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## **Cost of Compliance: SAIC Report**

Jennifer Wigal  
Oregon DEQ

Workshop: Fiscal Impact and Implementation  
Strategies of a Revised Fish Consumption Rate

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## Overview

- Analysis conducted by EPA-funded contractor, SAIC
- Charged with estimating the incremental cost of compliance to meet revised water quality criteria based on a new fish consumption rate
- Analysis contains
  - Estimates of costs for point sources
  - Qualitative description of potential costs for nonpoint sources and stormwater
  - Estimates of government regulatory costs associated with variances and an increase in the number of impaired waters
  - Discussion of uncertainties and limitations
  - Approaches and results of implementation activities and relevant actions in other states



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## Approach to Estimating Costs

- Selection of facilities
  - Reviewed 1 minor steel mill and 4 largest facilities (municipalities, one of which is dominated by industrial wastewater)
  - Representative random sample of 15 additional facilities (both municipal and industrial)
- Cost estimated between “baseline” and revised criteria based on a range of fish consumption rates
  - Baseline considered to be water quality criteria currently in effect
    - Most stringent of human health criteria based on 17.5 gpd, previous human health criteria, and aquatic life criteria
    - Estimates based on fish consumption rates ranging from 63.2 gpd to 620 gpd



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## Methodology

- Followed DEQ's current Internal Management Directives where applicable
- Used data contained in EPA and DEQ data systems; additional data provided by DEQ
- Assumptions
  - Facilities with higher flows are most likely to incur the greatest costs
  - Facilities would pursue least cost approach to compliance, which would include consideration of the following:
    - Optimizing treatment processes
    - Source control
    - Installing end-of-pipe treatment
    - Alternative compliance mechanisms (e.g., variance)
  - Facility compliance determined at the method quantification level (i.e., level at which laboratory method can quantify pollutant levels present in the sample)



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## Point Sources—Which Pollutants Are Likely to Have an Effect?

- Reductions in effluent concentrations needed for at least 6 pollutants to achieve baseline water quality criteria:
  - 4,4'-DDT, alpha BHC, arsenic, bis(2-ethylhexyl) phthalate, dioxin, mercury
- Additional reduction efforts under revised criteria would also likely be needed for 3 of those pollutants:
  - Arsenic, bis(2-ethylhexyl) phthalate, mercury
- Limitations
  - Small sample of facilities
  - List based on currently available data. Additional ambient and effluent data may result in different conclusions.



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## Point Sources—Approaches to Compliance

- Report concluded that sources would likely employ several compliance approaches to meet revised water quality criteria
- **Mercury**
  - No proven large-scale treatment technologies that can treat to levels of the revised water quality criteria
  - Assume facilities will pursue pollution prevention programs with or without alternative compliance mechanism
- **Arsenic**
  - Largely naturally occurring; assumes municipalities would pursue inflow and infiltration controls, variances, or intake credits
- **Bis (2-ethylhexyl) phthalate**
  - Projects facilities would pursue cleaner sampling or pollution prevention program



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## Point Sources—Estimated Costs

Summary of Potential Annual Compliance Costs (millions of \$2007)

Scenario	Total		Incremental <sup>1</sup>	
	With I&I Costs <sup>2</sup>	No I&I Costs	With I&I Costs <sup>2</sup>	No I&I Costs
Baseline	\$3.62 - \$29.7	\$3.62 - \$3.92	NA	NA
63.2 gpd	\$3.69 - \$29.8	\$3.69 - \$4.04	\$0.075 - \$0.13	\$0.075 - \$0.13
113 gpd	\$3.96 - \$30.1	\$3.96 - \$4.31	\$0.35 - \$0.40	\$0.35 - \$0.40
175 gpd	\$3.96 - \$31.0	\$3.96 - \$4.36	\$0.35 - \$1.32	\$0.35 - \$0.45
389 gpd	\$4.46 - \$31.6	\$4.46 - \$4.86	\$0.85 - \$1.82	\$0.85 - \$0.95
620 gpd	\$4.46 - \$31.6	\$4.46 - \$4.86	\$0.85 - \$1.82	\$0.85 - \$0.95

NA = Not applicable

1. Represents the difference between total annual cost and baseline costs (i.e.



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## Nonpoint Sources and Stormwater—Which Pollutants Are Likely to Have an Effect?

- Pollutants where point source controls insufficient to meet revised criteria
  - Could include arsenic, bis(2-ethylhexyl) phthalate, mercury
- Pollutants where ambient concentrations exceed criteria
  - Existing data indicate antimony, beta-BHC, and mercury could be included
- Potential sources include
  - agricultural and forest lands,
  - storm water,
  - legacy mining,
  - atmospheric deposition,
  - natural sources and
  - municipal and industrial point sources



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## Nonpoint Sources and Stormwater—Potential Costs

- Costs highly uncertain
  - Controls largely based on BMPs, which are not designed to achieve a specific percent reduction in pollutants
  - Report qualitatively concludes that costs could be significant due to ubiquitous pollutants
- Report includes information regarding potential controls and associated unit costs, where available



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## Government Regulatory Costs

- Report estimates government regulatory costs associated with
  - Additional waters listed as impaired and subsequent TMDL development
    - Estimated to be \$26,000 to \$500,000 per TMDL
  - Processing applications for variances
    - Estimated one-time incremental cost of \$65,000 under existing regulations
  - Other government costs outside the scope of work



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## Uncertainties in the Analysis

- Data limitations
  - Effluent data
  - Ambient data
  - Controls and activities underway
- Potential pollutant load reductions achievable
  - Method quantitation limits
- Dischargers' response to potential revised requirements and permit conditions