


Background on EPA's Ambient Water Quality Criteria for Bacteria



Lars Wilcut
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The Basics

- ❖ EPA's recommended bacteria water quality criteria (WQC) are for indicator organisms
 - ◆ Indicators are not generally pathogenic to humans

- ❖ Pathogens are disease-causing microorganisms that include viruses, protozoa, and bacteria


- ❖ Monitoring for the many illness-causing pathogens is difficult and costly

History


- ❖ American Public Health Association's Committee on Bathing Places recommended total coliforms criteria for pools in 1924
 - ◆ No recommendations for beaches due to concern over public hysteria

- ❖ From 1948 to 1950, the US Public Health Service conducted health studies at beaches on Lake Michigan, the Ohio River, and Long Island Sound

History

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- ❖ The National Technical Advisory Committee of the Federal Water Pollution Control Administration made the first federal bacteria criteria recommendations in 1968
 - ◆ Fecal coliforms
 - ◆ Based on the 1948-1950 USPHS studies
 - Studies measured total coliforms

Epidemiological Studies



❖ In 1972 EPA initiated a series of multiyear, comprehensive epidemiological studies at marine and fresh water bathing beaches

- 1 Are bathers at risk from contaminated waters?
- 2 What indicator has the greatest correlation to swimming-related health effects?

Study Results

- ❖ Of the indicators measured during the studies, *E. coli* and enterococci showed strongest correlation to swimming-associated gastroenteritis
 - ◆ *E. coli* and enterococci in fresh waters
 - ◆ Enterococci in marine waters

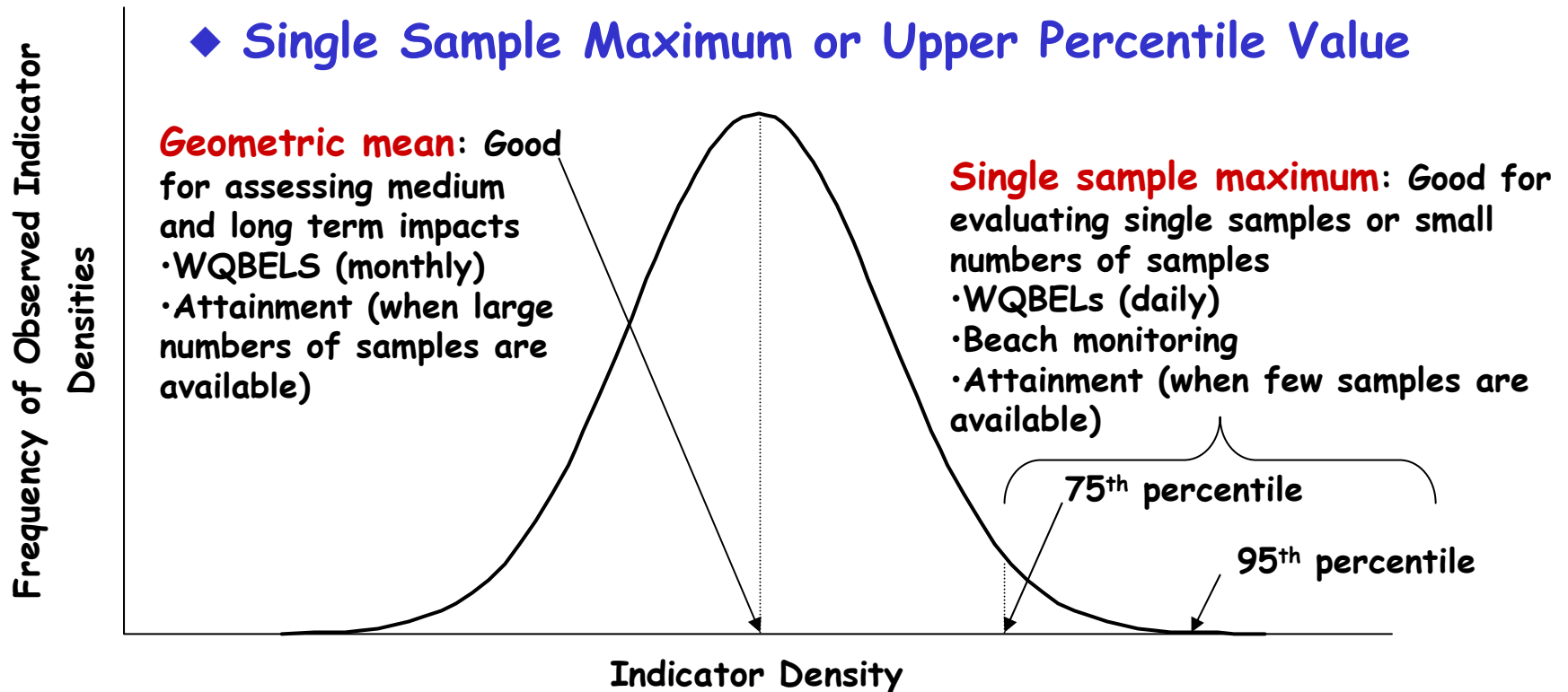
EPA's 1986 Recommended Criteria

- ❖ The 1986 criteria use *E.coli* and Enterococci as indicators of fecal contamination.
- ❖ The 1986 criteria are used in two different, yet related ways:
 - ◆ Protection of human health in water bodies designated for recreational uses in state and tribal WQS
 - ◆ Use in beach monitoring and notification programs
 - Protect public health
 - Aid in determining when to issue advisories or close beaches

Components of EPA's Criteria

❖ *E. coli* and enterococci criteria have two components:


- ◆ Geometric mean
- ◆ Single Sample Maximum or Upper Percentile Value




Why develop new criteria?

- ❖ It has been over 20 years since EPA last issued recreational criteria.
- ❖ Science (particularly molecular biology, virology and analytical chemistry) have advanced significantly during this time.
- ❖ EPA believes that new scientific and technical advances need to be considered, if at all feasible, in the development of new criteria.


BEACH Act - Key Provisions

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- ❖ 304(a)(9): EPA shall publish new or revised criteria for pathogens and pathogen indicators (including a revised list of testing methods, as appropriate), based on the results of the section 104(v), for the purpose of protecting human health in coastal recreation waters.

BEACH Act - Key Provisions

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- ❖ 104(v): EPA shall initiate studies to provide information in developing:
 - ◆ Assessment of potential human health risks resulting from exposure to pathogens..., including non-gastrointestinal effects;
 - ◆ Appropriate and effective indicators for improving detection in a timely manner...;

BEACH Act - Key Provisions (cont'd)

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- ◆ Appropriate, accurate, expeditious, and cost-effective methods (including predictive models) for detecting in a timely manner...; and
 - ◆ Guidance for State application of criteria for pathogens and pathogen indicators to be published under section 304(a)(9) to account for the diversity of geographic and aquatic conditions.

BEACH - Key Definition (CWA § 502)

❖ Coastal Recreation Waters means:

- ◆ The Great Lakes; and
- ◆ Marine coastal waters (including coastal estuaries) that are designated under section 303(c) by a State for use for swimming, bathing, surfing, or similar water contact activities.

❖ Exclusions - The term "coastal recreation waters" does not include:

- ◆ Inland waters; or
- ◆ Waters upstream of the mouth of a river or stream having an unimpaired natural connection with the open sea.