Sediment Phthalates Work Group Meeting Notes
November 29, 2006

ATTENDEES

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This meeting summary was prepared by Kate Snider and Erin Murray. It is based on a transcription of the flip charts used during the meeting to document the discussion. Action items are identified in ***bold script***.

PURPOSE OF THE MEETING

This was the sixth meeting of the Sediments Phthalates Work Group. It took place at the Thea Foss Waterway Trailer in Tacoma. The purpose of this meeting was to reach agreement on and document the key messages that are apparent from the material collected and reviewed regarding the occurrence of phthalates.

AGENDA

- Distribution of the disclaimer for use on Work Group products
- Distribution of updated Occurrence figures from Ecology
- Discussion on Work Group products and public availability
- Occurrence discussion and messages
- Discussion of Talking Points regarding this project

DISCLAIMER AND PUBLIC AVAILABILITY OF WORK GROUP PRODUCTS

- Disclaimer language below has been agreed to by the group.

  This information on sediment phthalates represents a preliminary, limited collection of existing information. It is intended solely for use and discussion within the Sediment Phthalates Work Group for informational purposes.

  The information has been drawn from published and unpublished sources. A comprehensive analysis or validation of all this information has not been completed and no conclusions have been made to date.

- This disclaimer should be included on all information gathering products (i.e., on the cover, summary sheets and summary spreadsheets)
- Notebooks compiled of information gathered, with summary spreadsheets should stay within Work Group. They should not be distributed widely within member organizations or to others, as there has been no formal QA/QC on the information.
- Lists of the references used can be shared outside the Work Group membership.
- The key messages that are documented from Work Group meetings as apparent from the material collected and reviewed can be shared publicly, with the information references attached.
- Work Group members can update their information notebooks as appropriate—it is just important to note that there has been no formal QC of the information.

Floyd|Snider to send the disclaimer electronically to Work Group.

KEY MESSAGES RE: OCCURRENCE IN ENVIRONMENT AND PATHWAYS TO SEDIMENTS

This is a summary of the key messages or conclusions agreed to by the full Work Group as being apparent from the information gathered and discussed relative to occurrence of phthalates in the environment. The information used to generate these messages is listed on the attached Reference List.

General

Phthalates are ubiquitous in the urban/developed environment, in air, surface water and sediments.

Occurrence in Air

- Air deposition of DEHP on watershed surface is magnified by transport from a wide deposition area to a smaller sediment area (this is key to final accumulation in sediments).
- DEHP and BBP occur more in the particulate phase in air and these are the two phthalates that are most found in sediments.

- Occurrence in air on particles is significant because phthalates that occur in air are deposited to the watershed surface, which then runs off to the sediments.
- Deposition on impervious surfaces within the whole watershed is meaningful to sediment accumulation.
- The level of permeability and infiltration characteristics of the watershed greatly affects transport of phthalates to sediments.
- Indoor air has much more concentrated DEHP than outdoor air.
- The sources of phthalates in air are widely distributed.

Occurrence in Surface Water Runoff

- Occurrence in surface water tends to be near urban areas.
- Not much variability within region—DEHP concentrations typically between 0.5—5 ppb.
- Phthalates in surface water tend to be related to urban influences (they are very low in highly rural top of watershed areas).
- Phthalates tend to accumulate on particulates and these particulates end up in surface water.
- Not seeing phthalates as significantly in the dissolved phase.
- Surface water data is more representative of the big picture (composite water samples more homogeneous than focused sediment samples).
- Air deposition and surface water both transport phthalates to sediments where they concentrate over time.
- Phthalates tend to remain fairly local within the area of contamination—they are not in as high concentrations in rural surface water sources.
- Phthalates are found in all ambient water bodies in developed areas.

