

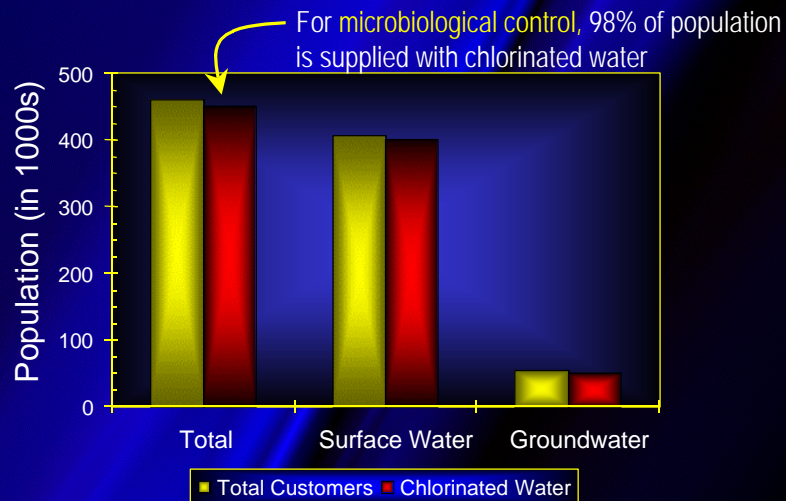
Regulatory Framework in Canada

- The Guidelines present values for:
“substances that have been found in drinking water and are known or suspected to be harmful”
- The guidelines are reported for:
 - Microbiological pathogens
 - Chemical substances
 - Physical properties
 - Radiological substances

Water Treatment Objectives

- **Microbiological control**
 - Disinfection
 - Physical removal from water
- **Chemical control**
 - Removal of natural organic matter (NOM)
 - Removal undesirable inorganic compounds (e.g., iron, manganese)
- **Physical/Aesthetic control**
 - Colour, odour, taste

Water Treatment Practices in Newfoundland and Labrador



Water Treatment Practices in Newfoundland and Labrador

- In addition to chlorination, 13 plants apply physical/chemical removal technologies for water safety
 - 11 “conventional” treatment process
 - 1 “conventional” treatment with reverse osmosis
 - 1 membrane treatment plant

Summary of Treatment Objectives

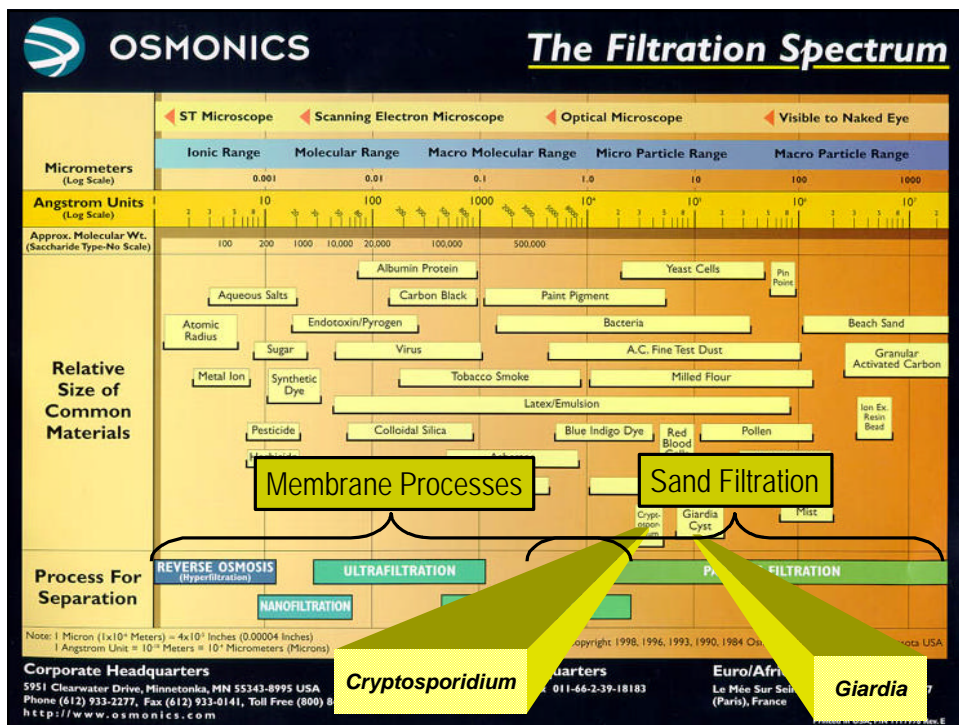
- The need for water treatment is paramount for preventing waterborne disease
- Watersheds, treatment technologies and distribution system management comprise the “multiple barriers” that are critical for ensuring safe public water supply

Physical Removal Treatment Technologies

Overview of available technologies for removing microorganisms and unwanted particles from water

Objective of Physical Removal Processes

- Objective of physical removal technologies is to remove suspended matter from water
 - Microorganisms
 - Particles
 - Organic material
 - Inorganic minerals
- Material that will contribute to *turbidity*, a measure of water clarity.



Sand Filtration



- Typically, filtration occurs with two media types
 - Top layer is larger media (e.g., anthracite)
 - Lower layer is finer media (e.g., sand)



Chemically-Assisted Filtration

- **In-line filtration**
 - Treatment process that involves *coagulation* preceding sand filtration
- **Direct filtration**
 - Treatment process that involves coagulation and *flocculation* preceding sand filtration
- **Conventional treatment**
 - Treatment process that involves coagulation, flocculation and *clarification processes* preceding sand filtration