



## Services

### Analytical Services

Applied Sciences Laboratory (ASL) is a comprehensive, multi-function laboratory and analytical consulting system that applies the talents of its staff, using the latest scientific tools and best practices to help client achieve real world solutions to current challenges. Core business areas that we serve include:

- Water supply, groundwater, and wastewater treatment
- Hazardous waste investigations and remediation
- Solid waste and air quality management
- Indoor air quality and ecological assessments
- Process engineering
- Human health and ecological risk
- Resource management
- Green Chemistry

To serve these core businesses, we have laboratory units that perform:

- Conventional wet chemistry
- Inorganics and metals analyses
- Volatile and semi-volatile organic analyses
- Air sampling and analyses
- Process engineering support
- Treatability/Applied research testing
- Bioassay/Toxicity testing
- Close support lab operations
- Consulting services

### Air Toxics Analysis Service

CH2M HILL's Air Toxics Laboratory utilizes state-of-the-art instrumentation and experienced staff to provide air analyses services that few other laboratories in the world can offer. Air toxics laboratory staff has extensive experience in both sample collection and analysis.

The air toxics laboratory has been in operation since 1991. Projects and clients often use the data generated from air toxics analyses for:

- odor studies
- soil gas investigations
- ambient air studies

- remedial investigations
- vapor intrusion

### **Aquatic Toxicology Service**

CH2M HILL's Applied Sciences Laboratory operates an aquatic toxicology laboratory providing aquatic testing services to a variety of clients. The laboratory has full-service aquatic toxicology capabilities (acute, chronic, and flow-through testing) as well as one-of-a-kind custom tests. Applied Sciences staff have performed thousands of toxicity tests ranging from simple acute testing to lifecycle chronic and bioaccumulation studies. This experience has included testing over 40 different marine and freshwater vertebrate, invertebrate, and algal species.

### **Close Support Laboratories Services**

Close Support Laboratories (CSLs) provide data on an as-needed or near "real-time" basis utilizing portable analyzers or lab grade instrumentation in a trailer or facility in close proximity of the site.

CSLs can be located anywhere. The equipment and staff specific to the project are relocated to the site. The CSL allows for quick decisions to be made. The data is targeted to specific parameters and generated through the use of standard testing protocols or methods modified or developed specifically for the parameters and the sample matrix.

The rationale associated with utilizing CSL onsite includes:

- Provides data to project staff when it is most pertinent to ongoing activities
- Permits the project manager and task leaders to make informed decisions concerning the direction of their work, and helps identify when adjustments are needed
- Reduces the tendency to under- or over-investigate a site or contaminant source
- Focuses on target parameters rather than extensive lists of unrelated parameters
- Provides additional data sets for use in feasibility studies
- Methods used are customized or fitted to best analyze the site parameters in the same matrices of interest
- Eliminates sample packaging and shipping costs
- Offers a cost-effective alternative to extensive offsite laboratory analytical work
- Produces data for all levels of QC, and obtain state/regulatory certification if necessary

### **Consulting Chemistry Services**

- Custom instrumentation

- Data validation
- Emissions characterization
- Method development
- Process analysis
- Regulatory consultation
- Sample plan development

### **Laboratory Sediment Management Services**

The analysis of sediments, overlying water, bioassays, porewater and tissues is complex. It is often driven by regulatory requirements and risk assessments with low reporting limits that are difficult, if not impossible, to meet unless scientists know how to “clean up” samples and resolve analytical interference factors. The Applied Science Laboratory offers years of experience in handling these samples. The laboratory can consistently deliver:

- Accurate, reliable data
- Data within lower reporting limit
- Quick turnaround



### **Quality Assurance Management**

CH2M HILL Applied Sciences senior chemists have years of laboratory and management experience, often with a number of different laboratories. We have assisted a number of clients with:

- Laboratory audits to assist clients with preparing for state or federal certification programs.
- Preparation of blind quality assurance samples to be submitted to the Client's laboratory as part of an overall performance evaluation.
- Development, preparation, or revision of standard operating procedures (SOP) as part of a laboratory's overall quality control program, or to meet specific requirements by outside agencies.
- Development or presentation of training programs to provide laboratory staff with health and safety training, sample collection or sample analysis training (general or instrument-specific).
- Development, or evaluation of Quality Assurance Plans (QAP) to meet project-specific requirements or for general laboratory operation.

### **Restrictive Substances/Green Chemistry**

Green Chemistry is defined by the American Chemical Society as “the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substance” and “linking the design of chemical products and processes with their impacts on human health and the environment.”



Green Chemistry is an integral part of sustainable development because its principles attempt to reduce the use of toxic materials, conserve natural resources, and minimize waste and emissions. As an ardent supporter of sustainable design and development, CH2M HILL has consulted with clients on restricted substances issues. The laboratory is also capable of carrying out the analysis for restricted substances, advising clients on environmental impacts of manufacturing processes, assisting with interpretation of regulations related to Green Chemistry, and collecting, evaluating, and interpreting environmental data.

### **Sediment/Tissue Analysis**

The analysis of sediments, overlying water, porewater, and tissues is demanding, often with low reporting limits driven by regulatory requirements and risk assessments. The Applied Sciences Laboratory is experienced with the extraction, cleanup procedures, concentration of samples, and the specialized analyses for sediments, waters and tissues. CH2M HILL can identify strategic solutions that are expedient, cost-effective, and environmentally compliant.