



The University of Chicago
Department of Statistics
Master's Seminar

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**Analysis of Sediment Toxicity Using Sediment Chemistry
and Grain Data: the Mid-Atlantic Region Estuaries 1997
Sediment Data**

TUESDAY, November 18, 2008 at 4:00 PM
110 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

We analyze the sediment toxicity data collected from Mid-Atlantic region estuaries. The toxicity test is the result of the *Ampelisca* test, recorded as the ratio of number of survival amphipods in treatment and control. This paper explores the relationship between the survival probabilities and the sediment chemistry data by using logistic regression model. The Expectation-Maximization algorithm and Newton-Raphson method are employed to estimate parameters and construct confidence intervals with the assumption of a single survival probability for the control sample. Our simulation study considers variations in survival probabilities in the control sample, in which we observe that the result does not differ much from that of the single survival probability in the control.