



Project Outline

DRAFT, SEPTEMBER 2007

Comments are welcome!

MISSION:

The mission of the IES EC Project is to determine the environmental and human health impacts of EC, and what can and should be done to prevent or mitigate them.

By addressing environmental issues with a multi-disciplinary technical approach, we can prevent waste and unwanted side effects, and provide opportunities to optimize environmental improvements. Absent this approach, our government agencies (and thus citizens in general) may waste millions of dollars implementing pollution control strategies, later found to be ineffective (at best) if not counterproductive (at worst). We will implement a broad-based stakeholder advisory group, including public and private sector researchers; local, state, and federal government representatives; health-care providers; pharmaceutical manufacturers; water suppliers; wastewater treatment utilities; and other relevant representatives. We will develop a stakeholder-based program to determine the environmental and human health impacts of emerging contaminants, and what can and should be done to prevent or mitigate the negative impacts.

GOALS:

- Implement pilot research, testing, and evaluation programs to determine: pollutants, pollutant sources, relative risks associated with pollutants
- Research and implement pilot testing of potential pollution prevention and mitigation strategies
- Determine and develop ways to minimize the negative impacts on human health and the environment

a. Responsibility

Responsibility – Redefined

- Responsibility for pollution remediation often given to downstream recipient
- Government regulations often focused on end-of-pipe reductions
- ◇ Shift responsibility to the original source – the original chemical footprint

- Find (scientifically sound) solutions with low cost/high impact (vs. high cost/low impact)

Responsibility is too divided up; i.e., in emerging contaminants the responsibility is stuck on the wastewater treatment plant instead of the individual, drug company or entity making the decision. Regulators and legislators may look to punitive measures. There is no incentive to go to the source and curb the “emissions”.

Chemical Footprint concept:

- Identify responsibility at the source
- Provide information / data for informed decisionmaking
- Provide choices / alternatives
- Evaluate net benefits
- Steer toward most cost effective approaches

b. Incentives

Develop list of potential incentives to:

- *Engage stakeholders*
- *Determine major sources of ECs*
- *Reduce ‘source emissions’*

OBJECTIVES:

The objectives of the EC Project are:

Phase 1

Task 1: Stakeholder Involvement

Establish relevant stakeholder groups (spheres), e.g.:

- Community-based: health care providers, pharmacies, WWTP, locals government, state government, consumers, education and communication
- Science and research: human health, environmental ecology, chemistry
- Policy: state government, local government, federal government, environmental policy, medical / pharmaceutical

Identify full range of potential stakeholder groups (spheres) and representatives

Organize stakeholder groups to implement Tasks 2 and 3 for each Stakeholder Sphere

Establish the Project Steering Committee; review proposed Project Organization

Finalize Project Mission and Goals

Task 2: Information And Education

Background technical, regulatory, and community information

Collect and organize available information

Design accessible web-based information

Develop background information for stakeholder groups (technical tutorials, presentations, handouts)

- Risk understanding and evaluation
- Public education and outreach

Education and communication

Determine needs to educate stakeholder groups

Design effective approaches

Develop preliminary briefing materials

Best Practices information for the Front Range (Denver County, Boulder County, etc.)

EC / PIE Communication

Task 3: Pilot Research Development

- **Chemical Footprint:**
- **Determine HOW to determine what the major sources are**
- **Determine what the major sources are**
- **Determine the relative contributions of the major sources to the downstream concentrations ('source-receptor analysis')**
- **(Begin to) determine what the potential major impacts are of the various downstream concentrations**

Identify key questions / information gaps

Identify pollutants

- Identify and quantify sources of pollutants
- Identify and quantify sources of risk from pollutants

Design potential pilot research, testing, and evaluation programs to determine and address the environmental and human health impacts of PPCPs

Documented informed measurements of proposed strategies to provide reasoned optimization or elimination based on demonstrated effectiveness.

- Pharmaceutical take-back pilot program
- Wastewater treatment plants: current strategies and processes that mitigate ECs; sampling strategies to determine the presence of ECs
- Accessible science database on ECs
- Strategies for effective disposal of unused drugs
- Investigate, evaluate innovative technologies and strategies

Develop approaches to address scientific / technology gaps

Stakeholders are critical in development of effective strategies / alternatives.

Task 4: Policy Analysis

Investigate and review existing policies and regulations

Investigate and review regulatory limitations

Determine the needs for any policy

What can and should be done to prevent or mitigate environmental and human health impacts

Phase 2

- Quantify the environmental and health impacts of EC
 Convene an independent forum of stakeholders to promote objective and effective research and analysis
 Collaborate with public, private, and non-profit organizations to...
- Link cause and effect
 Point
 Non-point
- Determine and quantify the sources of EC
- Education and outreach – Chemical Footprint Toolbox

Look for and evaluate potential and existing effective treatment strategies

Look for and evaluate potential pollution prevention strategies

Create an accessible database of scientific research and regulatory information

Provide a neutral forum to evaluate these findings

Develop educational outreach to concerned citizens and organizations

Phase 3 – Realization

Develop strategies to mitigate damage from EC

Develop methods to quantify environmental and health benefits of proposed strategies

Implement objective evaluation of effectiveness of existing and proposed policies and programs

 Including measured costs and benefits

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September 19, 2007

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