**Memorandum**

To: Co-worker

From: Andy Ossman

Date: September 23, 2013

Subject: Nonlinear Curve Fittings

**Objective:**

The objective of this experiment was to observe and plot sorption data for a set of dissolved chlordane concentrations, Caq with corresponding adsorbed Chlordane concentrations, Cadsorbed.  Then visually assess whether a linear or Freundlich model fits the data best.

**Methods:**

The data of the chlordane concentrations was obtained and added to the Kaleida Graph Program. The dissolved chlordane concentrations, Caq, was graphed on the x-axis while the corresponding adsorbed chlordane concentrations, Cadsorbed, were graphed on the y-axis. A linear model and the Freundlich model were both fit to the data using the program. The linear model and Freundlich model equations are shown in equations 1 and 2, respectively. The model that best fits the data was then chosen visually.

(eq 1)

(eq 2)

**Results and Discussion:**

The graph relating the dissolved chlordane concentrations with the adsorbed chlordane concentration yields a model best fit by the Freundlich model shown in Figure 1. The data does not visually appear to be linear and has a bend or exponential component to it making the Freundlich model the best fit. The K value, Freundlich isotherm soil-water partition coefficient, was found to be 245 (mg/g)(L/mg) and the 1/n Freundlich isotherm intensity parameter was found to be .4. The Freundlich model fits the data best. A trend line was added to graph to show this relationship more clearly.



K=245

**Figure 1.** Plot relating the adsorbed chlordane concentration and dissolved chlordane concentration using the Freundlich Model