

1.2 CERTIFICATION AND CHOOSING A LABORATORY

In Canada, laboratories can enter voluntary certification programs that can provide proof of competency in the analysis of parameters of concern. In Canada, the major provider of such services is the Canadian Association for Laboratory Accreditation (CALA). Some provinces such as Quebec have a separate accreditation program. The goal of CALA is to help laboratories achieve and demonstrate the highest levels of scientific and management excellence through the combined principles of competence, consistency, credibility and communication. The advantages to a person conducting analytical monitoring in using a laboratory that has been accredited by CALA is that they can be confident that the laboratory has the ability to provide accurate and precise analytical measurements.

Laboratories receive accreditation on a test-by-test basis for specific matrices (e.g., ambient waters, wastewaters, etc.). What this means is that a laboratory may receive accreditation for the performance of one test (for example, copper) in one media but might not have accreditation for another test (for example, zinc) in the same or different media. The reason for this is that first, the laboratory must apply for accreditation in each test, and, second, they may not meet the standards that are applied by the accrediting agency. Therefore, when selecting a laboratory for testing, you must ensure that they have accreditation in the media and for the parameters that you are interested in.

Generally, all organizations that grant accreditation for testing require that laboratories illustrate proficiency by undertaking proficiency testing. Proficiency testing is defined as the use of inter-laboratory comparisons to determine the performance of individual laboratories for specific tests or measurements.



Photo 1. Proficiency testing samples sent to laboratories
(Courtesy: L. Swain, Tri-Star Environmental Consulting)

Disciplines	Matrices
inorganic chemistry	water, waste oil, soil/sediment, air collection media (e.g. quartz and cellulose acetate filters, and charcoal tubes) and asbestos testing
organic chemistry	water, waste oil, soil/sediment, air collection media (e.g. quartz and cellulose acetate filters,

	and charcoal tubes) and asbestos testing
toxicology	water, waste oil, soil/sediment
occupational health	air collection media (e.g. quartz and cellulose acetate filters, and charcoal tubes) and asbestos testing
microbiology	Water, soil/sediment

Table 2 – Disciplines and matrices available for CALA accreditation¹

For CALA, the Proficiency Testing (PT) Program targets high volume testing in the disciplines of inorganic chemistry, organic chemistry, toxicology, occupational health and microbiology for the following matrices: water, waste oil, soil/sediment, air collection media (e.g. quartz and cellulose acetate filters, and charcoal tubes) and asbestos testing. CALA indicates that a laboratory has acceptable performance for a test should the PT score ≥ 70 . If scores less than 70 are attained, then the following consequences result:

- one non acceptable result = possible suspension (PS) of accreditation
- two successive non-acceptable result = suspension (S) of accreditation
- three successive non-acceptable result = withdrawal (W) of accreditation

Laboratories often offer “package” tests for certain matrices, such as metals and pesticides, and care must be taken in choosing the method. For a detailed discussion of standard analytical methods see Eaton *et al.* 2005. In selecting a method, consideration must be given to the detection limit of the method in question and the corresponding water quality guideline against which the data may be assessed. In general, detection limits should be five to ten times lower than the guideline that will be used for comparison, and/or the levels being measured, in order to ensure that there are no false-positive values. Some laboratories are better suited for analyzing ambient samples and this can be determined from their PT studies.



Photo 2. Accreditation certificates at a laboratory
(Courtesy: L. Swain, Tri-Star Environmental Consulting)

¹ <http://www.cala.ca/index.html>