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School of Marine Science

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License No. 45-07112-01

Stephen Hamman
Health Physicist
Commercial and R&D Branch
Division of Nuclear Materials Safety

Subject: Dr. Steve A. Kuehl's Training and Experience

Dear Mr. Hamman;

In reference to your letter of January 10, 2006, please find the enclosed summary of Dr Kuehl's training and experience with regard to radioactive material. I am hopeful that this is sufficient information to allow for your continued review and decision.

Sincerely,

Thomas W. Grose
Director, Safety & Environmental Programs
College of William & Mary
Virginia Institute of Marine Science

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Steven A. Kuehl

Professor of Marine Science, Virginia Institute of Marine Science
B.A., Lafayette College
M.S., Ph.D., North Carolina State University

Research Interests: Primary research centers on sediment dispersal and the accumulation of sediments on continental margin environments.

Training/Experience with Radioactive Materials: Initial training and experience began as a graduate student in 1979, at North Carolina State University with formal classroom training and supervised use of radioisotopes for research under the tutelage of Dr. David DeMaster. Instruction included laboratory safety, radiation protection principles, characteristics of ionizing radiation, safe handling procedures, dose and quantity measures, exposure hazards, instrumentation, and spill response. Type of radioisotopes typically used included U-Th series (U-238, Th-234, Th-230), Pb-210, Ra-226, Rn-222 Po-209, Cs-137 and C-14. Quantities of material used were in increments of micro-, nano- and picocuries with forms of material including solid and liquids. Training and practice in radiation detection included the following: liquid scintillation counting for C-14, gas scintillation for Rn-222, silicon surface barrier detectors for alpha emitters, high purity germanium detectors for gamma spectroscopy. Research with radioactive material continued until completion of doctoral degree in 1985.

In 1985, as a faculty member of the University of South Carolina responsibilities included the day to day operation of the geochronology laboratory which continued until 1993. This work involved the U-Th series isotopes as listed above and research with C-14 resulting in the development of a radiocarbon extraction method using benzene liquid scintillation methods for quantification. Research was also conducted with ion exchange isolation techniques on U-238, Th-234, and Th-230. Solid and liquid forms of radioisotopes were used for research and calibration typically in increments of micro-, nano- and picocurie quantities.

In 1993, a faculty position was offered and accepted at the Virginia Institute of Marine Science. Instructional responsibilities included teaching coursework on the natural abundance of radioisotopes in the marine environment, radioisotope dating techniques, and geochemical systematics, as well as, general supervision of geochronological research in which micro-, nano-, and picocurie quantities of U-Th series, Cs-137 and C-14 were typical. Recently attended and completed updated Radiation Safety Training (10/24-10/28/2006), which included sections on radiation protection principles (ALARA, time, distance, shielding), characteristics of ionizing radiation (alpha, beta, gamma, neutron), radiation dose and quantities (units of dose, occupational dose limits, personal dosimetry, and Curie/SI system of quantification), biological hazards of exposure (ionization, direct and indirect effects, stochastic/non-stochastic, acute vs delayed effects), instrumentation (discussion of various methods, types and limitations of detection and demonstration of various G-M and scintillation instruments.) and security/emergency response (locked/guarded, authorized/unauthorized access, restricted/unrestricted areas, emergency notification, and spill response measures). Training concluded with a written exam (score 98/100 pts) and a practical hands-on response to a spill followed by critique.