



SETAC North Atlantic Chapter Presents...

# Introduction to Statistics for Environmental Professionals

The Doyle Conservation Center, Leominster, MA  
September 30, 2010

## INSTRUCTORS

Neptune & Company, Inc.



Paul Black holds a PhD in statistics from Carnegie Mellon University and is a co-founder of the Neptune and Company. His interests stem from training as a Bayesian statistician with a strong tendency to look for efficient and logical solutions to complex environmental problems. He has initiated a number of web-based decision-support and decision-analysis systems. Current work includes development of decision analysis support systems, evaluating aquatic systems, ranking food supply pathogens, and probabilistic modeling of physical nuclear waste.

Kelly Black, an environmental statistician, holds two degrees in statistics, with co-emphases in sociology and economics. Her current projects include working with EPA to develop guidance and training on aspects of systematic planning and data analysis. She has taught statistics and data quality courses throughout the country and enjoys sharing her enthusiasm for these subjects with those who may previously have ranked them somewhere below having an impacted wisdom tooth removed.

## INTRODUCTION

This workshop will provide a one-day overview of the role of statistics for environmental professionals. The material will be presented at a conceptual level. We will begin with introductory concepts, move into application of statistics in environmental problems, then discuss the real-world challenges environmental practitioners face with censored (non-detect) data, and finally conclude with different software available to you as either a producer or consumer of statistical information. All sessions will be interactive and not nearly as boring or frustrating as that darned statistics course you remember from college!

**Details about this course and registration information will be available on our website in early July**

**[WWW.NACSETAC.ORG](http://WWW.NACSETAC.ORG)**

## PRELIMINARY AGENDA

- Introduction and Basic Statistical Concepts  
Difference between exploratory statistics, confirmatory statistics, and statistics used as the basis of decision-making. A variety of methods for visualizing and interpreting data will be presented.
- Confidence Intervals and Hypothesis Testing  
Discuss the statistical logic that underlies two techniques for assessing data (confidence intervals and hypothesis testing), one- and two-tailed hypothesis tests, the relationship between hypothesis tests and confidence intervals, and the use and misuse of confidence intervals and hypothesis tests.
- Dealing with Non-Detects  
Discuss the typical reasons for non-detects, and then focus on how to handle non-detect data. Several data analysis techniques that account for non-detects will be presented, along with explanations of their pros and cons.
- Statistical Software Options  
SAS? Minitab? A high-end HP graphing calculator? Grandpa's slide rule? We'll discuss a range of available tools from Excel to GiSdT, and R.