

Operation Water Drop



Class Handout for Grades 6 - 8

Lesson 1 - What Is Drinking Water Quality?

There are two major sources of water:

- Groundwater – found underground in the earth's crust
- Surface water – found on the earth's surface in lakes, and ponds, rivers, etc.

Drinking water should be:

- Clear
- Colourless
- Odourless

Drinking water should not contain:

- Small living organisms that cause diseases
- Harmful chemicals

What else might be in water?

- Small, living organisms
- Nutrients
- Chemicals

Where do harmful particles come from?

- Erosion of rock and soil
- Garbage landfills
- Sewage
- Wastewater treatment plants
- Farms
- Homes
- Water from large companies or factories
- Motor boats like Jet-skis



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Effects of harmful particles in water

- Appearance - can taste, smell, or look bad
- Appearance of people drinking bad water - skin rashes, bad teeth
- Harmful effects within hours - diarrhea and/or vomiting
- Harmful effects not seen for years - liver disease, cancer

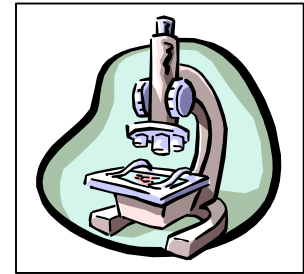
Minerals, nutrients and chemicals can affect human health

- As water moves, it dissolves and carries with it things it contacts
 - Many salts and minerals found in water are necessary for our bodies, but some like arsenic can be dangerous
- Microorganisms and human health

Microorganisms are small, living organisms that can make you sick, including:

- Bacteria - *E. coli*
- Protozoa - Cryptosporidium
- Viruses - Hepatitis A
- Algae - Microcystis

However, not all microorganisms found in water can make you sick.



Some minerals and nutrients affect human health

- High levels of sulfates and other salts can cause diarrhea
- Nitrates can cause death in babies
- High levels of arsenic can cause heart disease and cancer

Chemicals can affect human health

- Many of the harmful chemicals are man made
- Some include farm chemicals (pesticides), oil and gas
- Effects may include: liver or kidney damage, cancer

How do we make our water safe?

- Monitor the water supply
- Test for harmful particles
- Apply appropriate treatment before drinking the water
- Protect the source water



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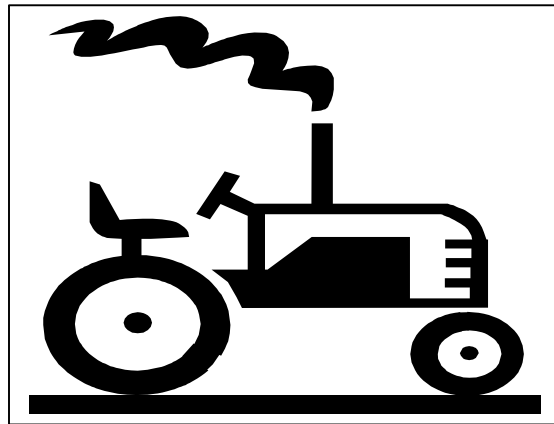


Treatment

- All water should be treated before drinking
- No one treatment system is perfect for every water source
- Problems with the water must be identified, then treated
- Just adding chlorine to your water does not make it safe

Difference between Farm and City water

- Cities can have water tested daily in treatment plants
- Some farms may have wells tested twice a year
- Farms get water from wells or ponds, while in the city, water comes mostly from lakes and rivers
- Water in cities contains high levels of chlorine while some farms don't use chlorine
- Farm water is often of much poorer quality than city water



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