

Environmental Lab and Industrial Waste: A Close Connection

by Kate Leone, Environmental Laboratory Manager

One of the Environmental Lab's key customers is King County's Industrial Waste Program. The mission of this program is to protect the environment, public health, biosolids quality, and King County's regional sewerage systems by regulating industrial and other discharges to the sanitary sewer.

The Lab has been working closely with the Industrial Waste Program for more than 30 years, providing data that helps the program know if industries are complying with their discharge permits, and to trace the source of illegal discharges to the sewer system.

In addition to the routine monitoring mentioned above, these units also provide support to Industrial Waste for special efforts.

One such effort was the work started in late 2008 for the new Brightwater treatment plant's local limits study. By evaluating current discharge concentrations at a variety of locations during a year period, Industrial Waste will be able to better establish appropriate discharge permit levels for customers connected to the new treatment plant. The lab analyzed 663 samples for 671 different compounds at low levels to establish a large data set. This data set gives Industrial Waste staff the information they need to formulate meaningful discharge limits to utilize in regulating industries in the Brightwater service area.

Another special effort was Trace Metals' work to aid Industrial Waste's monitoring of several large industries that were permanently closing their doors. This process went on for several months and involved many quick-turn samples a week as these industries were treating and eliminating a wide variety of chemical discharges as part of their waste streams.

Such samples are always challenging because they are often highly buffered and are therefore prone to digestion explosions and frequently require extra analytical quality control measures to insure the accurate quantitation of priority pollutant metals.

Finally, Trace Organics recently completed an air deposition phthalate project requested by Industrial Waste. The project was to collect rainwater in specially prepared sample carboys, which are rigid containers designed to transport fluids. The carboys

LAB UNITS SUPPORTING INDUSTRIAL WASTE

The three units at the Lab that support Industrial Waste most closely are:

- **Conventionals** analyzes more than 30 inorganic parameters that are indicators of water quality. Tests for turbidity, dissolved oxygen and pH, and measurements of ultra low-level nutrients such as nitrogen and phosphorus, alert scientists to changes in the ecological balance of area waters. In addition to water quality measurements on samples from regional waters, Conventionals measures cyanide and biochemical oxygen demand in municipal and industrial discharges, analyzes for several parameters in biosolids, soils and sediments and characterizes contaminated drainage from construction sites.
- **Trace Metals** analyzes environmental, wastewater and industrial samples for more than two dozen potentially toxic metals. Of the many metallic elements found in the environment, some such as calcium, magnesium, zinc and copper are essential nutrients at low concentrations, but may be hazardous at higher levels. Others, like arsenic, lead, mercury and cadmium are toxic even at relatively low concentrations.
- **Trace Organics** measures trace levels of carbon-containing compounds found in air, liquids or solids. The unit routinely analyzes for federally designated priority pollutants and hazardous substances such as pesticides, PCBs, volatile solvents, byproducts of fuel combustion and other potentially toxic or hazardous organic contaminants. Additionally, Trace Organics has developed analytical techniques to analyze for endocrine-disrupting compounds and other analytes that are being used to evaluate the health of our lakes, streams and Puget Sound.

were deployed around the lower Duwamish waterway in parking lots and on rooftops.

After several weeks or depending on the amount of rainfall, the carboys were returned to the lab for low-level phthalate and polyaromatic hydrocarbon analyses. Phthalates are substances

added to increase the flexibility, transparency, and durability of plastics. Polyaromatic hydrocarbons are chemical compounds that are produced as byproducts of the combustion of fuels.


The goal of the sampling was to evaluate the atmospheric deposition pathway for selected chemicals of concern that pose a risk to contaminate sediments in the lower Duwamish waterway. The sampling measured a combination of dry and wet deposition in urban/industrial neighborhoods with the results being comparable to studies conducted in other urban/industrial areas.

Whereas it was previously thought that phthalates were deposited primarily from rainfall, data from this study suggests that heavier semivolatile organic compounds are predominantly deposited via both wet and dry deposition.

For more information related to Industrial Waste programs and services see the link below.

<http://www.kingcounty.gov/environment/wastewater/Industrial-Waste.aspx>

About King County's SciFYI

Published by:  **King County**
Department of Natural Resources and Parks
Water and Land Resources Division
Science and Technical Support Section

Section Manager: Randy Shuman

Editor: Doug Williams

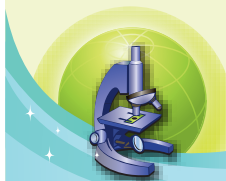
Contributors: Ben Budka, Jim Devereaux, Mike Doubrava, Larry Jones, Kate Leone, Diane McElhany and Fran Sweeney

Photographers: Ned Ahrens

Designer: Laurel Preston

View or download on the Web at: <http://www.kingcounty.gov/environment/wlr/science-section/sci-fyi-newsletter.aspx>

Send questions, comments and future story ideas to:
Kate O'Laughlin - kate.olaughlin@kingcounty.gov, 206-296-8363 or
Jim Simmonds - jim.simmonds@kingcounty.gov, 206-296-1986



File: 1004_SciFYI.indd LPRE

