

Reversing Water Pollution





- 🌍 70% of the earth is covered by water but only 2% is drinkable, fresh water
- 🌍 One litre of wastewater pollutes about eight litres of freshwater.
- 🌍 There is an estimated 12,000 km³ of polluted fresh water worldwide

How is polluted water cleaned up?

It is not easy to reverse the effects of water pollution and it can be very expensive.

There are two common ways to fix water that has been polluted:

- a. Remove the pollution source
- b. Remove the contaminants

Removing the Source

- Depends on the source and the type of pollution
 - Could be from one of three source types:
 - Point source
 - Nonpoint source
 - Transboundary source
- What are some examples of point, nonpoint and transboundary source pollution?

If removing the source of the pollution gets rid of the pollution then why isn't it used all the time?



Removing the Contaminants

- This is the second way of cleaning up water pollution
- There are five techniques used
 - Sometimes they are used individually or in combinations.
 - Most involve pumping the water out, treating the water and then pumping it back to the source.

Air Stripping



- This technique uses air to remove contaminants that evaporate easily
- The polluted water is pumped into a tank then it is sprayed over packing material
- The water slowly drips through the packing material and a fan blows over the water to evaporate the chemicals
- The chemicals are collected at the top of the tank and are treated to prevent further pollution.

Activated Carbon Filtration

- Polluted water is sent through columns on activated carbon
- The chemicals stick to the surface and pores of the carbon granules and clean water flows through
- When filters become full, they are either cleaned or replaced



Bioremediation

- Uses naturally occurring microorganisms to digest contaminants
- The contaminants are converted to water and other gases such as carbon dioxide
- Often used in wastewater treatment plants in cities and can be used for drinking water too.



Phytoremediation



- Plants and trees are used to remove pollutants
- The roots of the plant take up the contaminants at the same time as water and nutrients.
- The contaminants are stored in the roots, stems, and leaves

Chemical Oxidation



- Oxidants are used to convert chemicals into less harmful chemicals
- Wells are drilled into the ground water source and the oxidants are pumped in
- The contaminants are removed above ground and are treated and disposed of easily.

Is it our problem?

- Is the clean up of polluted water our problem?
- Can we do anything individually to clean up water pollution?
- If you could chose a method of clean up, which method or methods would you choose and why?