

## Sediment Phthalates Work Group Meeting Notes January 31, 2007

### 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 seventh meeting of the Sediments Phthalates Work Group. It took place at the King County Department of Natural Resources and Parks. 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 sources of phthalates to sediments.

### AGENDA

- Discussion on public process
- Discussion and finalization of 11/29/06 Occurrence meeting notes
- Development of key messages on Sources

**GENERAL**

***Seth to research getting a page on Ecology's website that will hold the Work Group's final publicly available documents so they can be accessible to all.***

Some Work Group members are attending a Source Control meeting on February 1, 2007 and will distribute all the publicly available documents produced by the Work Group thus far.

On March 20, 2006 Government, Management, Accountability and Performance (GMAP) is holding a meeting on stormwater toxics. This would be a good forum to discuss the Sediment Phthalates Work Group and our process.

Seth is keeping a log of public outreach conducted for the project.

***Floyd/Snyder to finalize 11/29/06 meeting notes and distribute to Work Group and Policy members.***

**KEY MESSAGES RE: SOURCES OF PHTHALATES IN ENVIRONMENT TO SEDIMENTS**

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

Phthalates are a key commodity in the U.S. and throughout the rest of the world.

- The quantity of phthalates in our environment is measured in billions of pounds—important to clearly illustrate all of the common products that contain plasticized PVC.

Significant quantities of phthalates are manufactured in the U.S. and imported to the U.S.

- There is a significant presence in imported products. Worldwide production appears to be increasing. Need to recognize this when thinking about potential source control alternatives.

The primary use of phthalates is in plasticized PVC products, which can contain a significant percentage of phthalates by weight (up to 40%). Plasticized PVC products clearly contain the largest reservoir of phthalates in the environment.

- Off-gassing from plasticized PVC products is not the only source of phthalates in the environment, but is by far the greatest.
- There are a wide variety of plastics present in the environment; however, for phthalates the focus is on flexible PVC that has plasticizers added to it.
- Plasticized PVC is used widely as a construction material (vinyl flooring, electrical cable covering, carpet, shower curtains, etc). Ubiquitous in construction building materials.

- Plasticized PVC is very inexpensive and versatile, which is why it is so prevalent. There is a huge economic incentive for its use worldwide, which provides a barrier to substitution.
- It appears that DEHP is a good surrogate to use in this evaluation for the whole class of phthalates seen in sediments - DEHP is the predominant phthalate used to plasticize PVC (it appears to make up at least 50% of the phthalates used).
- There is a huge reservoir of phthalates currently out in the environment in the form of plasticized PVC products—there is constant off-gas loading to air from these products throughout the life of these products (approximately 1–50 years of product life). Therefore, if product restrictions or alterations were made to reduce future loading, this reservoir of source would still be uncontrolled.
- Autos are a significant source of plasticized PVC (as well as the largest source for particles in urban air that influence the equilibrium of phthalate off-gassing).

It is well documented that all plasticized PVC products off-gas DEHP to the air over long periods of time (over the life of the flexibility of the products).

- Rigid PVC has not been plasticized with phthalates to appreciable extents and thus is not a primary source of phthalates to the air or sediments—it either does not off-gas or off-gasses at an extremely low rate.
- Off-gassing is driven by environmental variables that affect mobility (temperature; particulate concentration in the air; and concentration of phthalates in the plasticized PVC). As the amount of particles in the air increases, off-gassing is increased through equilibrium balance.
- The concentration of phthalates in plasticized PVC ranges up to 40% by weight (e.g., vinyl flooring is approx. 20% phthalates by weight).
- It is well documented that off-gassing from plasticized PVC to the air is the primary source of DEHP in the environment.

It is well documented that DEHP in air attaches to dust and other particles in the air.

- Vehicles are the biggest source of fine particles in the urban environment.
- DEHP is also soluble in oil and is present in waste oils.

For the sediment pathway, phthalates in outdoor air that are attached to particles are a key concern.

- Although the total of human health exposures include many other pathways (indoor air, cosmetics, ingestion, etc.), our focus is on the sediment pathway.
- It is important to note that indoor and outdoor air are constantly exchanging, which makes them a likely source of phthalates and particulates to each other.

Phthalates are brought to the ground by rain and particle deposition.

- Phthalates deposited on impervious surfaces may then be transported to the sediments with storm water runoff, where they are deposited in sediments at the end of the pipe..

- Watershed and “airshed” characteristics significantly influence the amount of phthalate contribution and the balance of sources contributing to sediments.
- Auto sources are influenced by the amount of particles in the air and amount of plasticized PVC in cars, as well as other auto sources (tires, brake pads, etc.).

There are other sources of phthalates (such as wear from tires, etc.) but atmospheric deposition appears to be the most significant source of phthalates to sediments.

- Particulates laden with phthalate from automotive sources that end up on impervious areas may be a key source to sediments.
- Another sediment source of phthalates is wastewater contribution from combined sewer overflows (CSOs). Some products contribute to this that do not contribute to air deposition (e.g., personal care products). However, these products appear to be a very small percentage of the phthalate loading to sediments. Wastewater is a small percentage of loading to sediments and this is the pathway through which personal care products would enter sediments.

Source tracing may identify specific point sources of phthalates from manufacturing or handling that can be controlled, but non-point air deposition sources appear to be the most significant sources.

- The information reviewed indicates that nationally the amount of material that could contribute to direct release through production and handling is a small percentage of the total DEHP budget in the environment.
- Release to the environment appears to predominantly come from off-gassing of end-use products and not from the production and manufacturing of products containing plasticized PVC.

All of the sources of phthalates are aggregated in sediments.

## **PARKING LOT**

The following items are additions to the “parking lot” of items identified for potential further evaluation or consideration by the Sediment Phthalates Work Group during deliberation on the issues.

- Consider ways to illustrate the enormous range of common products that are manufactured from plasticized PVC, in order to give the general public an understanding of the prevalence of phthalates in our environment.
- Consider analogies that can be made between the volume of phthalates in our environment and other products that are more commonly understood. Work on ways to illustrate the scale/magnitude of sources.
- Consider making a diagram that illustrates use/sources of phthalates versus pathways for exposures - illustrating human health versus sediment end points.
- Provide perspective in recommendations on the proportion of relative exposure mechanisms.

- More work could be done on mass balance of relative source contributions:
  - \* Source testing and mass balance seems to indicate that tires and brake pads are a minor source of phthalates when compared to plasticized PVC off-gassing.
- Consider suggestions for studies to further evaluate auto sources.

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