Statistical Engineering Division Seminar

Tuesday February 28, 1995 11:00 am
Administration Bldg., Lecture Room B
NIST
Gaithersburg, MD

A Rational Analysis of Interlaboratory Data

John Mandel
Statistical Consultant

The analysis of the data resulting from interlaboratory studies that is currently widely used is faulty in several ways. It attempts to "correct" the data without touching the method that produced them. It uses significance tests that are often uninformative and often wrong.

An approach is proposed that looks at all the data, not just the extremes. This approach is based on an examination of the criteria by which laboratories should be evaluated and intercompared. It leads to a flagging of laboratories that present problems and suggests that after an analysis of the data, steps be taken to find the causes of the difficulties and, if necessary, to modify the testing process itself. Real data taken from the literature will serve as examples.

John Mandel holds an M.S. in chemistry from the University of Brussels. He studied mathematical statistics at Columbia University and obtained a Ph.D. in statistics from the University of Eindhoven. Dr. Mandel has been a consultant on statistical design and data analysis atthe National Bureau of Standards, now the National Institute of Standards and Technology, from 1947 to 1990. He is the author of three books and has contributed chapters on statistics to several major treatises, including Kolthoff and Elving's Treatise on Analytical Chemistry. He has written numerous papers on mathematical and applied statistics, dealing more particularly with the application of statistical methodology to the physical sciences. Mandel has served as a Visiting Professor at Rutgers University and at the Israel Institute of Technology in Haifa. He has contributed to the educational program of the Chemical Division of the American Society for Quality Control through lectures and courses. A fellow of the American Statistical Association, the American Society for Testing and Material, the American Society for Quality Control, and the Royal Statistical Society of Great Britain, Mandel is the recipient of a number of awards, including the U.S. Department of Commerce Silver Medal andGold Medal, the Shewhart Medal, the Dr. W. Edwards Deming Medal, the Frank Wilcoxon Prize and the Brumbaugh Award of the American Society for Quality Control. He is an NBS Fellow of the National Bureau of Standards. He was Chairman of one of the Gordon Research Conferences on Statistics in Chemistry and Chemical Engineering and has served on several ASTM committeesand was, in particular, and active member of Committee E-11 on Statistical Methods. He is now a consultant on statistics to the Institute of Standardization Research and to several companies and government agencies.

[NIST contact: Hung-kung Liu, (301)975-2718]