The SOLEC PBT Break-out Session

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Presentations

- Health effects of PBTs: Henry Anderson, WI Division of Public Health
- Remaining sources and pathways: Alan Waffle, Environment Canada
- Screening and Prioritization of “New” PBTs: Derek Muir, Environment Canada

Screening for “new” PBTs

- Canada’s DSL: 11K substances, EPA’s HPV list: 3549 substances
  - Only 1453 overlap (DSL from 1980s)
- Looking at physical-chemical properties that relate to bioaccumulation and long-range-transport, use data
- Identified a preliminary list of P&B substances (not currently looking at toxicity)

Screening, cont.

- False negatives and false positives from screening may be a concern, so need to monitor and assess health risks
- Scientific judgment is needed to assess chemicals identified as P&B and particularly their degradation products
- Binational priority setting, including cooperation with industry, is needed so that analytical and assessment resources are used effectively

Sufficiency of PBT Indicators

- Existing indicators (air, water, biota) are for the most part sufficient, need to ensure that programs continue so that data behind indicators exists
- Possible new PBTs are often in consumer products vs. old PBTs being mainly industrial
  - Do we need to track sources like WWTPs?

Use of Indicator Information

- Useful for journalists and others who aren't familiar with the status of the Great Lakes
- Indicator write-ups not necessarily useful at the local/AOC level
  - Could feature "State of the AOC" reports at SOLEC 2008 to feature progress made in AOCs, current status

Future Directions

- Need resources for method development, monitoring, and toxicity testing so that results of screening efforts can be verified
- How will we incorporate emerging chemical information into future SOLECs?
- Feature AOC assessments at SOLEC 2008

The SOLEC Non-Persistent Substances of Continuous Release Break-out Session

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Presentations

- Screening and Prioritization of non-persistent chemicals - Mitchel Kostitch, USEPA
- Ecotoxilogical Effects of Substances of Continued Release - Rebecca Klaper, UW, Milwaukee
- Sources and Pathways of Substances of Continued Release - Sheridan Haack, USGS

Screening

- Challenges
  - Current Data Limited
  - Many chemicals to test – too expensive to test for all
  - Older Studies only look at acute effects (non-relevant environmental ranges)
  - Metabolites complicate matters
  - Interspecies variability

Need to…

- Estimate influent concentrations
- Use known info about human daily doses to rank concerns
- Characterize variability in results
- Re-prioritize based on findings
- Try to establish endpoints and appropriate animals for testing

Conclusions at this stage

- Need more funding for research and better data
- Many questions remain: what about uptake mechanisms, the effects of wastewater treatment, biomagnifications...

Ecotox Effects

- When determining risk assessment of these substances, the following questions apply:
  - What kind of organisms are exposed?
  - What are the effects of exposure?
  - What considerations are needed for each chemical?
  - How to control the release?

More questions than answers

- Chemicals have been designed to be non-toxic, taken at low dosages.
- Much of the testing on acute toxic affects.
- Important to know what the ecological affects of chronic low-level exposure.
- What endpoint should we assess?

More questions than answers

- Much of the testing that is done in labs is done on mammals, but are these transferable to fish?
- Are the reactions similar?
- What to do about unintended pathways?
- It is difficult to develop indicators for these questions.

For Example

- Decrease in the heart rate of daphnia, when exposed to fluoxetine (commonly known as Prozac). Is daphnia's reproductive success affected?
- Fat head minnows exposed to fluoxetine exhibit sexual behavioral changes, which affect mating, as well as embryo growth.
- So the question is, what do we measure?

Take home message

- We need more data on the effects of these substances
- Need to develop ecological risk parameters
- Do we change / require additional tests on the behalf of pharmaceutical companies?
- What potential indicators for the environment are suitable?
- How do we fund these studies?

Sources and Pathways

- The US EPA/USGS developed a list of chemicals commonly found in wastewater (2005).
- Indicators might focus on these.
- Testing could be based on usage.
- Monitoring effluent?
- Special attention could be given to bioactive v.s. compound substances, as they are intended to have biological effects