

Industrial hygiene analytical program recognized

A Hanford organization is one of the first to successfully complete a newly revised reaccreditation process that aligns with International Standardization Organization quality requirements.

The Waste Sampling and Characterization Facility's Industrial Hygiene Analytical Program was up for reaccreditation with the American Industrial Hygiene Association in May, directly after AIHA changed its process to align with International Standardization Organization requirements. These are the quality standards that testing and calibration laboratories must meet to demonstrate technical competence and the ability to generate technically valid results.



Industrial hygiene chemist Jim Lachut analyzes proficiency test samples for beryllium using inductively coupled plasma mass spectrometry.

The AIHA reaccreditation changes included an increased emphasis on customer interactions, management involvement, analytical traceability and definition of analytical uncertainty. The process for the WSCF program included preparation of a detailed paper application, an on-site assessment by an AIHA quality expert and acceptable performance in the applicable proficiency programs.

Excellent performance

At a time when many assessments yielded 20 to 30 deficiencies and numerous suggestions for improvements, WSCF's Industrial Hygiene Analytical Program was found to have only two deficiencies and received just three additional suggestions for improvement. All were immediately addressed by the lab.

WSCF IH undergoes reaccreditation every three years with AIHA, the primary United States certifying body for industrial hygiene analyses. Reaccreditation has been routine for the program that began in 1974 as the Hanford Environmental Health Foundation's Industrial Hygiene Laboratory. It is now located at WSCF and operated by Fluor Hanford for the Department of Energy Richland Operations Office. WSCF is a full-capability analytical laboratory and the core analytical laboratory for non-radioactive and low-level radioactive samples for the Hanford site.

Achieving the newly revised reaccreditation is one of several indicators of program success. Another is the WSCF IH proficiency program performance rating, which has been maintained at 98 percent over the past three years.

A variety of samples

Bill Baird, the WSCF team lead in Inorganic Chemistry and Industrial Hygiene Chemistry, explained that the laboratory receives samples from AIHA every quarter. The samples contain unknown substances that must be detected through a variety of analyses. The resulting proficiency performance ratings are based on the quality of these analyses.

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Samples may be in the form of an air filter with traces of metals, or a “wipe” — that is, a small cloth that’s been wiped over a surface for analysis to detect the presence of any number of possible metal contaminants like lead or beryllium. Samples also may be paint or soil for lead analysis, solvents on sorbent tubes or passive monitors, free silica on filters, fiber counts related to asbestos exposure and bulk asbestos samples.

WSCF uses a variety of techniques to determine which substances are present and the concentration of each.

Baird credited Maureen Hamilton with much of the success of the WSCF Industrial Hygiene Analytical Program. He said she was a pioneer for industrial hygiene chemistry at Hanford and continues to serve the program today as a private contractor.

WSCF’s industrial hygiene analytical staff is currently involved on several worker health fronts at Hanford. These include analysis of blowing dust, beryllium assessments, respirable silica analysis and ongoing support of asbestos-related projects and tank-farm activities.

Since the wildfire of June 2000, blowing dust and interest in its possible health impacts have increased. Numerous samples have been taken by the WSCF industrial hygienists and analyzed by the WSCF laboratory for total, respirable and inhalable particulate levels and for the presence of metals and free silica. Hanford industrial hygienists are assessing the results of these analyses.

Beryllium concerns

WSCF personnel are providing analytical support for beryllium assessments occurring site-wide. Beryllium, a metal with many industrial applications, was used at Hanford from about 1960 to 1986. It has since been determined that beryllium dust, fumes and soluble salts are factors in chronic beryllium disease.

Since the summer of 1999, when the lab analyzed more than 1,500 wipe and air samples to characterize 25 facilities, beryllium has become the metal analysis most frequently requested. To improve the analysis, the lab recently validated a new wiping material that will allow for faster analysis and an ability to detect contaminants in smaller amounts.

WSCF IH also is supporting requests for respirable silica analysis. Silica is very common and typically harmless in nature. But, in the form of a dust that is consistently breathed, silica can contribute to the lung disease silicosis. Industrial hygienists take the samples to detect silica in this form, and the WSCF laboratory conducts the analysis. ♦