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Spotlight on hazardous waste testing: TCLP

What you should do with that barrel of goo

By Richard Maw, Project Scientist
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The Environmental Protection Agency (EPA) has identified four characteristics for hazardous waste. Any solid waste exhibiting one of these four characteristics is considered hazardous waste by way of the Resource Conservation and Recovery Act (RCRA). The four characteristics are ignitability, corrosivity, reactivity and TCLP toxicity (toxicity characteristic leaching procedure). This article addresses the characteristic of TCLP toxicity.

Method 1311 for TCLP covers the leaching of wastes. That is, it identifies waste that is likely to leach hazardous concentrations of RCRA-regulated parameters. It's important to note that these levels are not total concentrations but rather leachable levels expressed in milligrams per liter. RCRA parameters for TCLP characteristic waste include eight metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) in addition to 32 organic compounds.

During the leaching procedure, the constituents of concern are extracted from the waste in a manner designed to simulate leaching waste (and what would happen in regards to groundwater or precipitation if the waste was improperly disposed of in a landfill). The extract is then analyzed to determine if measured levels of toxic constituents exceed regulatory levels. If regulatory levels are exceeded, the waste is classified as hazardous. Responsibility for determining if a waste is hazardous falls upon the generator (either through testing or

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Testing should be performed for those parameters that can reasonably be expected to be present. For instance, it would be unnecessary to test for pesticides on spent parts washer solvent, but testing for metals and volatile compounds may be appropriate.

Performing the TCLP test

Generators of hazardous waste are required to obtain a representative sample of their waste stream. An extraction fluid is added to an appropriate amount of waste (100 grams of sample for metals and semivolatile organic compounds and 20 grams for volatile compounds). The sample is then extracted for 18 +/- 2 hours. The extract is filtered and further prepared for specific

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Lab Manager's Corner: A better year ahead



Tom Wagner

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Based on inquiries we are receiving from clients regarding projects and work plans for the next few months, I am optimistic that 2010 will be better than 2009. There have been many exciting things happening at our laboratory, as well, including new services and programs.

I am pleased to report that we were recently approved by the Minnesota Pollution Control Agency (MPCA) Laboratory Contract Program to test soil, air and asbestos samples for state Superfund sites. To find out more about these services, please contact Steve Albrecht at 952.995.2622. The Braun Intertec Analytical Laboratory also now offers analyses for CPAHs (carcinogenic poly aromatic hydrocarbons). These compounds can potentially be found in sediment ponds, railroad shipyards and landfills. Currently, the MPCA requires testing for these compounds on certain types of sites, such as those listed.

Meanwhile, many clients are pleased with the Braun Intertec TO-15 air canister analysis program. Each of our air canisters includes an attached air pressure gauge, eliminating a possible source of cross-contamination by having to use the same gauge for multiple canisters. Air canisters are used for vapor intrusion projects or when testing indoor air for total volatile organic compounds (VOCs) for Leadership in Energy and Environmental Design (LEED) projects. We also test for formaldehyde in air associated with LEED certification projects.

In this issue of *The Analytical Consultant* you will find information about our sampling containers. Should you require sampling containers, or have questions about which container you should use, please contact Chee Lee at 952.995.2660, or your project manager. Also, see the back cover for our extended summer Saturday hours, which will begin May 1.

Wishing you a wonderful spring,
Tom Wagner

Meet Garrett Ykema • Lab Analyst I •



As part of his duties, Garrett cleans TO-15 canisters, which are used for air analyses. These canisters are sometimes used for Leadership in Energy and Environmental Design (LEED) projects, when a client needs to know about a building's indoor air quality.

Like many of his colleagues, Garrett Ykema enjoys two things: scientific methods and knowing that every day will be different in the Braun Intertec Analytical Laboratory.

"The best part about my job is that I get to do so many things in the lab," Garrett said. "One week I might spend a lot of time analyzing for PCBs (polychlorinated biphenyls) and the next week I might be overseeing DRO (diesel range organics) analyses, depending on our clients' needs."

Garrett enjoys the variety of projects in which he is involved. When he is not working on analyses, which also includes work with organochlorine pesticides, he assists with the TO-15 air canister program by cleaning canisters.

"One of the unique things about this equipment is that it can be used to help

earn LEED (Leadership in Energy and Environmental Design) points for a building's internal environmental air quality," he said.

And if that's not enough, Garrett also verifies data and serves as backup in the organic prep laboratory, which involves working with semi-volatiles, PCBs, pesticides, as well as many other chemicals. And Garrett's busy schedule doesn't stop at work. Outside of the lab he is a busy athlete.

