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Effects of Particle Size and Time on the Reliability of Toxicity Characteristic Leaching Procedure Results

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73

Coy, K. LTU and J. Fein UND. A preliminary evaluation of humic acid adsorption onto mineral surfaces. --Adsorption of humic acid onto the surface of alpha-corundum was examined in order to calculate an equilibrium constant for this process. This constant is needed to quantify the amount of contaminant in transport to the mineral surface by humic acid for any natural system. An experimental procedure was developed which involved determining the concentration of humic acid needed for analysis and the time required for humic acid to reach equilibrium with the mineral surface. Three experimental runs were conducted in which the interaction of humic acid with corundum was analyzed at a range of pH values. In each experimental run the concentration of corundum was decreased which resulted in a decrease in humic acid adsorption. These experiments produced sufficient results for the development of an equilibrium constant. This equilibrium constant will be applicable for determining humic acid adsorption rates onto a mineral surface at any pH in most natural systems. Supported by NSF and Univ. of Notre Dame.

74

Dupre, Teddy; Granier, Tamerage; Mandhare, Keshav; Schultz, David; Beck, James. P.O. Box 2022-Department of Physical Sciences, Nicholls State University, Thibodaux, LA 70310. Phone (504)448-4576, FAX (504) 448-4927 -- A survey of mercury concentrations in soil and in various species of fish taken from Lake Boeuf, Southeast Louisiana. --

Mercury was analyzed in four types of fish, namely redear sunfish, large mouth bass, blue gill perch, and black croppie. Samples were obtained from Lake Boeuf, Southeast Louisiana. After being caught, the fish were immediately frozen. From each fish, three tissues were removed and analyzed by EPA method 7471 using (BACHARACH) Coleman model 50B mercury analyzer system. Sediments were collected using a coring device and each core cut into one-inch thick samples. The partitioned samples were analyzed using EPA method. The results to date have shown concentrations of mercury ranging from 0.001 to 1.15 ppm. Concentrations of mercury in the soil samples ranged from less than 0.07 - 0.501 ppm.

75

Newchurch, M. K. NSU. A comparative study on occupational exposure to airborne toxicants in a health care facility.-- Volatile organic compounds (VOCs) found in ambient air in a health care facility were fingerprinted. Air quality in a new wing of a local hospital was analyzed using a parallel multi-column gas chromatograph (PMCGC) and a baseline of select low molecular weight chemicals defined. The air quality was tested in the fall of 1996 when the new facility opened and again one year later in the fall of 1997. A comparison was made between the two sampling periods to asses the effects that remodeling and new construction had on the quality of ambient air in the facility. Air samples were collected and analyzed on site using the PMCGC in conjunction with a new sample concentrator. The study focused on those chemical pollutants with two (2) to nine (9) carbon atoms that pose significant toxicological risk

76

Landry, A. A., G. E. Heard, N. M. Kliebert, M.A. Janusa. NISU. Effects of particle size and time on the reliability of Toxicity Characteristic Leaching Procedure results.--The Toxicity Characteristic Leaching Procedure (TCLP) is an accepted leaching test by EPA. The Federal Register regulations of TCLP test require that waste samples be crushed to particle size less than 9.5 mm and extracted for a period of 18 hours with an acetic acid solution. The leachate is filtered prior to conducting the contaminant analysis. Herein, the validity of TCLP results is questioned. The regulations have two major flaws: (1) no minimum particle size, (2) no time limit between extraction and filtering. Experimental data show that drastic differences in final concentration of waste leached can be obtained when these two parameters are not considered. The results suggest that these two parameters must be stated in order for TCLP results to be reliable and comparable.

77

Trowbridge, J. E. and J. H. Wandersee. Southeastern Louisiana University. Distinguishing between science and technology. --- The ability to distinguish between science and technology is now a "standard" for current science teaching and curriculum planning. In many cases students and teachers do not distinguish between the roles of science and technology. This study of high school students and teachers found restricted notions of science and technology. Frequently students' and teachers' notions were restricted to a positive application and advancement of science. Students and teachers did not recognize that technology can proceed on its own, without a science connection. Furthermore, there is little recognition that technology can be applied in a harmful manner or applied to anything other than service to humans. These and other findings have ramifications for the continued definition of scientific literacy.

78

Stringer, G., B. Flowers, and S. Lantz. NLU/USL. Utilization and integration of the "Oil Spill Awareness through Geoscience Education (OSAGE)" curriculum and CD for education and industry in Louisiana.-"Oil Spill Awareness through Geoscience Education (OSAGE)" is an innovative, multi-year, collaborative project consisting of a precollege-level curriculum and CD which address the essential concepts of oil spills. The primary goal of the project was to systematically develop a relevant and comprehensive oil spill awareness curriculum complete with curricular activities, materials, and resources for Louisiana schools. The curriculum teaches essential concepts of oil spill awareness and can be integrated into junior high and high school earth science, general science, life science, and environmental science courses. The CD provides a colorful, interesting, and interactive method of delivery for the oil spill curriculum.