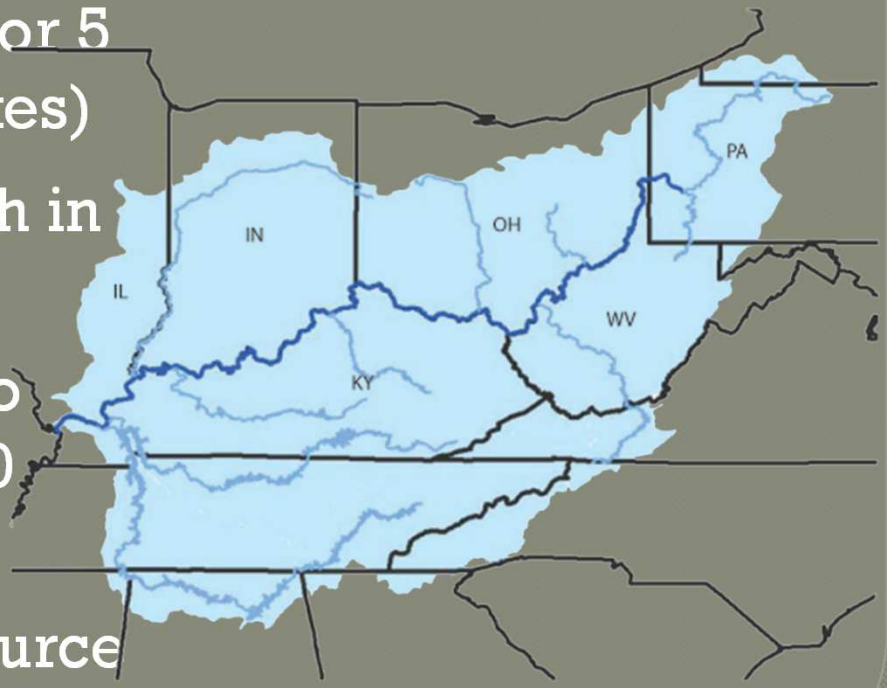
Ohio River Water Quality Issues

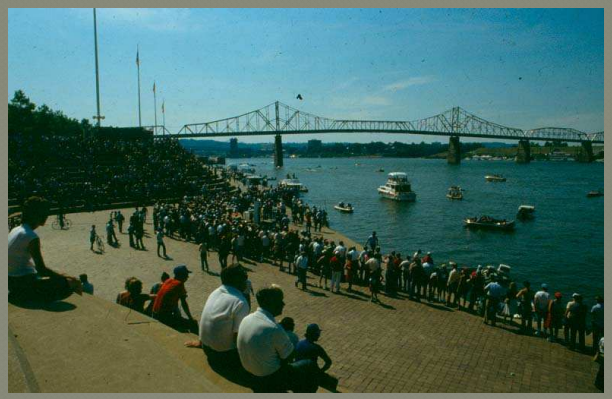
Pathogens
Wet Weather
Nutrients
Mixing Zones - BCCs

Ohio River Facts

- 981 Miles from Pittsburgh to Cairo
- Drinking water source for 5 million people (33 intakes)
- 120+ species of fish; rich in mussels
- 230 million tons of cargo transported annually; 20 locks and dams
- Recreational water resource
- 38 power generating plants



Recreation on the Ohio River



Water Pollution Control on the Ohio River

- States adopt water quality standards
- States issue NPDES permits
- ORSANCO adopts standards under authority of the Ohio River Valley Water Sanitation Compact
- ORSANCO standards include water quality criteria and effluent limits
- Permits for Ohio River discharges must address ORSANCO standards

Ohio River/ Wet Weather Conditions Background

- Over 10 % of CSOs in the US are along the Ohio River.
- Ohio River Valley Water Sanitation Compact pledges states to make river safe for water supply, aquatic life, recreation.
- ORSANCO studies indicate pathogens are major wet weather impact.

Ohio River/ Wet Weather Conditions Background

- Contact Recreation Criteria apply May – October.
- No designated bathing beaches – water and jet skiing are major contact recreation activities.
- Contact recreation is hazardous at high river stage.
- Nine Minimum Controls in all CSO communities will not attain recreation criteria.

Guiding Principles for development of wet weather provisions for pathogen criteria

- Pathogen criteria established to protect water supply use should be met at all times.
- Pathogen criteria established to protect recreation use should be met at all times when the river is otherwise safe for contact recreation.

Guiding Principles (continued)

- All sources of pathogens should be required to provide a reasonable level of control.
- The public needs to receive clear information regarding the risks of contact recreation in the Ohio River.

Guiding Principles (continued)

- Decisions that involve the balancing of risk to the public in recreational use of the river versus cost to the public in order to control pathogens need to be made with considerable public input.

Work Group Recommendations Resulted in 2009 Proposed Revisions to ORSANCO Standards

- Revisions proposed to Section IV.C.1 b and c
  - Revised numerical criteria
  - Suspension of Contact Rec Use at high flows
- Revisions proposed to Section V.B.3.c
  - Provision for alternative criteria after completion of LTCP and UAA

And What Happened?