"I play a lot of different sports, depending on the season," he said.

In the spring and summer Garrett pitches for the Braun Bombers, the company softball team. He is on a flag-football team in the fall, and in the winter he plays basketball and volleyball. Garrett has worked at Braun Intertec since earning his chemistry degree from Winona State University in 2007. ■

Ask an Analyst: Sampling Containers

Why do different samples require different sampling containers?

By Richard Maw, Project Scientist
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Specific containers are required for collecting samples as many analyses require special preservatives to avoid biological breakdown. In many cases, the preservatives are small amounts of various acids in the supplied bottles. Amber-colored containers help block out light, as light can degrade certain types of parameters of interest.

The photos offer a brief overview of the types of containers used by the Braun Intertec Analytical Laboratory and for what specific analyses the bottles are used. If you need sampling containers or have questions about containers, please contact the lab at 952.995.2660.



These containers are used for collecting water samples. You'll note that some of them are designed for very specific analyses. From left: 1 liter plastic bottle; 500 ml plastic bottle; 500 ml (yellow label) plastic for TP, NH₃, TOC, and COD; 500 ml plastic (red label) for metals; 500 ml plastic (purple label) for cyanide; 500 ml amber glass for sulfide; and 40 ml amber glass for VOCs.



These larger containers are also used for water samples. From left: 1 liter amber glass bottle for many organic parameters; 1 liter amber plastic for Chlorophyll A; 1 liter amber glass for oil and grease; and 1 liter amber glass for DRO.



These containers are used when collecting soil samples. From left: 60 ml amber glass jar for DRO; 60 ml plastic flip top for soil samples; 4 oz. jar for PAHs, pesticides and PCBs; 2 oz. container for analyzing for metals; and a 40 ml glass jar for volatiles.

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parameters. Extracts must be subjected to an acid digestion for metals analysis and a liquid/liquid extraction for semivolatiles analysis. Samples that are 100 percent liquid or contain less than 0.5 percent solids are not subjected to the leachate portion of the procedure and can be treated as extracts.

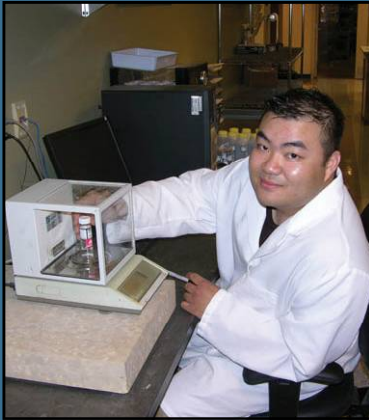
When requesting a TCLP analysis from a laboratory, it is important to request both the extraction procedure and the analysis you are interested in. Oftentimes a customer will ask for TCLP metals resulting in the analyst not knowing if the customer wants the sample analyzed only for total metals or if that customer also wants a waste characterization procedure performed. Asking for the proper test protocols will help avoid delays and streamline the analytical process. For more information about TCLP procedures, please contact Richard Maw at 952.995.2644. ■

Welcome Home Bob Schmidt



We are thrilled to welcome home Bob Schmidt, one of our most experienced prep lab employees. Bob recently returned from a year-long tour of duty in Iraq where he served with the National Guard. Overseas, Bob played his tuba with the military band to raise troop morale. We are very proud of his service to our country.

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Summer Hours

Our extended summer hours begin May 1. During this time, we will be open Saturdays from 8 a.m. until noon, excluding holidays.

Questions, Requests and Comments

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This newsletter contains only general information. For specific applications, please consult your engineering or environmental consultants and legal counsel.

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Guess Who's Coming to Lunch

Need to know the proper way to handle a sample? How about additional information about a test method, or a refresher about a sampling technique? Our scientists and project managers are available for training and brown bag presentations to provide you with information on a wide range of topics, including:

- **Analytical methods**
- **Gas Chromatography/Mass Spectrometry vs. Gas Chromatography**
- **Quality control samples—What are they and why are they analyzed?**
- **TO-15 Air Canister sampling/analysis**
- **Hexavalent chromium in air**
- **Sample collection and handling techniques**
- **Shipping requirements for samples**
- **A general overview of our environmental or industrial hygiene services**
- **A topic of your choice**

We will come to your site, or if you prefer, will host the training presentation at our office and provide a tour of our analytical laboratory. For more information, contact Tom Wagner at 952.995.2650 or twagner@braunintertec.com.