



EPA Recreational Criteria Activities

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EPA's Current Bacteria Criteria

- EPA's 1986 recommended bacteria water quality criteria (WQC) are for indicator organisms
 - Indicators are not generally pathogenic themselves
- Pathogens are disease-causing microorganisms that include viruses, protozoa, and bacteria
- Monitoring for the many illness-causing pathogens is difficult and costly
- *E. coli* and Enterococci are EPA's current indicators



EPA's Current Bacteria Criteria

Risk Level (% of swimmers)	Geometric Mean Density (per 100 mL)	Single Sample Maximum Allowable Density (per 100 mL)			
		Designated Bathing Beach (75 th percentile)	Moderate Use (82 nd percentile)	Light Use (90 th percentile)	Infrequent Use (95 th percentile)
Enterococci for Marine Water					
1.9	35	104	158	276	501
<i>E. Coli</i> for Freshwater*					
0.8	126	236	299	409	576
Enterococci for Freshwater*					
0.8	33	62	79	107	151

*EPA allows criteria values up to a 1% risk level in freshwater



The Use of EPA's Recommended Criteria



- The national criteria are used in two different, yet related ways:
 - Protection of water bodies designated for recreational uses in state and tribal WQS
 - Used to derive permit limits, make listing decisions, and develop TMDLs
 - Beach monitoring and notification programs
 - Protect public health
 - Aid in determining when to issue advisories or close beaches

EPA's Objective

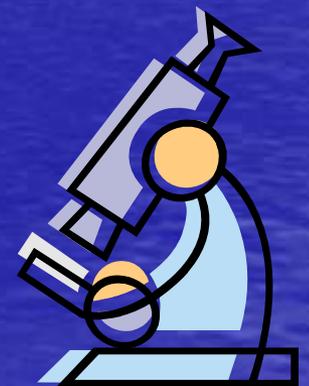


- New rec criteria for all waters by 2012
 - Including freshwater rivers, streams and lakes
- Why?
 - Incorporate new science—over 20 long years since 1986 criteria; CWA requires updates “from time to time”
 - Improve scientific foundation and implementation
 - 2012 is Consent Decree deadline
 - Settled Law Suit in August 2008
 - Beach Act requires new criteria for coastal rec waters
 - Want to cover all waters
 - Eases implementation for BEACH Act states: no double standards
 - Makes providing protection for downstream rec waters easier

EPA's Major Research Areas per Critical Path Science Plan



- Epidemiology Studies and Quantitative Microbial Risk Assessment (QMRA)
- Site Characterization
- Indicators/Methods Development and Validation
- Modeling
- Addressing Application to Inland Waters



Epidemiological Studies

- 2002-2004 Freshwater NEEAR Studies at four Great Lakes Beaches
- 2005 Marine NEEAR Study in Biloxi, MS (partial study)
- 2007 Marine NEEAR Studies in Goddard, RI and Fairhope, AL
- 2007/2008 Supported marine studies with SCCWRP in Southern CA at Avalon and Doheny Beaches
- 2009 Planned Studies:
 - Beach in tropical region
 - Marine beach impacted by urban runoff in a temperate region
 - Technical support to studies by PR University and SCCWRP



Agricultural Animal QMRA



- Conduct QMRA to estimate illness at a freshwater location primarily impacted by agricultural animal sources (e.g., bovine, swine, poultry)
- Data collection – Fall 2009/Spring 2010
- QMRA – Fall 2010



Site Characterization



- Fate and transport of the qPCR signal
 - After treatment at the POTW and after release in ambient waters
- Data collection and source characterization to aid in site selection for urban runoff and tropical epi sites
- Design and evaluate monitoring approach
- Evaluate quantitative sanitary investigation methods

Re-analyzing NEEAR Epi Water Quality Samples

- Re-analyze Great Lakes Epi Study archived samples
 - *E. coli* by qPCR
 - Revised *Bacteroides* by qPCR



Modeling



- Develop and pilot test software for beach-specific predictive models
- Develop user-friendly interface for beach decision-making software
- Develop and apply other models for freshwater and marine beach notification and closure
- Develop site-specific protocols for development and application of predictive models for beach advisories

EPA Inland Waters Efforts

- Literature review to determine
 - Fate and behavior of pathogens and indicators
 - Microbial ecology and persistence
 - Indicator performance
- Analyze samples from EPA's National Rivers & Streams Survey for additional indicators by molecular methods
 - 2,200 sample locations
- Develop monitoring scheme specific to inland waters
- Collect side-by-side information on culture-based and molecular-based methods in inland (and other) waters



Schedule & Timing



- All research must be complete by December 15, 2010
- New/revised criteria must be finalized by October 15, 2012



For More Information



- EPA's Beach and Rec Criteria Web Pages
 - www.epa.gov/waterscience/criteria/recreation
 - Experts Scientific Workshop Report and Executive Summary
 - Critical Path Science Plan
 - Consent Decree & Settlement Agreement Documents
 - Announcement of Stakeholder Meetings & Logistics
 - www.epa.gov/beaches
 - BEACH Act text
 - Grants information
 - Beach Guidance Document
 - Local beach information
 - www.epa.gov/waterscience/criteria/humanhealth/microbial/#wqs
 - BEACH Act rule
 - Technical fact sheets
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