May 25, 2006

Mr. Walston Chubb
4953 Cline Hollow Road, Apartment 244
Murrysville, PA 15668-1591

Dear Mr. Chubb:

This letter acknowledges receipt of your letter of April 8, 2006, concerning the U.S. Nuclear Regulatory Commission's (NRC) regulation of exposure to ionizing radiation.

As previously communicated to you, the NRC takes its mission to protect public health and safety and the environment seriously. In a letter dated December 6, 2004, Mr. Stephen Klementowicz briefly described the basis of NRC's radiation safety regulations. Another description of how recommendations for occupational dose limits were derived in the U.S. is provided in Chapter 8 of the National Council on Radiation Protection and Measurement's Report number 116, entitled "Limitation of Exposure to Radiation." The technical basis for these regulations was recently re-validated by a 2005 National Academies report, entitled "Health Risks from Exposure to Low Levels of Ionizing Radiation." The National Academies committee reviewed the scientific literature published since 1990 and concluded that the current scientific literature is consistent with the hypothesis that there is a linear, no-threshold dose-response relationship between exposure to ionizing radiation and the development of cancer. In this report, the National Academies committee accounts for repair of radiation-induced damage after chronic exposure by incorporating a low dose/low dose rate reduction factor (DDREF=1.5).

In a May 31, 2005, letter from Ms. Cheryl Trottier, additional information on the health effects of exposure to ionizing radiation was provided to you. Again, the National Academies in their 2005 report describe how ionizing radiation is deposited into biological material, the types of damage induced, and how this damage is processed in biological systems.

Finally, I would like to recommend Dr. Eric J. Hall's book, entitled "Radiobiology for the Radiologist," for your review and consideration. The first chapter, entitled "The Physics and Chemistry of Radiation Absorption," provides several insights concerning radiant energy deposition into biological material and subsequent biological effects of ionizing radiation exposure. Similarly, chapters 17 and 19 also contain useful information that provide insights into discerning the subtle differences between the deterministic effects (e.g., acute radiation sickness) and stochastic effects (e.g., carcinogenesis) of radiation exposure.

I hope that this additional information is useful.

Sincerely,

/RA/

Brian W. Sheron, Director
Office of Nuclear Regulatory Research

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Brian W. Sheron, Director
Office of Nuclear Regulatory Research

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