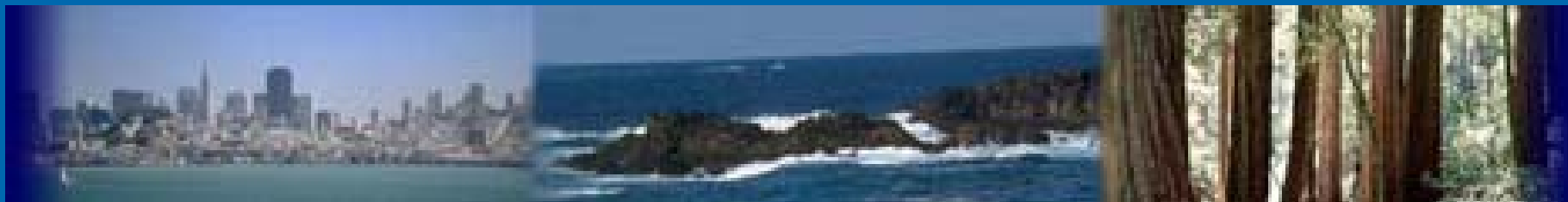


US EPA ARCHIVE DOCUMENT



The EPA Regional Perspective –

Why Pharmaceuticals in the Environment are an Emerging Science Issue to EPA's Regions

Bobbye (Barbara M.) Smith, Ph. D.

National Regional Science Council PPCPs Team


Pharmaceuticals in the Environment

ORD Las Vegas Laboratory

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Presentation Outline

- **National Regional Science Council's Top 14 Short Term Science Needs**
 - **What's Happening in the Regions**
 - **Regional Information Needs**
 - **Priority Science Needs**
 - **Summary**
- 

National Regional Science Council's Short Term Science Needs Project

- Developed for the first time this year
- Science Needs cross-regional & cross-programmatic
- From > 100 science needs, **PPCPs in Top 14**
- For the Regions - **PPCPs include:**
 - products from Waste Water Treatment Plants (WWTPs) and septic systems
 - veterinary pharms associated with agriculture & mariculture
 - personal care products including surfactants and fragrances

What's Happening in the New England Region (Region 1)

- Developed HPLC/MS/MS method for steroid hormones and other EDCs in water- part of study of 40 WWTPs in CT, ME, VT
- Grant to Northeast Recycling Center (NERC) evaluating approaches to dispose of used consumer drugs
- Grant to Hospitals for a Healthy Environment (H2E) to address hospital pharm waste

continued

What's Happening in the Mid-Atlantic Region (Region 3)

- Intersex male bass found in South Branch of the Potomac River
 - Poultry operation runoff initially implicated
- Current studies test correlation between WWTP effluents and estrogenic effects
- Vtg Gene expression assay underway to assess presence of estrogenic EDCs
- Regional Project “Environmental Consequences of the Use of Veterinary Antimicrobials”

continued

What's Happening in Region 5

- Regional Laboratory developing analytical methods
 - alkyl and nonyl phenols
 - AP and NP ethoxylates
- UW Superior & St Cloud MN perform toxicity tests to help develop Water Quality Criteria
- Liver assay by ORD to correlate chronic toxicity values - Vtg gene expression assays
- Regional Project “Wastewater Treatment Plants Sewage Sludge and PBTs”

continued

What's Happening in the Mountains & Plains Region (Region 8)

- **Effluent Study Year 1:**
 - Research by University of Colorado
 - Reproductive disruption in native White Suckers
 - Downstream sites showed sex ratio-skewed towards females, intersex fish found
- Year 1 results contributed to formation of “Consortium for Research and Education on Emerging Contaminants”
- Year 2: Integrate lab and field assessments

continued

What's Happening in the Pacific Southwest Region (Region 9)

- Disseminating EPA's EDC & PPCP research results to multiple stakeholder groups
- Held trainings for Region, States, and Tribes on gene expression EDC exposure assays
- Helped California build capacity to do FM fish EDC - Vtg gene expression assay
- Participated in an ORD Vtg gene expression study of 50 WWTP effluents across the U.S.

continued

What's Happening in the Pacific Northwest (Region 10)

- Characterizing surface and groundwater in the vicinity of CAFOs in OR, ID
- Preliminary assessment of mariculture operations in ID, WA, OR
- Preliminary assessment of Alaskan shipboard wastes
- Regional Lab developing capacity to perform Vtg gene expression assays for EDCs

concluded

Regions Need Answers To:

- Is there evidence of harm to human health or the environment at the levels that are detectable?
- What are the sources of PPCPs in the environment ?
- Can PPCP sources be controlled or reduced?

continued

Regions Need Answers To:

- What are the most important PPCPs to monitor?
- What existing analytical methods should be used?
- What is known about PPCP fate and transport?
- Are there valid exposure and/or effects tests?

concluded

Regional Science Needs

Examples of Needed Tools

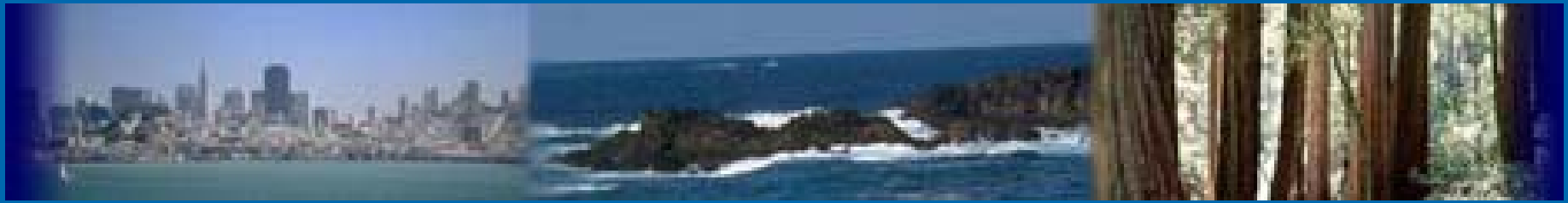
- **Methods to Measure Biological Exposures**
- **Methods to Measure Biological Effects**
- **Chemical Analytical Methods**

Examples of Needed Research

- **Modes of Action**
- **Pathway Assessments**
- **Fate and Transport**
- **Links Between New Tools and Human Health and Environmental Outcomes**

Summary

- EDC exposure effects, e.g., intersex, have been found in fish in several Regions
- Regions are doing:
 - Research projects & providing grants
 - Providing tech transfer and training
- Regional science needs are:
 - chemical analytical & exposure methods
 - Modes-of-action information
 - Fate and transport information
 - Linkages between exposure and effects



PPCPs Cross-Regional Team

Al Alwan	Region 5
Jan Baxter	Region 9
Cynthia Greene	Region 1
Peter Howe	Region 5
Ariel Iglesias	Region 2
Robert Pepin	Region 5
Peter Philbrook	Region 1
Bobbie Smith	Region 9
Donna Twickler	Region 5
Luisa Valiela	Region 9
Wendi Shafir	Region 9

