

## **NH ELAP Limit of Detection (LOD) & Limit of Quantitation (LOQ) Guidance Document**

\*Definitions for LOD & LOQ may be found in the Glossary of the 2003 NELAC Standards.

### **LOD:**

\*The LOD requirements are found in Chapter 5 sections C.3.1 (initial) and D.1.2.1 (continuing) of the 2003 NELAC Standards. The level has to be determined and then validated by the laboratory staff. The laboratory's QSM needs to describe the procedure for meeting these standards.

Note:

- The LOD level is a level below that of the LOQ.
- NH ELAP has found that most labs do not report data down to a LOD, but report to a LOQ value; usually the low calibration standard (LOQ  $\approx$  low calibration standard).
- The LOD verification is a qualitative analysis that is performed on an annual basis.
- The levels at which the standard needs to be prepared are listed in the Standards.
- Acceptance criteria are not established by the Standards nor do they have to be developed by the laboratory staff since this a qualitative analysis. The analyst basically needs to "see" that the analyte of concern is present.
- The sample has to go through the preparation steps.
- The analysis can be performed on analyte for which a spiking solution or a quality control sample is available.

### **LOQ:**

\*The LOQ requirements are found in Chapter 5 sections C.3.2 (initial) and D.1.2.2 (continuing) of the 2003 NELAC Standards. The level has to be determined and then validated by the laboratory staff. The laboratory's QSM needs to describe the procedure for meeting these standards.

Note:

- The LOQ verification procedure is used to verify the limit of quantitation value stated by a laboratory. This value is typically noted on an analytical report.
- NH ELAP has found that most labs report to a LOQ value; usually the low calibration standard (LOQ  $\approx$  low calibration standard).
- A LOQ can be verified for any analysis for which the laboratory has already established a LOQ (however named).
- The LOQ verification is a quantitative analysis that is performed on an annual basis.
- The levels at which the standard needs to be prepared are listed in the Standards.
- The sample should go through the preparation steps.
- The recoveries have to meet method specific criteria. If no method specific criteria exist then the laboratory staff needs to develop acceptance criteria (Appendix D). The procedure for determining acceptance criteria can be found in the quality control section of Standard Methods; as an example.
- The acceptance criteria should be reasonable and may be compound dependant.
- "Temporary" criteria (i.e. +/-30%) may be established until such time that enough points (20 – 30) have been analyzed in order to create limits as described in Standard Methods.
- Corrective action needs to be taken if the criteria are not met.
- The analysis can be performed on analyte for which a spiking solution or a quality control sample is available.
- Some methods may establish a LOQ (however named). This level needs to be verified.
- Some programs (clients) may set a LOQ (however named). This level needs to be verified.