

Wasting Water

© 26 May 2016

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Reprinted 2016

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Outline

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 - B. Death by dysentery is only one effect of water contamination; without proper purification, there will be many more epidemics.
- II. Body
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 - A. Since the 17th century, dysentery has been taking many lives due to poor sanitation and lack of resources to help purify water. The mortality rate due to dysentery is primarily reoccurring in developing countries such as Africa and India because of the inevitable lack of facilities and resources, but there are also incidences occurring in the Unites States as well. Experiments are being performed in an attempt to find a cheaper, more natural form of purification. In the meantime, water contamination can be prevented by maintaining personal hygiene, resisting the temptation to use the sink and toilet as a waste basket and also paying attention to vehicle maintenance.
 - B. Dysentery continues to take the lives of many, but natural resources and experiments are making it possible to reduce the odds of death by the "hands" of this disease.

Water contamination has been a contributing factor to many of the deaths that have occurred throughout the centuries. Due to the lack of purified water in third-world countries and even in the United States, many are suffering from different water-borne diseases. Dysentery has been a killer for centuries, dating back to the 1700's. The water contamination crisis is much bigger than expected, and dysentery has been one of the most deadly forms of water-borne diseases to date. Utilizing the resources available from the Earth itself can help purify water and prevent water-borne disease. Death by dysentery is only one effect of water contamination; without proper purification there will be many more epidemics.

Dysentery is an infectious intestinal disorder caused by food or water that has been contaminated by traces of feces. It is contracted by infected individuals coming in contact with the food or water. Dysentery causes abdominal pain, inflamed intestines, and diarrhea containing blood or mucus. There are two types of dysentery; bacillary dysentery and amoebiasis dysentery. Bacillary dysentery (shigellosis) can range from mild to fatal, causing dehydration from fluid loss through defecation of feces. It is treatable with the use of antibiotics, fluid replacement and if necessary, a blood transfusion. Amoebiasis dysentery occurs when an individual is infected with the amoeba *Entamoeba histolytica*. It can cause similar side effects as the bacillary dysentery, or it can become more chronic or occur at irregular intervals, but the amoeba can be killed with the use of specific drugs ("Dysentery," 2014).

To find out more about the devastating effects of dysentery, studies are being performed on past victims. Recently, researchers who studied mummies that were displayed in Bowers Museum performed a CT scan on three mummies that were found in a secret crypt in

the Dominican Church of Vac, Hungary. One of the CT scans that was done on a baby named Johannes Orlovits, son of Skripetz, showed that he was a well-nourished baby, but his bowels were clean and lacked micro bacteria that is needed for digestion of food. It is presumed that dysentery was the cause of Johannes' death. Due to the lack of treatment through IV fluid, dysentery was fatal to anyone in the 17th century in which the mummies lived (Boessenkol, 2016).

Since the 17th century, dysentery has been taking lives of children and adults in third-world countries where there is a scarce amount of resources to help purify the drinking water and sanitation is poor. "It is estimated that around 1 in 10 people in the world is infected with *E. histolytica*....It is thought that, worldwide, about 40 to 50 million people infected with *E. histolytica* develop amoebic colitis or abscesses, causing up to 100,000 deaths per year. *E. histolytica* infection is particularly common in areas of Central and South America, Africa, and Asia..." ("Amoebiasis," n.d.). The lack of proper facilities in developing countries forces the people to resort to relieving themselves in or around the rivers and streams, causing contamination to spread and reluctantly become passed onto everyone who comes in contact with the virus through ingestion or physical contact.

Dysentery has victimized over 400 million, causing the death of about 600,000 people worldwide. Beginning in 1991, dysentery has been found in eight developing countries across South Africa ("Water-borne Diseases: Cholera and Dysentery," 2016). Further up northeast in Sweden during the climax of the outbreak, 90 percent of the deaths were at the "hands" of dysentery ("Dysentery Epidemic Killed Many In The 1700's-1800's," 2012). During the Civil War, many lives were taken by dysentery due to factors such as poor hygiene, exposure to a variety

of weather conditions that decreases immunity to diseases, rapidly spreading disease caused by overcrowding and also spoiled food (“620,000 Soldiers Died During the Civil War,” n.d.).



According to EPA (Environmental Protection Agency) , “...pollution prevention is reducing or eliminating waste at the source by modifying production processes, promoting the use of nontoxic or less toxic substances, implementing conservation techniques, and reusing materials rather than putting them into the waste stream” (“Pollution Prevention,” 2016). Pollution can easily be prevented all over the world by starting at home. Simply avoiding the temptation to use the toilet or sink as a trashcan, picking up after pets when they defecate outside and even paying attention to car maintenance can significantly reduce pollution in everyday lives (“6 Ways You Can Help Keep Our Water Clean,” 2016).

Personal hygiene plays an important role in the spread or containment of disease. Preventing this disease calls for a need for better attempts at hygiene and the studies to find a

vaccine. The team at University of Virginia Health System created the only FDA-approved diagnostic test for this infection. This diagnostic test helps distinguish it from other types of bowel diseases that cause the same symptoms as dysentery. In order to create a vaccine, the team at the University of Virginia Health System study children who are immune and are planning future vaccines that can be ingested through fruits and vegetables (“Amoebic Dysentery,” 2003).

“The first record of experimentation in water filtration, after the blight of the Dark Ages, came from Sir Francis Bacon in 1627....Hearing rumors that the salty water of the ocean could be purified and cleansed for drinking water purposes, he began experimenting in the desalination of seawater” (“Water Treatment in the Middle Ages,” 2010). In an attempt to find a present solution to purifying water by using natural resources, English biologist Rob Reed discovered that using sunlight and oxygen will naturally kill bacteria found in contaminated water. In collaboration with Isaac Bright Singh of Cochin University of Kerala, Reed set out to India to carry on his experimental trials of solar photo-oxidative disinfection techniques. In his earlier research, Reed and his team were experimenting on sewage in seawater, and with the use of sunlight and oxygen, they found a way to kill bacteria such as E. coli. He then thought to try it on drinking water. Every year millions of people die from contaminated water, and Reed found a cheap way of purifying water to decrease those odds. Although he has found a way to kill bacteria with sunlight and oxygen, the fight against killing off viruses is an unlikely win (“New Take on Old Techniques,” 2001). There are many ways to purify water at home that can help prevent the spread of disease. Distillation is a purifying technique where water is steamed and boiled. Boiling the water kills off different bacteria and pathogens, and as the steam rises, it

leaves behind any impurities such as waste materials, metals and other various contaminants (Williams, 2016).

In conclusion, dysentery is just one devastating effect of water contamination. Since the 17th century, dysentery has been taking many lives due to poor sanitation and lack of resources to help purify water. The mortality rate due to dysentery is primarily reoccurring in developing countries such as Africa and India because of the inevitable lack of facilities and resources, but there are also incidences occurring in the Unites States as well. Experiments are being performed in an attempt to find a cheaper, more natural form of purification. In the meantime, water contamination can be prevented by maintaining personal hygiene and resisting the temptation to use the sink and toilet as a waste basket. Dysentery continues to take the lives of many, but natural resources and experiments are making it possible to reduce the odds of death by the “hands” of this disease.

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