Not Adopted

Use suspension at higher flows and alternative criteria

Adopted

Alternative Criteria can be established (requires approval by State and ORSANCO) per completion of LTCP and UAA

Observations/ Lessons Learned

- We were too anxious to move forward
  - Proposals needed more justification.
  - High flow cutoff was not well thought out.
- We didn't get our message across
  - To the public
  - To elected officials
  - To our own Commissioners

Observations/ Lessons Learned

- Public Hearings are a poor mechanism for presenting a complex proposal.
- Proponents of wet weather standards need to mount a more effective supportive effort.

Next Steps

- Study of Ohio River Recreational Use.
- Participation in the National dialogue on pathogen indicators.
- Development of a TMDL for pathogens.
- Review of ORSANCO Public Education Activities.

Progress Report

- Recreational Use Study Completed
- Increased efforts at public education – minimal effectiveness
- Participated on WERF pathogen group
- US EPA issued new criteria

2011-2012 Review of ORSANCO Pollution Control Standards

Revisions adopted in October, 2012

Document Reorganization

Content of 2011 Standards

- Authority and Purpose
- Definitions
- Designated Uses
- Water Quality Criteria
- Waste Water Discharge Requirements
- Mixing Zone Designation
- Limitation
- Variance
- Analytical Methods
- Severability Clause
- Appendices

Content of Proposed 2012 Standards

Chapter 1: General Provisions

- Authority & Purpose
- Definitions
- General Conditions
- Limitations
- Severability
- Variances
- Site Specific Criteria

Chapter 2: Designated Uses

Chapter 3: Water Quality Criteria

- Summary Table of Criteria (Added)
- Aquatic Life
- Human Health

Chapter 4: Mixing Zones

Chapter 5: Wastewater Discharge Requirements

Recreational Use Criteria

1) Recreation season extended from May-Oct to Apr-Oct.

2) Revisions based on USEPA's proposed criteria:

   a) Fecal coliform criteria removed from Chapters 3 & 5.

   b) Monthly geometric mean E. coli criterion of 130/100mL revised to 90-day geometric mean criterion.

   c) Single sample monthly max E. coli criterion of 240/100mL revised to not to be exceeded in more than 25% of samples in 90 day period.

Comparison of Proposed Revisions

30-Day Geo Mean E. coli 130/100mL

	# Mos. Exceed	% Mos. Exceed	Assessment
ORM 462.5	3	10%	Full Support
ORM 477.5	11	37%	Non-Support

90-Day Geo Mean E. coli 130/100mL

	# Mos. Exceed	% Mos. Exceed	Assessment
ORM 462.5	1	5%	Full Support
ORM 477.5	3	15%	Partial Support

Maximum Criterion E. coli 240/100 mL

Current single sample max criterion not exceeded in > 10% of all samples.

Proposed 25% in 90 days: Allows 3 exceedances in any 90 day period.

Mixing Zones for BCCs

- Ten year phase out adopted in 2003
- Concerns raised about Mercury in FGD discharges
- New analytical method reveals many discharges exceed mercury criterion
- Variance procedure adopted in 2010
- First variance granted in 2012
- ORSANCO is considering two year extension of deadline

Nutrient Criteria Development

- Criteria development for the main stem of the Ohio River began in 2002.
- There are not obvious cause-effect relationships between concentrations of nutrients and impairments caused by nutrients.
- There are occasional algae blooms and drinking water taste & odor problems that are associated with nutrients.
- Continuing to look at other indicators such as changes in macroinvertebrate communities resulting from nutrients.
- No date certain for completion of criteria development.

Algae/Nutrients Program Design

- Parameters: total phosphorus, nitrate/nitrite, TKN, ammonia, phytoplankton algae identification, chlorophyll *a.*
- Frequency: 2/month. 12 months/year for nutrients. 9 months/year for algae.

- 7locations
- West View, PA ORM5
- Wheeling , WV ORM87
- Huntington, WV ORM306
- Northern KY ORM463
- Louisville, KY ORM600
- Evansville, IN ORM792
- Paducah, KY ORM936

Ohio River Basin Trading Program

- Project began with Electric Power Research Institute 2008 feasibility study.
  - Power plants compliance cost ranged from $20-180 per lb of nitrogen
  - Typical farmer BMP cost $2-4 per lb
- Project funding to date from project partners and grants: $5 Million
- Advisory groups from Power Industry, Agriculture, WWTP's, Environmental Groups.
  - WWTP advisory group from NACWA

- Project Partners
  - **Electric Power Research Institute**
  - **American Electric Power**
  - **Duke Energy**
  - **Hoosier Energy**
  - **Tennessee Valley Authority**
  - **American Farmland Trust**
  - **Ohio Farm Bureau Federation**
  - **ORSANCO**
  - **Hunton & Williams**
  - **Kieser & Associates**
  - **US EPA**
  - **USDA**

Trading Program Pilot Phase

- Pilot phase will test out procedures developed for the program
- Pilot Trading Plan signed by Ohio EPA, Indiana DEP, Kentucky DEP August 9, 2012
- $100,000 will be spent on BMP's in each State.
  - Projects are currently being scoped
  - Installation of BMP's this spring/summer
  - First credits for sale in September 2013
- Project will go full scale in 2015.

Questions?