food costs slightly more but it will have a positive effect on our water table.

The wetlands of the world act like a big filter and create a natural buffering zone between the water and the land. All of the different plants, bacteria, algae, and microorganisms help to filter out all of the destructive pollutants. The wetlands can easily be preserved by replanting. Planting the right foliage can help a wetland survive. Some wetlands have been filled and developed wetlands tend to make poor environments to build on. By stopping wetlands from being filled and by helping replant trees, water will be somewhat filtered by the trees roots and it is also a great way for people in the community can help by volunteering which will lower the cost of hiring help.

Scientists in Argentina have been working on a bacterium that can eat oil. This bacterium eat oil in extremely cold temperatures which is similar to the bacterium that was created in Buenos Aires, this bacterium can eat oil as well but only in extremely warm climates. Both of these bacteria can break down fossil fuels or heavy metals in water and soil. The only downfall to using this bacterium is in some places it is illegal to introduce bacteria or viruses from other countries such as the Antarctic. This bacterium is called *Pseudomonas putida* and it grows just like any other bacteria so it does not take an abundant amount of government funding, so we can clean our water without going broke in the process.

If governments just update their water systems it will have a great impact. If straight pipes were removed, which are pipes that run the outflow pipe

from their house's plumbing system straight to the nearest creek. These setups are illegal but not all of them have been corrected. Changing these setups would cost a big amount of money however, and it an ongoing question to if it is up to the government or the land owner to fix the problem. Some places have put on "flush taxes", for example in Maryland (located in the United States) instituted a three dollar tax on citizen's sewer bills to help fund the upgrade of the states aging treatment plans.

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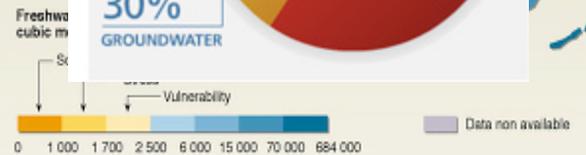
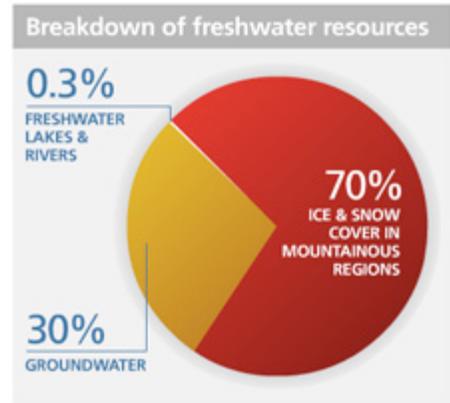
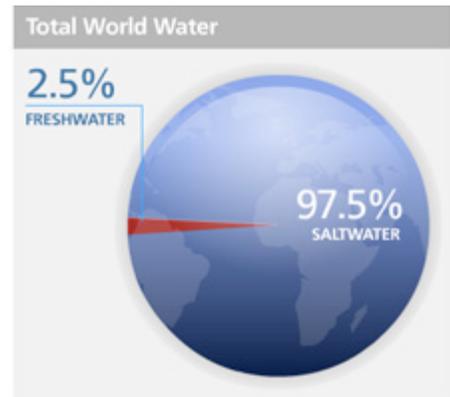
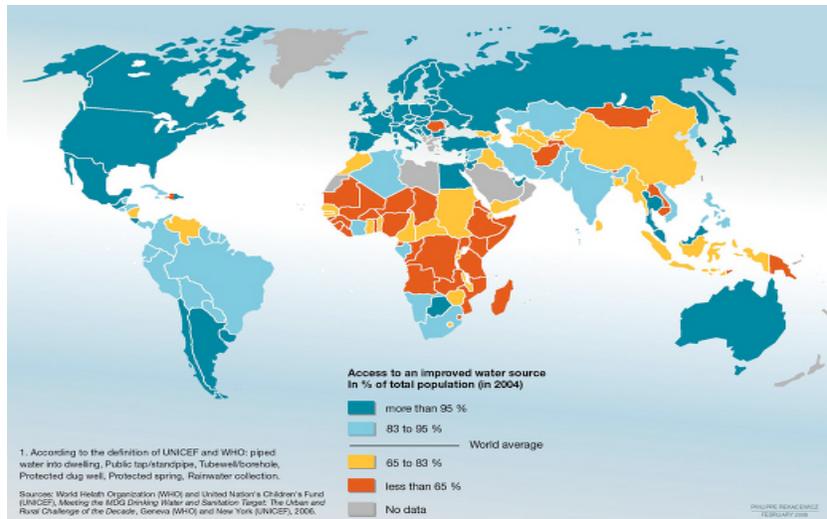
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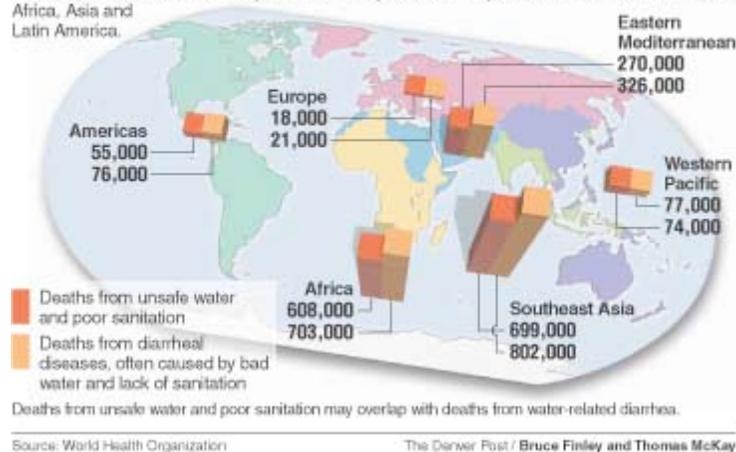
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Appendix



Water deaths worldwide

World Health Organization officials gave these rough estimates for water-related deaths in 2000. Precise data are hard to come by, but officials say deaths clearly are concentrated in low-income Africa, Asia and Latin America.



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