

Overview and Framework for the Selection of Water Treatment Processes



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Presentation Outline

- Objectives of Water Treatment
- Physical Treatment Methods
 - Chemically-Assisted Filtration
 - Membrane Filtration
- Disinfection
 - Methods of Treatment
- Distribution Systems

Objectives of Water Treatment

Ensuring Public Health by
Managing Water Safety

Objectives of Water Treatment

“The availability of reliable supply of
clean and safe water is one of the most
important determinants of our health”

- Source to Tap, 2001. Department of Environment,
Government of Newfoundland and Labrador

Significance of Safe Water: Historical Perspective

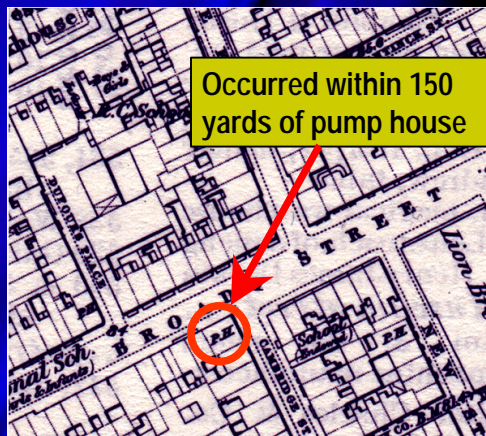
- In August 31-Sept 5, 1854, Dr. John Snow reported on the “worst case” of human disease that London has ever experienced.



The communal pump at the Corner of Broad and Cambridge Street.

Significance of Safe Water: Historical Perspective

- 500 cases of cholera developed in the span of 10 days
- Resulted in 83 deaths
- Handle was eventually removed



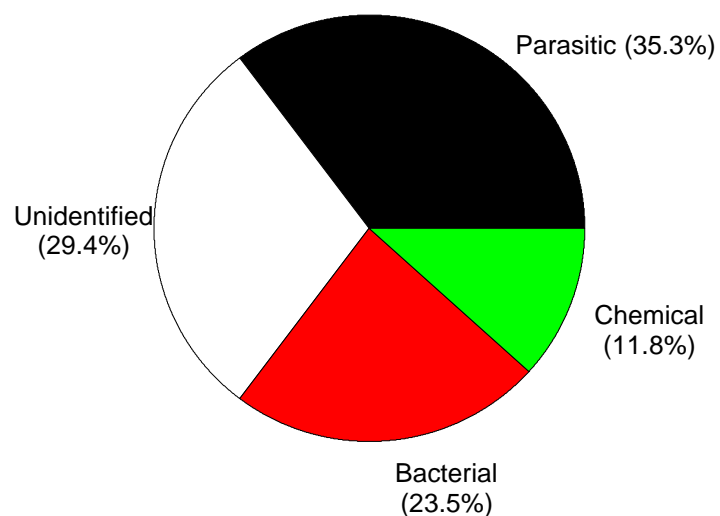
CASE STUDY: Demonstrated the need for
source protection & treatment

Significance of Safe Water: Recent Waterborne Outbreaks

- **Walkerton, ON May 2000**
 - 7 deaths and an estimated 2,300 experienced gastrointestinal illnesses (GI)
 - Drinking water was contaminated with *Escherichia coli* 0157:H7
- **Milwaukee, WI April 1993**
 - An estimated 400,000, approximately half the population, experience GI symptoms
 - Drinking water was contaminated with *Cryptosporidium parvum*

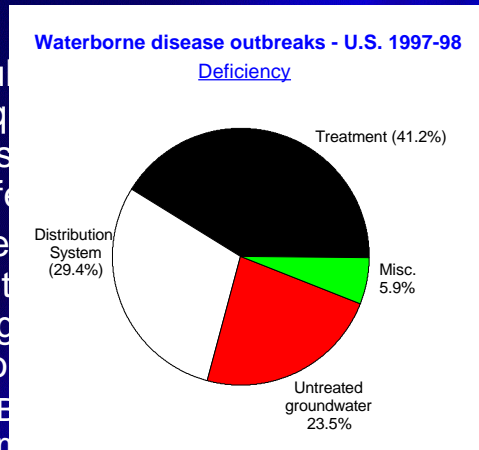
Waterborne disease outbreaks - U.S. 1997-98

Etiologic Agent



Source of Waterborne Disease

- Multiple requirements for safe
- Treatment distribution large proportion
- Environmental



Regulatory Framework in Canada

- Federal-Provincial Subcommittee on Drinking Water
 - Sets Guidelines for Canadian Drinking Water Quality (GCDWQ)
 - Published by Health Canada

http://www.hc-sc.gc.ca/ehp/ehd/bch/water_quality.htm