

A Brief Summary of U.S. EPA Research on Contaminants of Emerging Concern

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Although this work was reviewed by EPA, it may not necessarily reflect official Agency policy.

Region 5—Great Lakes governance



PPCPs in Water Supplies

- ▣ Residuals have been found in:
 - Surface water
 - Sewage effluent
 - Sewage sludge
 - Groundwater
 - Drinking water
- ▣ Types of PPCPs:
 - Beta blockers
 - Analgesics
 - Anticonvulsants
 - Antibiotics
 - Antimicrobials



Now the question is..

▣ **SO WHAT** does this mean?

- Detection \neq Risk
- Some scientific evidence that aquatic life may be impacted
- No scientific evidence that human health has been impacted



Complex Mixtures of Chemical Stressors at Ultra-Low Concentrations:

Pose Major Challenges for Measurement and for Assessing Exposure and Biological Effects



Emerging Challenges from Emerging Contaminants

- Increasingly advanced methods of analysis allow peering into the shadows of chemical space with ever-greater magnification and clarity.
- At ever-lower exposure levels, it may no longer be possible to deconvolute a purported effect from its incidence as ambient (natural) background.
- Ever-lower detection limits pose increasingly greater challenges for assessing, communicating, and ameliorating ever-diminishing risks.
- Where do these risks reside within the overall scope of larger environmental concerns?

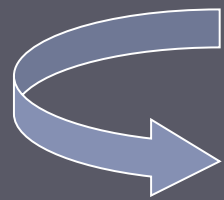


Einstein on: *Environmental Monitoring*

“Not everything that can be counted counts,
and not everything that counts can be
counted.” (oft attributed to Albert Einstein)



corollary for environmental monitoring



**Not everything that can be measured is
worth measuring, and not everything
worth measuring is measurable.**



Possible Major Outcomes from Emerging Contaminants Research

- Catalyze new paradigm for screening and controlling chemical unknowns in complex mixtures that pose actual rather than potential risks.
- Reduce cost and improve speed and efficiency of managing, mitigating, and preventing chemical pollution.
- Develop proactive capability for early warning or predictive ability for identifying newly emerging contaminants.



Office of Water's Strategy



EPA/OW is pursuing a four-pronged strategy:

- ▣ Strengthening Science
- ▣ Improving Public Understanding
- ▣ Identifying Partnerships and Promoting Stewardship Opportunities
- ▣ Taking Regulatory Action When Appropriate



Completed Activities



- ▣ Office of Water website for PPCPs in Water
- ▣ Analytical methods
- ▣ Exploratory occurrence studies
 - Targeted National Sewage Sludge Survey
 - Nine POTW Study
 - Fish Tissue Pilot Study
- ▣ National Academy of Science workshop
- ▣ SAB review of draft Methodology for Aquatic Life Criteria for Contaminants of Emerging Concern
- ▣ Federal disposal guidelines
- ▣ Treatment Technology Compendium
- ▣ Third Contaminant Candidate List (CCL3)

NAS Workshop Follow-up Activities



- ▣ Prioritization and screening
 - Working to identify therapeutic classes of drugs posing greatest risk

- ▣ Cumulative Risk
 - Investigating approaches to allow departure from chemical by chemical assessment of risk

- ▣ FDA/EPA Workgroup formed in October 2009
 - Working to develop an approach for assessing groups of pharmaceuticals

What DfE is About

- Goals
 - Safer products
 - Safer chemical ingredients is baseline
 - Life cycle impacts are considered
 - Protecting Consumers, Workers, & the Environment
- Central Elements
 - OPPT technical tools and expertise
 - Multi-stakeholder participation
- Results
 - Currently, industry partners use more than 700 million pounds of safer chemicals



DfE Standard for Safer Cleaning Products

1) Review every ingredient

- Compare to ingredients of similar functionality (promotes green chemistry)
- Evaluated under DfE Criteria for Safer Ingredients
 - Lists
 - Literature
 - Analogous chemicals – SAR

2) Review formulation as a whole

- Synergistic effects
- pH
- Performance testing

3) Partnership Agreement

- Valid for 3 years
- Audits
- Logo Use

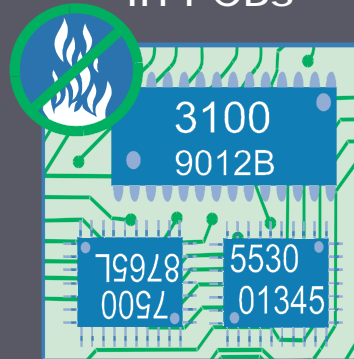


DfE's Current Projects

Best Practices in Auto



Flame Retardants in PCBs



BPA Alternatives in Thermal Paper



Safer Product Labeling



Best practices for spray polyurethane foam



Flame retardant alternatives to decaBDE



Lithium-ion battery LCA

Launched this month:
HBCD alternatives in foam insulation

This summer:
NPEs Alternatives Assessment

This fall: Phthalates Alternatives Assessment

For more information



Visit our websites:

Pharmaceuticals & Personal Care Products in Water

<http://water.epa.gov/scitech/swguidance/ppcp/index.cfm>

EPA's Design for the Environment Program

www.epa.gov/ppcp

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