Waste Management

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"Human society sustains itself by turning nature into garbage"
~Mason Cooley

The System

Need-to-Know Words

Water Pollution: Adding to a body of water any substance that might degrade its quality.

Sewage: Water that contains waste matter produced by humans.

Point Sources: Direct sources of pollution like factories and sewage.

Water Recycling: Re-use of any waste water.

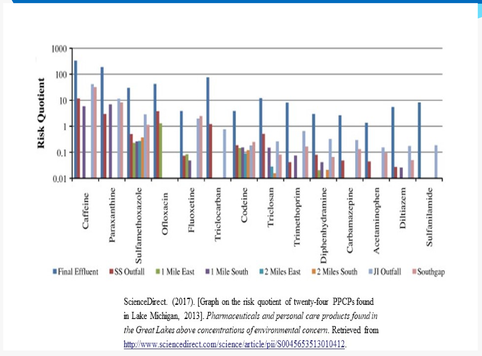
Mason, S. A. (2017)

80%

Richmond, E. K., Grade, M. R., Kelly, J. J., Reisinger, A. J., Rosi, E. J. & Walters, D. M. (2017).

There are pharmaceuticals and personal care products care products (PPCPs) in over 80% of the streams in the U.S. and the majority of these are understudied and or deemed "low risk."

Improper Disposal

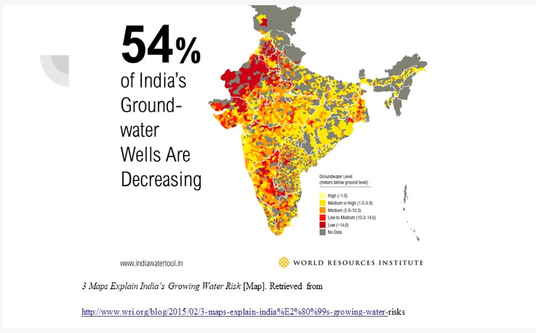


ScienceDirect. (2017). [Graph on the risk quotient of twenty-four PPCPs found in Lake Michigan, 2013]. *Pharmaceuticals and personal care products found in the Great Lakes above concentrations of environmental concern.* Retrieved from http://www.sciencedirect.com/science/article/pii/S0045653513010412.

Wastewater treatment plants are not designed to remove PPCPs. The figure on the left shows final effluent (wastewater discharged to surface waters) of PPCPs and their Risk Quotients in Lake Michigan. From 0.1 to 1 is medium risk, and greater than 1 is high risk. All PPCPs are at medium or high risk.

Blair, B. D., Crago, J. P., Hedman, C. J. & Klaper, R.D. (2013).

Unsafe Groundwater



3 Maps Explain India's Growing Water Risk [Map]. Retrieved from http://www.wri.org/blog/2015/02/3-maps-explain-india%E2%80%99s-growing-water-risks

80% of India's population relies on groundwater supply. 33% of that water is unsafe. It is contaminated with industrial waste and agricultural run-off, and poorly built infrastructure encourages bacteria and waterborne disease.

Chakraborti, D. , Das, B. & Mumil, M. T. (2011).

The Programs

Drug Take-Back Programs: There are events that safely dispose of drugs/medicines, and there may also be medicine take-back programs in your community

Pure-Water Programs: To better water recycling, some cities have started programs. For example, San Diego is launching a program that will provide 1/3 of the city's water supply locally by 2035 and it will use proven water purification technology to clean sewage into high-quality drinking water.

Smith, J. E. (2017).

Our Solutions

For less developed areas such as India, we can rebuild infrastructure (deeper tube wells), in order to reduce bacteria. We can also implement basic water treatment like those that we see in places like the U.S., in order to eliminate the chemicals. For more developed countries, we can use different advances in sciences to create better water treatment plants that do filter our PPCPs since it is impossible to totally prevent the problem through lifestyle changes.