

Frequently Asked Questions on reporting results at very low concentration

Abbreviations: LOQ: limit of quantification DRW: data reporting website
DL: detection limit

1. We do not report a value to clients that is below a LOQ or DL for the method. Instead, we report the value as something less than the LOQ or DL. How should we report these results on the Magruder DRW?

Report the value you obtain from the instrument even if it is below the LOQ or DL.

A single result that is some value less than an LOQ or DL is appropriately not considered a “real” value since it is indistinguishable from instrument noise. However, many results within the noise have importance when considered together and averaged. The process of averaging many replicate results to increase the signal to noise ratio is termed “signal averaging”.

Although a single lab value does not have importance when it is below the LOQ or DL, many lab results will have value in statistical analysis because of an increased signal to noise ratio with signal averaging. The Magruder program would like to have all the values even if below the LOQ or DL to improve the statistical analysis and evaluation of the methods.

2. My instrument does not provide a result if it is below a LOQ or DL. What do I report on the Magruder DRW?

Try and see if your instrument can be set to provide a result that is below the LOQ or DL. If this is not feasible, do not report a result to the Magruder DRW for the analyte.

3. Can I report 0 if my result is below a LOQ or DL?

Entering 0 as a result should be considered a last resort.

It is preferred to have the actual instrument value reported on the Magruder DRW for the reason stated in the answer to question #1. If you cannot obtain this value, the next preferred action is to report nothing at all. If you feel you must report something as a record that you attempted to determine the analyte, you can report 0. However, 0 values will not be considered in determining averages and standard deviations from which z scores are based. A z score will be provided for the 0 result and may be a very poor z score.

4. Can I report a result that is less than 0?

No. The DRW will not allow entry of negative numbers. Negative results are usually an indication that your instrument needs recalibrated or more standards at low concentration are needed in the calibration.

5. My lab result on the Magruder reports may be misinterpreted to be a “real” value even if it is below the LOQ or DL. How will this misinterpretation be avoided?

Each report in the program will have a footnote with the following statement:

Individual lab values may be below detection limits but are reported solely for the purpose of this Proficiency Testing program.