

DETECTION LIMIT POLICIES



Contact your local ALS Technical Sales Representative for more information.

Why do detection limits vary?

ALS Limits of Reporting (LORs) are established using rigorous experimental and statistical procedures that begin with the determination of the Method Detection Limit (MDL) at 99% confidence. The MDL takes into account several factors, including long term Method Blanks, low level Sample Duplicates, and low-level Spiked Samples. However, the MDL is based on “typical” sample types in the absence of sample-specific problems, and doesn’t apply in all circumstances.

ALS takes a conservative approach to detection limits. Our goal is to minimize false positives, because we recognize that any false positive results can be damaging for our clients. Where possible, we establish LORs at levels well-above the statistical MDL. This improves the accuracy and precision of results near the detection limit, and reduces the chance of false positives due to sample-specific issues. Still, situations do arise when LORs must be raised above our standard levels. Examples include:

- **Insufficient Sample Amount:** Routine LORs are based on the processing of a standard weight or volume of sample. If insufficient sample is available, LORs must be raised accordingly.
- **Soils / Sediments with High Moisture:** Most parameters in soils or sediments are reported on a dry weight basis. For tests where high moisture soils or sediments are processed without prior drying (e.g. organics), LORs must be raised because less dry sample is available for testing.
- **Dilutions Due to High Concentration Samples:** When a test parameter is present in a sample at a high level, a dilution may be required to reduce its concentration to within the calibrated range of our test method, and sometimes even to prevent damage to sensitive instruments. LORs must then be increased to reflect the dilution factor. For multi-parameter tests, LORs are increased for all parameters within the test, whether they are detected or not.
- **Dilutions Due to Sample Matrix:** Some samples must be diluted because the sample matrix causes problems with the test. Matrix issues vary by test, but can include highly coloured or turbid waters, high salinity (e.g. seawaters or brines), or high organic carbon content.
- **Analytical Interferences:** There are many different types of analytical interferences that can require detection limits to be increased. Our chemists are diligent in identifying and preventing false positives from interferences, for example:
 - Co-eluting interference peaks in gas or liquid chromatographic tests (e.g. GCMS, LC/MS/MS).
 - Inter-element spectral interferences in ICPOES elemental analyses.
 - Polyatomic interferences in ICPMS elemental analyses.

The reasons why detection limits are sometimes increased are as varied as the samples we receive for analysis. In all cases, our goal is to protect our clients’ interests by preventing false positive results.

If you experience issues where raised LORs prevent you from adequately interpreting your test results, please contact your Account Manager. Other options may be available to achieve lower detection limits, such as re-analysis by an alternative method.

For more information please contact your ALS Account Manager at +1 800 668 9878



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