LSPA Continuing Education Seminar:
Environmental Data Analysis and MCP Risk Assessment Statistics with ProUCL
Tuesday, November 1, 2022 from 8:00 AM to 5:00 PM
The VERVE Hotel, Natick

Course Syllabus:
Each session below will include opportunities for Q&A.

7:30 - 8:00 Registration

8:00 – 10:00 Why upper confidence limits and statistics? Regulatory requirements related to the estimation of exposure point concentrations (EPCs) (SGZ)

- Use of EPCs in MCP risk characterizations; and
- Consideration of background in risk characterizations.

The necessary mathematical underpinnings for any UCL (BM):

- Central Limit Theorem; sample mean; sample standard deviation;
- The "appropriate" probability distribution to use;
- Straightforward examples and applications to establish a framework; and
- Interpretation.

10:00 – 10:15 Break

10:15 - 12:00 Different data distributions: normal; log-normal; gamma. (BM)

- Distributional influence on the specification of a UCL.
- Statistical tests for determining which distribution to use.
- What do these tests mean and how do they factor into EPC calculations?

12:00 - 1:00 Lunch

1:00 – 3:00 ProUCL – a useful vehicle for applications:
Walk-Through Implementation for calculation of UCLs and BTVs: (HRR)

- Importing data from Excel spreadsheets into ProUCL;
- Data visualization;
- Outlier screening and Goodness-of-Fit Tests;
- Calculation of UCLs of the mean; and
- Calculation of Background Threshold Values (BTVs).
- Fine Tuning: Data problems and their impact on the UCL (BM)
- Small sample size and censored or non-detect data;
- Techniques for developing the UCL under these circumstances

3:00 – 3:15 Break

3:15 - 5:00 Application and Case Studies (HRR/BM/SGZ)
Case studies for calculation of UCLs and BTVs with challenging environmental data sets.

5:00 Adjourn