



# HEALTH PHYSICS SOCIETY

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*Specialists in Radiation Safety*

**Health Physics Society Preliminary Comments on the  
Nuclear Regulatory Commission's  
Proposed Rulemaking on Requirements for Expanded Definition of  
Byproduct Material**

**presented by**

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President**

**at the public meeting held at the**

**William Olstead High-Level Waste Hearing Facility  
Las Vegas, Nevada**

**on**

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Good morning. I am Brian Dodd, President of the Health Physics Society. I want to thank the Nuclear Regulatory Commission for holding this public meeting and for providing me with the opportunity to make some preliminary comments on behalf of the members of the Health Physics Society. As the former head of the International Atomic Energy Agency's unit responsible for developing the revised Code of Conduct, the revised Categorization of Radioactive Sources, the IAEA's Security of Radioactive Sources interim guidance and documents on regaining control over orphan radioactive sources, it is also personally interesting to see the national implementation of work started internationally over 5 years ago.

For those not familiar with the Health Physics Society, or HPS, it is an independent scientific organization whose members are professionals in the field of radiation safety. The Society's mission is excellence in the science and practice of radiation safety. HPS activities include encouraging research in radiation science, developing standards, and disseminating radiation safety information.

Today I have three fundamental comments on the NRC's proposed rule on the Requirements for Expanded Definition of Byproduct Material. The HPS also intends to submit written comments prior to the public comment deadline, which we expect will include a few additional comments but which will not be extensive or fundamental to the proposed rule. We feel we need to do some additional research and discussion on some details before formulating them into formal comments.

By way of background on my comments today and on the HPS's active interest in the subject of the proposed rule, I would like to quickly review the Society's activities in this area of including naturally occurring and accelerator produced radioactive materials in the same regulatory framework as Atomic Energy Act, or AEA, radioactive materials.

The HPS has a relatively long history of advocating for a more uniform and compatible regulatory framework for the responsible regulation of radiation and radioactive materials. Over fourteen years ago, in January 1992, the HPS issued a position statement "Compatibility in Radiation Protection Regulations." This position statement was driven by the HPS's concern over the differences in radiation regulations that existed between individual state's in their regulation of non-Atomic Energy Act radiation sources and radioactive material and over the differences between these state regulations and the NRC regulations for Atomic Energy Act radiation sources and radioactive material. Our concern for the non-uniform regulation of similar radiation risks grew as the basis for radiation protection standards evolved, both nationally and internationally, and as more and more federal agencies exercised legislative authority over other sources of radiation and radioactive materials. Finally, in August 2000, the HPS revised its "Compatibility" position, now titled "Compatibility in Radiation-Safety Regulations," to call for a single, independent federal agency to have the responsibility and authority to establish all ionizing radiation-safety standards for all controllable sources of occupational and public exposures. This revision was driven by the HPS belief that the current regulatory framework for establishing and enforcing regulatory radiation-safety standards results in inconsistent, inefficient, and unnecessarily expensive public health protection policies regarding radiation safety. This position, and all other position statements of the HPS are available on our Web site at [hps.org](http://hps.org).

It is important to note for the context of my specific comments on the proposed rule that this call for a single regulatory agency is for the purpose of providing a uniform and centralized regulation of radiation and radioactive materials for the **protection of public health and safety**.

Following the events of September 2001, there became a heightened, and appropriate, concern for increased uniform and centralized regulatory controls on some radioactive materials for the purpose of **common defense and security** of the nation. That concern evolved through a number of legislative proposals for “dirty bomb prevention” and “nuclear infrastructure security.” Eventually the concerns were addressed legislatively in the Energy Policy Act of 2005, including the provision requiring expansion of the definition of by-product material in the AEA to include certain discrete sources of radium-226 and other naturally occurring radioactive materials, and certain radioactive materials produced by an accelerator.

Throughout the legislative and federal agency work to respond to this need for increased controls on sources of radiation and radioactive materials for the purpose of **common defense and security**, the HPS provided its input to congressional and the federal agency staff on the issues of safeguarding radioactive materials. This input continued to stress that one of the fundamental reasons for invoking some of these increased controls, that is, creating a uniform and centralized control in a federal agency, was also applicable to regulation for the purpose of **public health and safety**.

