



June 21, 2005

Ligia Mora-Applegate
Bureau of Waste Cleanup
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399

Re: Status of ProUCL as an Approved Statistical Method

Dear Ms. Mora-Applegate:

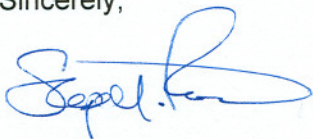
In this letter, we would like to clarify our recommendation regarding the status of ProUCL (Version 3) as an "approved statistical method" for calculating 95% UCL values, as provided in Chapter 62-780-610(2), F.A.C. As you know, ProUCL is a software tool developed by a U.S. EPA contractor and has been approved by the Agency for use in calculating exposure point concentrations. It is publicly available, and we have been in contact with one of its principal architects, Dr. Anita Singh, during the development of FLUCL. We coded a previous version of ProUCL into FLUCL during beta testing, and are familiar with how ProUCL works, including the current version. Although the validation studies used to create ProUCL Version 3 have not been published, we know how they were performed and have an understanding of the strengths and limitations of this tool.

We recommend that the Florida Department of Environmental Protection (FDEP) allow the use of ProUCL Version 3, provided that it is used within its limitations. This means specifically that it should be used only for data sets with:

1. A total of 10 or more samples, and at least 7 measured concentrations (either unqualified or carrying a "J", "I", or "T" qualifier). This condition applies regardless the software tool used to calculate the 95% UCL. The reliability of 95% UCL estimates from ProUCL, like FLUCL, is dependent upon being able to identify the underlying distribution of the data. This is impossible with only a few samples. While ProUCL Version 3 will operate when only a few data values are entered, the output is unreliable. In other words, just because the software will run with less than 10 samples doesn't mean that the output should be accepted.
2. No more than 15% of the data set is "non-detect". ProUCL Version 3 has not been validated to perform reliably when more 15% of the data are censored (i.e., non-detects). FLUCL should be used for data sets with more than 15% censoring, up to a limit of 70%. For very highly censored data sets, the bounding method can be used to estimate the 95% UCL. This method has been programmed into FLUCL, and can be used provided there are at least three measured concentrations.

It is our understanding that ProUCL Version 4 is under development, and that one of the planned improvements is better ability to handle censored data sets. When this version is released, we will evaluate it and give you our recommendation, including any limitations in its use, if warranted.

Sincerely,

A handwritten signature in blue ink, appearing to read "Stephen M. Roberts".

Stephen M. Roberts, Ph.D.

A handwritten signature in black ink, appearing to read "Kenneth M. Portier".

Kenneth M. Portier, Ph.D.