

How Sewage is Affecting Drinking Water and Other Bodies of Water:

Recorded by Lane Gaudioso

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Hello everyone and welcome to my WaterByte podcast, my name is Lane Gaudioso and I am here to talk to you about how sewage is affecting drinking water and other bodies of water around the world.

In the first part of this podcast I am going to talk about incidents where sewage has affected bodies of water; like rivers, oceans, and lakes. The first incident I'd like to talk about what happened in Nog-Poor, India. In Nog-Poor there is a lake called Gore-Wada Lake, which is the city's drinking source. This lake has been contaminated with sewage due to the lack of a proper sewage system.¹ It has been said that this contamination could cause the population to have health issues and it could cause a problem with the environment.² Nog-Poor Improvement Trust also known as the N-I-T has failed to stop the pollution of the city's drinking water and they have even delayed helping to save funds.³ The Gore-Wada Lake is not the only lake in India that sewage is being poured into.⁴ All of these other spills are also contributed to the N-I-T not installing proper sewage systems.⁵ People are starting to think that there isn't a real sewage problem, but thankfully as of January 2013, the Pollution Control Board has told the N-I-T to stop the sewage from flowing into lakes.⁶ After this warning no further action has been taken.⁷

This isn't just happening in places like India. There was a case in Montreal where the sewage was being dumped into the St. Lawrence River. Pierre Desrochers, the chairman of the city's executive committee stated that this was the only option that would allow construction work to be done.⁸ The city estimated that the temporary diversion would cost 1 billion dollars.⁹ They would runoff snow as well as industrial and residential waste.¹⁰ The Environmental Ministry has approved this plan as this was a common practice up until the 1980's and as recent as 2014 untreated sewage flowed freely into the harbor.¹¹ They also feel the river is too large for the contamination to make a difference, but experts feel differently.¹² The experts think that this contamination could impact the aquatic life living in and around the river.¹³

Many times in cases with contamination in water the aquatic life does suffers. In this next case sea turtles are developing Herpes due to them eating contaminated seaweed.¹⁴ The amount of contaminated seaweed is growing due to the rise in Nitrogen- rich overflow from sewers and farmers.¹⁵ The virus makes the turtles grow incurable growths around their eyes, mouth, joints, and organs.¹⁶ A team of scientist has been studying turtles for 28 years to calculate the nitrogen footprint.¹⁷ They found that the sick turtles hang around the areas with higher nitrogen overflow.¹⁸ It has been confirmed by other wildlife scientist that the turtle's tumors are linked to pollution but there could be many other factors.¹⁹

Now for my next case I'd like to bring it closer to home, to Albany New York. In this case contractors spilled 3 thousand gallons of sewage into the Willamette River. The spill lasted 2 to 3 hours.²⁰ The good news is that this spill was minor due to the quick reaction of the contractors who plugged the hole to avoid further spillage. Now you may be thinking 2 to 3 hours and 3 thousand gallons later, how is that quick? Well compared to the 6 million gallons of sewage the plant gets per day 3 thousand gallons is nothing. Signs were posted to alert the public and the city even went above and beyond by releasing the news that there was a high level of bacteria in the river, but that it would be flushed and cleaned out within a few days.²¹

With the previous incidents that I have shared with I wonder where the punishment is. In Cannon Beach they were charged with an 18 thousand dollar fine for spilling sewage into the sand and water.²² This penalty was served by the Department of Environmental Quality due to the pollutants that could harm the aquatic life and the drinking water.²³ This spill could also harm the recreational, commercial and agricultural use of water. Luckily this was avoided since the Cannon Beach public workers found the spill and the city immediately responded by restarting the pumps and cleaning up the contaminated sand. Although, this wasn't enough for some people.²⁴ The Ecola Creek Water-Shed Council chairmen felt that the city should have closed the beach until the water tested safe.²⁵ On the

other hand the Oregon Department of Environmental Quality was pleased with the way the city immediately placed signs up and cleaned the contaminated area and even went above and beyond by improving the pumps.²⁶ This is how they should handle a contamination.

In Miami, a sewage spill has occurred in the Oleta River area. About 5 million gallons of sewage spilled into the Biscayne Bay and other surrounding waters.²⁷ The city sent out a warning to the public about staying out do the contaminated waters.²⁸ The reason for the spill was because of a leak that sprung from a pump.²⁹ North District Wastewater Treatment Plant was doing maintenance when the leak began.³⁰ The spokeswoman from the county's Water and Sewer Department said she mainly blames the overflow of their unexpected rainfall combined with repairs to the pump.³¹ In certain areas of Miami they received excessive amounts of rainfall in March 2015.³² This lead to flooding in multiple areas. Storm water happens when rain picks up debris, chemicals, dirt, and other pollutants which flow directly into the storm sewer or into lakes, rivers, streams, wetland, and coastal water.³³

