**Memorandum**

To: Prof. Sills

From: Leticia Anechini Zanotti

Date: September 17th, 2013

Re: Sorption

OBJECTIVE

The objective of this experiment is to determine the parameters of the sorption isotherm of chlordane on granulated activated carbon (GAC). Find out which model (Linear or Freundlich) fits the collected data best and the model’s parameters.

METHODS

We have tried to fit the collected data of mass of adsorbate adsorbed per mass of adsorbent at equilibrium (q) in over concentration of adsorbate in the aqueous phase at equilibrium(C) in into two isotherm models with KaleidaGraph. The models are:

Linear:

Freundlich:

Where:   
K = Freundlich isotherm solid-water partition coefficient (()()), and   
 = Freundlich isotherm intensity parameter (unitless).

RESULTS AND DISCUSSION

After trying to fit the data to both isotherm models, the conclusion is that Freundlich fitted better as we can see in Figure 1. The Freundlich isotherm solid-water partition coefficient (K) is 245 (()()), and the Freundlich isotherm intensity parameter () is 0.4.



Figure 1. Measured mass of adsorbate adsorbed per mass of adsorbent (q) in mg/g vs. concentration of adsorbate in the aqueous phase (C) (mg/L) fitted to a Freundlich isotherm model. Where K=245 (()()), and .

APPENDIX A: ATTEMPT TO FIT TO A LINEAR MODEL

In the attempt to fit the data into the Linear model, we had the graph in Figure 2. Figure 2 illustrates how this was not the appropriate model to describe our data.



Figure 2. Attempt to fit the data of mass of adsorbate adsorbed per mass of adsorbent (q) in mg/g vs. concentration of adsorbate in the aqueous phase (C) in mg/L to the Linear model.

REFERENCES

Sills, D. L. (2013) Week 3 Laboratory Handout. – Nonlinear Curve Fitting. Bucknell University. CENG 340 Course Notes, Fall, 2013.