Occurrence in Marine Sediments

- Data reviewed is focused on Ecology sediment sites and ambient monitoring program (PSAMP).
- Data summarized by Ecology is less than 10 year old data with detects only:
  - 16% above SQS DEHP, many more data points for DEHP—Dry weight
  - 33% above SQS BBP—Dry weight
- Recent cleanup site data allowing “time 0 evaluation” is available from the Thea Foss and Norfolk as well as Diagonal /Duwamish sites in the Lower Duwamish
  - Balance of variables are uncertain and different in each site
  - However, various amounts of accumulation in very short order (less than 5 years) to levels of concern

- At these locations it looks like rapid accumulation of phthalates in sediments (after cleanup) is associated with urban stormwater outfalls:
  - In the local area of the outfall.
  - In low-energy environments.
- Small loading inputs discharging to a low energy basin or a large input (large drainage basin and/or large source input) to a low or high energy environment can (and do) cause rapid accumulation in sediments.
- In these environments accumulation occurs and exceeds SQS within just a few years.
- Accumulation depends on the:
  - Size of input
  - Energy of receiving environment
- Variables
  - Character of watershed
  - Character of receiving environment

Occurrence in Fresh Water Sediments

- Widespread presence
- The key differences between occurrence in fresh and marine sediments relates to the differences in receiving environments.
- There are similar characteristics of phthalates in discharges because freshwater and marine environments have similar watershed characteristics.
- A main difference between fresh versus marine is the difference in receptors - degradation, etc.

Occurrence in Wastewater (POTW information, not single industry discharges)

- Wastewater effluent phthalate concentrations are similar to surface water runoff concentrations.
- Wastewater influent is higher in phthalates than surface water runoff.
- POTW influent is higher in phthalates than POTW effluent.
- Wastewater influent seems to be measurably higher in new residential areas than older residential areas or industrial areas (phthalates seem to be associated with people and newly constructed surfaces).

Occurrence in Other Sediment Types (catch basins, sediment traps)

- Central tendency of catch basin/sediment trap sediments almost always above regulatory sediment standards SQS (which are not applicable at the catch basins).

  - Data sets biased (data exists primarily for Lower Duwamish and Foss where there are sediment concerns).
  - However, catch basins are located throughout these urban developed basins which should be fairly representative.
- Assume that these characteristics of in-line sediments are likely representative of most urban watersheds.
- Urban soil generally higher than rural (correlates to air deposition).

ITEMS FOR PARKING LOT OF ISSUES FOR FURTHER DISCUSSION

As the messages above were being discussed, items were identified for further research or discussion in subsequent Work Group meetings. These items are listed below. This "parking lot" of issues will be added to in future informational meetings.

- Comparative risk issues.
  - Indoor air and car air greater risk/occurrence than sediment risk/occurrence.
- Consider recommendation to have air agencies/lobbyists look more closely at air risk and the pathway to sediments and related standards.
- Consider evaluating whether more data from outfalls adds to dissolved versus particulate occurrence conclusions.
- Consider development of a diagrammatic figure illustrating the fate and transport of phthalates in the environment.
  - Consider doing some mass balance.
  - The affect of water concentrations to sediment concentrations—what concentrations and phase in surface water are we concerned about regarding affect to sediment? This is a hard question because of modeling difficulty.
- Address persistence.
- Consider further the presence of phthalates in wastewater from industrial areas versus new construction residential areas.
- Consider combined versus separated storm drains.
- Consider NPDES Industry Discharge of phthalates.
  - Phthalates are not an analyte regulated in most NPDES permits, but there may be data in applications.
- Direct discharge marinas, shipyards, etc. Marinas can have un-permitted direct discharges and use many new construction materials—this could be significant.
  - Consider marinas for source ID sampling.
- Consider investigating marine construction as a possible source.
- Consider soil concentrations adjacent to large roads.
- Consider correlating catch basin concentrations to % impervious, land use and air deposition for the watershed.

- Is there phthalate catch basin data from Bellingham Bay TMDL Study?
- Do phthalates exist in sediments in the form of abraded plastic/plastic pieces?
- What do we know about the phthalates breakdown (does plastic rope in marinas affect sediment?)
- Consider evaluating watersheds tributary to Ecology sediment site information with air photos—examine watershed characteristics and linkage of phthalates to urban runoff:
  - % impervious
  - Roadway use
  - Land use type
- Not much background sediment data regarding phthalates—consider acquiring and evaluating (relative to land use).
- Re-evaluate sedqual information—including non detects.
- Consider evaluation of historical trends as possible regarding recent increase in phthalates use and sediment concentrations

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