

**SETAC Pellston Workshop:
Evaluation of POPs & PBTs**

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 **Outline**

- ◆ Brief Overview of POPs Agreements
 - ~ LRTAP POPs Protocol
 - ~ Stockholm POPs Convention
- ◆ Criteria and Process for Adding New Substances
 - ~ LRTAP POPs Protocol
 - ~ Stockholm POPs Convention
- ◆ Key questions and issues
 - ~ Role of risk evaluation and precaution
 - ~ Role of screening criteria

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Overview -- LRTAP POPs Protocol

- ◆ Regional agreement for Europe, North America
- ◆ Protocol to the Long-Range Transboundary Air Pollution (LRTAP) Convention
- ◆ Adopted in 1998, entered into force in 2003
 - ~ 28 Parties to date
 - ~ United States signed but not ratified
- ◆ Obligates Parties to address 16 listed chemicals
 - ~ Annex I: eliminate production and use.
 - ~ Annex II: restrict uses
 - ~ Annex III: reduce emissions of byproducts

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Overview--Stockholm Convention

- ◆ Global agreement
- ◆ Adopted in 2001; entered into force 2004
 - ~ 152 Parties to date
 - ~ United States has signed but not ratified
- ◆ Establishes global regime for phase-out or restriction of POPs
 - ~ Chemicals
 - ~ Pesticides
 - ~ Production byproducts

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Overview--Stockholm Convention

- ◆ Parties obligated to eliminate production and use of substances listed in Annex A:
 - Aldrin
 - Chlordane
 - Dieldrin
 - Endrin
 - Heptachlor
 - Hexachlorobenzene (HCB)
 - Mirex
 - Toxaphene
 - PCBs
- ◆ Limited exemptions (e.g., trace contaminants in products and articles in use)
- ◆ Parties obligated to restrict production and use of substances listed in Annex B: DDT
- ◆ For both A & B listed substances, exports and imports are restricted

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Overview--Stockholm Convention

- ◆ Byproducts: Parties obligated to reduce total releases of Annex C chemicals from anthropogenic sources with goal of minimization
 - ~ HCB
 - ~ PCBs
 - ~ Dioxins and Furans (PCDD/PCDF)
- ◆ National action plans to be developed
- ◆ Promote Best Available Techniques (BAT) and Best Environmental Practices (BEP) for existing and new sources

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Listing Process -- LRTAP

- ◆ Criteria and procedures for adding new POPs, based on two-step review:
 - ~ Whether the chemical meets criteria for POP
 - ~ If further consideration warranted, a technical review of:
 - risk management actions including socioeconomic factors (e.g. production, use, emissions, alternatives, costs)
 - whether sufficient information exists to suggest substance likely to cause significant adverse effects as a result of LRT

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LRTAP Criteria

- ◆ Potential for Long-Range Transport:
 - ~ Vapor pressure < 1000 Pa and atmospheric half life > 2 days
 - ~ Or monitoring data showing presence
- ◆ Toxicity:
 - ~ potential to adversely affect HHOE
- ◆ Persistence:
 - ~ same as Stockholm Convention
- ◆ Bioaccumulation:
 - ~ same as Stockholm Convention

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Stockholm – Listing Process

- ♦ Screening Review: initial review against Annex D criteria and information requirements; apply criteria in a “flexible” manner
- ♦ Risk Profile:
 - ~ evaluate Annex D and other information to determine whether “substance is likely, as a result of LRT, to lead to significant adverse effects, such that global action is warranted”
 - ~ Lack of “full scientific certainty” shall not block
- ♦ Risk Management Evaluation: evaluate possible control measures, based on socioeconomic impacts, efficacy, alternatives.

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Stockholm Convention -- Criteria

- ♦ Persistence:
 - ~ half-life in H₂O > 2 months, or in soil or sediment > 6 months
 - ~ or “otherwise sufficiently persistent to justify consideration”
- ♦ Bioaccumulation:
 - ~ BCF or BAF in aquatic species > 5000
 - ~ or in the absence of such data log K_{ow} > 5;
 - ~ or monitoring data in biota indicating that bioaccumulation potential sufficient to justify consideration
 - ~ or presents other reasons for concern, such as bioaccumulation in other species, high toxicity or ecotoxicity

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Stockholm Convention -- Criteria

- ◆ Potential for long-range environmental transport
 - ~ Measured levels in locations distant from sources; or
 - ~ Monitoring data showing LRT may have occurred;
 - ~ Environmental fate properties or modeling results that demonstrate potential for LRT.
- ◆ Adverse effects
 - ~ Evidence of adverse effects that justifies consideration
 - ~ Toxicity or ecotox data that indicate potential for damage to HHOE
- ◆ Reasons for Concern
 - ~ “Where possible,” must include comparison of toxicity or ecotoxicity data with detected/predicted levels from long-range transport

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Recurring Themes -- Criteria

- ◆ Does each criterion need to be satisfied?
- ◆ Meaning of “flexible”?
- ◆ Criteria are conjunctive
- ◆ Only bioaccumulation criterion permits reference to other factors of concern

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Recurring Themes -- Risk

- ◆ Disagreement about meaning of 2(b) in LRTAP
 - ~ “whether sufficient information exists to suggest substance likely to cause significant adverse effects as a result of LRT”
- ◆ Various views expressed:
 - ~ presence alone,
 - ~ “possibility” of adverse effects,
 - ~ concern to regulatory agencies,
 - ~ integration of toxicity data with detected/predicted levels in environment from LRT.
- ◆ Room for discretion, but sets a minimum floor:
 - ~ Requires more than mere satisfaction of criteria
 - ~ “Significant” and “likelihood” relate to degree of impact and probability of impact

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Recurring Themes -- Risk

- ◆ Risk profile standard requires consideration of risk
 - ~ Likelihood of significant adverse effects
 - ~ Likelihood that effects are from LRT
- ◆ Generally such evaluations entail synthesis of information relating to hazard, exposure and dose responses,
- ◆ But few risk profiles cite quantitative exposure
- ◆ Lack of full scientific certainty does not equal lack of sufficient information to draw conclusions
- ◆ Room for judgment, but based on rigorous science

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Other Issues In POPs Listing Process

- ◆ Duplication between two similar agreements
- ◆ Open and transparent to stakeholders
- ◆ Ensuring review of all risk management factors
- ◆ Relevance to U.S. implementing legislation

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Concluding Observations

- ◆ Chemicals agreements growing quickly, but not yet mature legal regimes
- ◆ Real tests lie ahead as they take on more chemicals still in active use
- ◆ U.S. engagement vital to the regimes and to important U.S. interests

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Thank You!

Questions?

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