Specific to the current proposed rulemaking for expansion of the definition of by-product material, when it became clear that there would be legislation addressing this issue, the HPS formed a working group with the Organization of Agreement States, or OAS, to study the draft legislation for the purpose of taking a joint position on the draft legislation. In January, 2005, the HPS and OAS issued the joint position statement “Congressional Action is Needed to Ensure Uniform Safety and Security Regulations for Certain Radioactive Materials,” which contained seven specific principles that should be accomplished by the legislation. The HPS and OAS also jointly developed proposed draft legislation that would meet the seven principles in the position statement. These principles included the two very important provisions that (1) the definition of a “discrete source” be accomplished by rulemaking and not by legislation and, (2) that the proposed rule be developed in close cooperation with state radiation control agencies. The fundamental position that formed the basis for the seven principles was stated as follows: Our organizations believe that [a] fragmented regulatory framework allows for inconsistent standards for the possession, use, and disposal of these sources, which can potentially have a negative impact on **public health and safety** and on **national common defense and security**.

Section 651(e) of the Energy Policy Act enacted all seven principles of the HPS-OAS position statement. However, it did not support the fundamental position that **ALL** radioactive materials subject to the expanded definition needed to be included. Rather, it qualifies the materials as being those that “have been produced, extracted, or converted after extraction for use for a commercial, medical, or research activity.” That is, it only requires application of the expanded definition to sources created for the purpose of using their radioactive properties, which excluded sources of the same exact

radioactive materials that were produced, extracted, or converted after extraction **incidentally** to some other process or activity. This leaves the large category of naturally occurring radioactivity known as “diffuse NORM” as not being controlled under a uniform centralized regulatory framework.

With that background, I would now like to present my specific comments.

Specific Comment 1: The HPS would like to congratulate the Nuclear Regulatory Commission and its staff and the staffs of the State Radiation Control Agencies for engaging in an outstanding rule making process and for developing an outstanding proposed rule. The proposed rule adequately and appropriately implements the seven principles contained in the HPS-OAS position statement to the extent required by the Energy Policy Act. Our review to date has not identified any fundamental radiation safety concerns. We recognize that many details of implementing the proposed rule may be subject to comment, input, and criticism by those responsible for their implementation. Our finding of no fundamental radiation safety concerns does not imply there are not valid comments, criticisms, or concerns about some details regarding the implementation of the rule. In fact, the HPS may have some comments about specific details in the rule in our written submittal.

Specific Comment 2: While we find that the NRC has adequately met the requirements of the Energy Policy Act in regards to the extent of what materials must be included in the expanded definition of by-product materials, we point out that the Act does require considerations of **both** public health and safety and common defense and security. The Act restricts the extent to which the subject materials need to be included in the expanded definition by restricting its intended use, but not by restricting the activity or quantity of the material. However, the background discussion in the section “Other Naturally Occurring Radioactive Material With Similar Risk as Radium-226” offers three reasons not to include polonium-210 in the expanded definition. One of those reasons is “polonium-210 is very unlikely to be commercially used in individual radioactive sources with activity levels that would place them within IAEA Code of Conduct Category 1 or 2.” Within the USA, IAEA categories 1 and 2 have been associated with ‘high-risk’ sources and activities of concern to common defense and security. The requirement to evaluate other naturally occurring radioactive materials for inclusion in the expanded definition is to evaluate those that pose a similar risk as radium-226 to the public health and safety as well as the common defense and security. Using IAEA category 1 and 2 as the benchmark for the risk of radium-226 does not meet the requirement to include risk to public health and safety. In fact, since the IAEA regards uncontrolled category 1, 2 and 3 sources as potentially ‘dangerous’ to human health, the HPS would argue that IAEA category 3 is also a threat and the analysis is deficient by at least not including category 3.

Having made this comment, the HPS does not disagree with the NRC conclusion that polonium-210 does not need to be included in the expanded definition under the category of naturally occurring radioactive materials posing a similar risk as radium because of the more persuasive argument that the production of polonium-210 discrete sources for commercial, medical, or research use is by activation in a reactor so it is already regulated as by-product material.

Specific Comment 3: In Section G of the proposed rulemaking, the NRC requested comments on a number of specific issues including (G.(4)) the adequacy of the applicable default ALIs and DACs in Appendix B to 10 CFR 20 for oxygen-15 and nitrogen-13, and whether staff

should develop larger specific values for these radionuclides. It has been brought to the Society's notice by members that the default values could be two to three orders of magnitude less than specifically calculated values and use of the default values would require air monitoring and ventilation systems to be significantly greater than necessary. Because of this possibility, it would seem appropriate for the NRC to develop specific values for these radionuclides.

Finally, on the subject of the extent of materials included under NRC jurisdiction, the HPS does believe this regulatory action will provide a step forward by forming an excellent foundation for having uniform regulations for all materials that need control for public health and safety. The HPS will continue to hold the position that sometime in the future, when resources and priorities are appropriate, all radioactive materials that need to be controlled for public health and safety, regardless of their reason for production, should be controlled under a single regulatory framework.

That concludes my comments for today. Once again, thank you for the opportunity to provide them in this forum.