Now, for my next section I'd like to shed some light on contaminated drinking water and what some places are doing with it. First I'd like to talk about the drought crisis that is occurring in California. There has been talk that this is one of the biggest droughts in centuries. Due to this drought agriculture is plummeting

and the local economy is failing due to the lack of water.³⁴ This drought has driven many cities to filter their own sewage water into drinkable water.³⁵ In Fountain Valley, South of Los Angeles, the community has actually built a water recycling plant to convert their sewage water into drinkable water.³⁶ This plant is producing 70 to 100 million gallons of water a day.³⁷ First, the sewage is heated to a boil, and then it gets drained through a filter that is the size of human hair.³⁸ Once the water is filtered it goes through Osmosis and then it is treated with UV light.³⁹ According to the water district the recycling plant is the largest in the world and the only problem they foresee having is there not being enough sewage water.⁴⁰ Thanks to this plant they have less sewage waste and the people are becoming more aware of how to put recycling systems into their homes.⁴¹ This community believes the future is here.⁴²

They are also purifying sewage over in Orange County. This process has been approved by the San Diego City council, but the mayor banned this proposal because it would be too costly and the public would not accept it.⁴³ The city council plans on overriding this ban in December.⁴⁴ They dispute that it is as pure as distilled water and about the same cost as buying water from wholesalers.⁴⁵

Singapore is another area who is solving their water crisis by recycling sewage. Singapore is place lacking the most important thing that we need to live. As of now Singapore major source of water is imported, but this is based upon a

contract and when this contract ends, Singapore plans to be able to produce their own water.⁴⁶ They plan to catch rainwater and rely on technology to treat dirty water.⁴⁷ Two major challenges will be making the water system energy, less demanding and getting the consumers to act with respect towards water.⁴⁹

That is it for my podcast today. I hope I was able to raise everyone's awareness when it comes to water. Whether, it is just pollution or being more aware of your water usage it is more important now than ever for us to come together to come up with a better solution for these crisis. I am Lane Gaudio and thank you for listening.

Works Cited

- [1,2,3,4,5,6,7] Anparthi, A. A. (2014, April 15). Sewage still flowing into Gorewada lake, polluting drinking water. Retrieved September 24, 2015, from <http://timesofindia.indiatimes.com/city/nagpur/Sewage-still-flowing-into-Gorewada-lake-polluting-drinking-water/articleshow/33754603.cms>
- [8,9,10,11,12,13] CBC News. (n.d.). Montreal's raw sewage to be dumped into St. Lawrence River as planned. Retrieved October 14, 2015, from <http://www.cbc.ca/news/canada/montreal/montreal-sewage-decision-river-pollution-1.3253800>
- [14,15,16,17,18,19] Kessler, R., & 2010, for N. G. N. P. W. N. 10 12:10:00 E. (n.d.). Sea Turtle Herpes Tumors Linked to Sewage? Retrieved September 20, 2015, from <http://news.nationalgeographic.com/news/2010/11/101108-green-sea-turtles-tumors-pollution-science-environment/>
- [20,21] Times, C. G. (n.d.). Project sends raw sewage into Willamette River. Retrieved October 19, 2015, from http://www.gazettetimes.com/news/local/project-sends-raw-sewage-into-willamette-river/article_4aa2e987-8457-54ee-ba11-91034d12cfaa.html
- [22,23,24,25,26] Dani Palmer. (n.d.). Summer sewage spill in Cannon Beach draws \$1,800 fine. Retrieved October 13, 2015, from http://www.dailystorian.com/Local_News/20151013/summer-sewage-spill-in-cannon-beach-draws-1800-fine
- [27,28,29,30,31,32,33] Caitlin Granfield Special to the Miami Herald. (n.d.). No swimming: 5 million-gallon sewage spill affecting Oleta River area. Retrieved October 7, 2015, from <http://www.miamiherald.com/news/local/environment/article12601397.html>

[34,35,36,38,39,40,41,42] Brunhuber, K. (n.d.). California drought drives cities to filter drinkable water from sewage. Retrieved September 29, 2015, from

<http://www.cbc.ca/news/technology/california-sewage-to-drinking-water-1.3231396>

[37] Monks, K. (n.d.). From toilet to tap: Getting a taste for drinking recycled waste water -

CNN.com. Retrieved October 5, 2015, from *<http://www.cnn.com/2014/05/01/world/from-toilet-to-tap-water/index.html>*

[43,44,45] Randal C. Archibold. (n.d.). From Sewage, Added Water for Drinking - New York Times.

Retrieved September 10, 2015, from

http://www.nytimes.com/2007/11/27/us/27conserve.html?_r=0

[46,47,48,49] Senthingam, M. (n.d.). Drinking sewage: solving Singapore's water problem -

CNN.com. Retrieved September 20, 2015, from *<http://www.cnn.com/2014/09/23/living/newater-singapore/index.html>*