

Short Course: Statistics for Toxics Cleanup – A Washington State Perspective

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Summary: This is an introductory and interactive statistics course. The class begins with a refresher on general principals including measures of central tendency (mode, median, mean), variance/standard deviation/coefficient of variation, hypothesis testing, distributions, and outliers. We will then explore some of the free programs that allow the user to compare groups of data (e.g. treatment and control) through BioSTAT (USACE), calculate background and compliance values through MTCASat (Ecology), and then calculate background and compliance values through ProUCL (USEPA).

Length of course: Approximately 7 hours

Agenda:

8:30 am (Brain Stretch – Monte Hall Scenario)

- Part I General Principals
 - Hypothesis Testing
 - Measurements of Central Tendency
 - Variance/Standard Deviation/Coefficient of Variation
 - Distribution Decisions

10:15 to 10:30 am (Break)

- Part II BioSTAT
 - Testing for Differences (2 groups)
 - BioSTAT Flowchart
 - Input/Calculate Results

11:30 am to 12:00 pm (Lunch)

- Part III MTCASat Background Module
 - Input/Calculate Results
 - Distribution Decisions
 - 80th %, 90th %, 4 x 50th %
 - ½ DL for censored values
- Part IV MTCASat Compliance Module
 - Input/Calculate Results
 - Distribution Decisions
 - 95 UCL
 - ½ DL for censored values

2:00 to 2:15 pm (Break)

Part V ProUCL Goodness of Fit Tests

Part VI ProUCL Background Threshold Values
90/90 UTL
KM for censored values

Part VII ProUCL Upper Confidence Limits
Exposure Point Concentration
KM for censored values

4:00 to 4:30 (Class ends)

Note: Please bring a laptop and mouse so you can work through the problems with the class. The following statistical programs should be installed on your computer prior to class:

BioSTAT: <http://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/User-Manual/>

ProUCL (version 5.1): <https://www.epa.gov/land-research/proucl-software>

Any questions concerning the class, please contact **Arthur Buchan** at: abuc461@ecy.wa.gov