**Memorandum**

To: Professor Sills

From: Jessica Sampaio Silva

Date: September 24, 2013

Re: Lab Report – Non-Linear Curve Fitting – Part II – Sorption

**OBJECTIVE**

The objective of this experiment is fit the data parameters to one of two sorption isotherms equations described below, the Linear and Freundlich, and choose the model that most fits the data.

(1)

(2)

Where *q* is the mass of adsorbate adsorbed per mass of adsorbent at equilibrium in mg/g; *C* is the concentration of adsorbate in the aqueous phase at equilibrium in mg/L; *K* is the Freundlich isotherm soil-water partition coefficient in (mg/g)(L/mg); and *1/n* is the Freundlich isotherm intensity parameter (unitless).

**METHODS**

“KaleidaGraph” is used to plot the data set of dissolved chlordane concentration (Caq [mg/l]) versus adsorbed chlordane concentration (Cadsorved [mg/ g of GAC] and fit this data into the two isotherm models for sorption. First is necessary realizing the curve-fitting using both of equations. Then, with a visual analysis is possible determine the best model.

**RESULTS AND DISCUSSION**

After realize the trials for both equations, it’s possible to observe that the second one fits better the data presented. The non-linear curve fitting process provided a value for K (Freundlich isotherm soil-water partition coefficient) of 245 (mg/g)(L/mg) and 1/n (Freundlich isotherm intensity parameter) of 1/2.5. The graph generated is presented in Figure 01, below.



Figure 01: Data set, represented by circles, and non-linear fitting curve for Freundlich sorption isotherm (). The graph relates the dissolved chlordane concentration (Caq [mg/l]) with the adsorbed chlordane concentration (Cadsorved [mg/ g of GAC]. The value for K is 245 (mg/g)(L/mg) and n=2.5.