



Clearance of Solid Materials from Nuclear Facilities

Position Statement Revised June 2008

The American Nuclear Society (ANS) firmly holds that (1) it is not reasonable to absolutely prohibit the release of slightly radioactive solid materials, which give a dose of no more than 10 $\mu\text{Sv}/\text{year}$ (1 mrem/year), and (2) the unrestricted release of such materials can be accomplished with negligible risk to the public health and safety. It is noted that most naturally occurring or man-made solid materials and artifacts contain some amount of radioactive material, contributing to an average background radiation dose of about 360 mrem/yr in the United States. The American National Standards Institute (ANSI) / Health Physics Society (HPS) N13.12 standard "Surface and Volume Radioactivity Standards for Clearance" provides a sound technical basis for clearance of such solid materials. "Clearance" is used to describe the unconditional release of solid materials containing such trace levels of radioactive material.

While standards have existed at the Federal level for the release of liquids and gases to the environment, no such standards are in place for the release of solid materials that may have such trace levels of radioactive material associated with them. This regulatory void has led to substantial costs to manage such materials, even during decommissioning of nuclear facilities where large quantities of radioactive material may be present in the concrete and soil.

In March 2005, the U.S. Nuclear Regulatory Commission (NRC) staff provided a draft proposed rule-making package on Controlling the Disposition of Solid Materials. In May 2005 the NRC unanimously disapproved publication of the draft proposed rule-making package. The decision was based on the fact that (1) the NRC was faced with several high-priority and complex tasks, (2) the current approach to review specific cases on an individual basis is fully protective of public health and safety, and (3) the immediate need for this rule had changed because of the shift in timing for reactor decommissioning. Thus, the NRC has deferred this rule making.

The U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) and some Agreement States have also undertaken initiatives in this area. In parallel, professional societies and other industry groups worked on the issue for many years. This work under the HPS Standards Committee culminated in August 1999 with the publication of ANSI/HPS N13.12. The ANS supports and recommends that Federal agencies dealing with the issues of the release of solid materials potentially containing traces of radioactive materials adopt ANSI/HPS N13.12.

ANSI/HPS N13.12 is currently the only national consensus standard that addresses the safe release of solid materials containing trace levels of radioactive materials. It should be noted that the National Technology Transfer and Advancement Act of 1995 requires Federal agencies to use technical standards that are developed or adopted by voluntary consensus bodies, unless the use of such a standard is inconsistent with applicable law or otherwise is impractical.

The ANSI/HPS N13.12 dose criterion of 10 $\mu\text{Sv}/\text{year}$ (1 mrem/year) for the release of solid materials is consistent with the International Atomic Energy Agency (IAEA) guideline for clearance but is a small fraction of the existing standards for safe exposure of the public from nonmedical radiation sources. The

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current public dose limit for dose from all man-made radiation sources (except nuclear medicine) used by the NRC (10 CFR Part 20), the DOE (10 CFR Part 835 and DOE Order 5400.5), and proposed as Federal Guidance by the EPA (*Federal Register*, December 23, 1995, Vol. 59, 66414) is 100 mrem/year. The dose limit for NRC license termination for a nuclear power reactor site is 25 mrem/year (10 CFR Part 20.1402). Moreover, the threshold for additional efforts under the as-low-as-is-reasonably-achievable (ALARA) rule (10 CFR Part 50, Appendix I) is an external dose of 5 mrem/year from gaseous effluents to an individual in an unrestricted area.

The ANS position supporting ANSI/HPS N13.12 is specific to the criteria applied to clearance of solid materials. In no way does this ANS position question the safe regulatory dose limit of 100 mrem/year for a member of the public or contradict ANS Position Statement 41 that the risk of health effects from exposures below 10 rem (10 000 mrem) is either too small to be observed or is nonexistent.

From an operational health physics perspective, ANSI/HPS N13.12 is workable and is clearer than the 1974 surface contamination guidelines that were published by the then Atomic Energy Commission (now NRC) as *Regulatory Guide 1.86* and that continues to be in use by NRC nuclear materials licensees and by the DOE (in DOE Order 5400.5, Chapter IV, Figure 4.1, 1993).

The ANS is aware of the limitations of ANSI/HPS N13.12 regarding the scope of application and the conservative upper-bound assumptions. The ANS also recognizes that application of the standard leads to numerical release criteria for radioactive materials controlled under the Atomic Energy Act that are orders of magnitude more restrictive than the Naturally Occurring (and Technologically Enhanced) Radioactive Material (NORM/TENORM).

In conclusion, the ANS continues to believe that ANSI/HPS N13.12 provides a sound technical basis for achieving consensus among stakeholders to define a timely regulatory policy at the Federal level for the clearance of solid materials. The ANS urges the NRC to increase the priority of this rule making.

The American Nuclear Society, founded in 1954, is a not-for-profit scientific and educational society of over 11,000 scientists, engineers, and educators from universities, government and private laboratories, and industry.

Position Statements are the considered opinions and judgments of the Society in matters related to nuclear science and technology. They are intended to provide an objective basis for weighing the facts in reaching decisions on important national issues.