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**Contributor:** David Schiessel, Babcock Laboratories, Inc. (Riverside, CA). Created the CRAN package incorporating the LCMRL calculator source code, test input file, and required dependencies. Modified code to more thoroughly annotate outputs and designed more user friendly scripts.

**Title:** Statistical procedure for calculating the Lowest Concentration Minimum Reporting Level (LCMRL)

**Description:** An algorithm for calculating the Lowest Concentration Minimum Reporting Level (LCMRL) for each analyte measured by a designated analytical method. EPA defines the LCMRL as the lowest spiking concentration such that the probability of spike recovery in the 50% to 150% range is at least 99%. However, non-EPA users may select alternate modeling parameters to create a definition that meets their needs. The analysis of a minimum of 28 samples at seven spiking levels, with at least four replicates at each level, plus a minimum of four method blanks are required to calculate valid LCMRLs. All samples and blanks must be processed through the entire method. The LCMRL calculator constructs conditional (on spiking concentration) mean and variance models for analytical measurements. The conditional mean and variance models then specify the parameters for the conditional measurement distribution as a function of spiking level. It is this model of the distribution of repeated measurements at a given spiking level that is used to estimate the LCMRL.

**Version:**

Original Code – 5-18-2010, LCMRL R version.

LCMRL package including dependencies, test data, and improved scripts – December 2020, David Schiessel, Babcock Laboratories, Inc. (Riverside, CA); version number 1.0.9 – beta test.