

Quantitative, Semi-Quantitative, and Qualitative Analyses

With the recent release of our updated Compound List (Tech Bulletin 503 rev16), we have received many questions for clarification. Which analysis options offer quantitative reporting? Which compounds are included in my normal report? What are the differences between the lists?

Over the years we have worked to develop a wide range of reporting options. These different reporting options are versatile to help meet the specific detail the project demands. Why does this matter? When considering what analysis to request it is vital to know if your project requires quantitative, semi-quantitative, or qualitative analysis.

Quantitative Analysis

Definition: Measurement of the quantities of chemical components present in a substance or mixture. Prism uses a certified reference material to create a calibration curve for quantitative analysis. This gives a specific response factor for each chemical compound included in the calibration curve, resulting in accuracy of +/- 20% and nanogram detection thresholds. Have your copy of TB503? You will find these quantitative compounds on pages 1 & 2.

Semi-Quantitative Analysis

Definition: Constituting or involving less than quantitative precision. As expected, semi-quantitative analysis does not involve a full calibration. Prism's semi-quantitative compound identification is based on a single point reference or high probability library match. The determination of amount uses the ratio of the unknown chemical compound to that of a known compound added to the sample before analysis. Therefore, uncertainty for semi-quantitative results is higher than for quantitative results, leading to accuracy closer to +/- 50% or designation as an estimated value. These compounds can be found on pages 3-8 of TB503.

Qualitative Analysis

Definition: Identification of chemical components of a substance or mixture. You may find in some circumstances that a simple confirmation of the compound's presence is enough. For many laboratories, such as Prism, the sample must still go through a minimum review to obtain the data. The difference is then in the reporting and level of detail required. True qualitative reporting is not common for VOC detection.

Still unsure? Call your lab to discuss the best sampling procedure, analysis, and reporting options for your project.