



# HEALTH PHYSICS SOCIETY

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## Specialists in Radiation Safety

John Cardarelli II, PhD, CHP, CIH, PE  
President 2021-2023

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The Honorable Thomas R. Carper  
Chairman, Committee on Environment and  
Public Works  
United States Senate  
Washington, DC 20510

The Honorable Cathy McMorris Rodgers  
Chairman, Committee on Energy and  
Commerce  
United States House of Representatives  
Washington, DC 20515

The Honorable Shelly Moore Capito  
Ranking Member, Committee on Environment  
and Public Works  
United States Senate  
Washington, DC 20510

The Honorable Frank Pallone  
Ranking Member, Committee on Energy  
and Commerce  
United States House of Representatives  
Washington, DC 20515

June 5, 2023

Subject: Request for an oversight investigation to ensure that the latest science is incorporated into the radiation protection standards for low-dose environments.

I am writing to inform you of a serious issue involving radiation science and safety that, among other things, is materially hampering the cleanup of the Hanford and other nuclear waste sites around the country. The Health Physics Society was founded in 1956 and our mission is “excellence in the science and practice of radiation safety.” We are the largest radiation protection society in the world, representing nearly 2,500 radiation protection and safety professionals.

The *New York Times* recently featured a front-page [story](#) about the slow, expensive and never-ending clean-up of the Hanford nuclear waste site in Washington state. Although the clean-up is already decades old and has cost tens of billions of dollars, little progress has been achieved. The *Times* reported, for example, that: “*The job of treating the tank waste at Hanford alone carries an official price tag of up to \$528 billion; at the current rate of spending, it could take centuries to budget and finish the project.*”

The main reason for the lack of progress despite tremendous expense at Hanford and other nuclear waste sites around the country is that the clean-up standards are based on discredited claims about cancer risk from low-level exposures to radiation. Despite the absence of supporting scientific data, these claims are nonetheless perpetuated by the Environmental Protection Agency (EPA) and the National Council on Radiation Protection and Measurements (NCRP).

Dixie Lee Ray, former Governor of the State of Washington and past Chairperson of the Atomic Energy Commission, stated “...*what the public perceives to be true, even if it is wrong, has enormous consequences since it is public opinion that determines how public funds are spent*” (attached).

Emails recently obtained through the Freedom of Information Act expose coordinated efforts among high-level officials at the EPA and NCRP to suppress historical and scientific research questioning the basis for the application of the linear no threshold model (LNT) for estimating cancer risk. The HPS advises against [estimating health risks](#) to people from exposure to ionizing radiation that are near or less than natural background levels because statistical uncertainties at these low levels are great.

The efforts of these high-level officials have:

- Cemented in place a public perception and reliance on the LNT model to estimate risks in low-dose environment despite its questionable scientific basis;
- Censored the LNT model’s troubled history, which reveals there was no sound scientific basis for its application in the low-dose region; and
- Suppressed efforts to incorporate sound and up-to-date science that does not support the continuing use of the LNT model in the low dose range for radiation protection.

These emails were triggered by recent HPS efforts to inform the International Commission on Radiological Protection (ICRP) about the scientific underpinnings, or lack thereof, of the model currently used to estimate health effects associated with low-dose exposures to radiation. The ICRP is currently conducting a multi-year review of the entire system of radiation protection to determine if the current standards are “fit for purpose”. The HPS produced a 22-part video series entitled “The History of the Linear No-Threshold (LNT) Model,” available at [HPS.org](#) and [YouTube](#).

A curated set of these revealing emails is available on the Internet at [JunkScience.com](#). A full set of thousands of emails can be provided on request. It’s likely that even more emails exist that have yet to be produced by the organizations involved.

Because reliance on the LNT model is central to nuclear waste cleanup, as well as other important issues like nuclear power plant safety and all regulatory cancer risk assessment, I am requesting that Congress conduct an oversight investigation and then take action to ensure that radiation safety and cancer risk assessment are based on the most current science.

Current decommissioning regulations in the United States generally require that sites be remediated to a level such that no individual would receive more than 25 mrem per year from the site. For perspective, the average United States citizen receives about 300 mrem per year from natural sources of radiation in our environment, and the range across the country spans from 100 mrem to nearly 1,000 mrem per year. ICRP is recommending a range of 100 mrem to 2,000 mrem per year for existing exposure scenarios, where no further action would be needed, taking into account the actual various societal, environmental, and economic factors influencing the exposure situation. These values suggested by ICRP were not derived by using the LNT model, which assumes an increased risk of cancer all the way down to zero dose.

If, based on the recommendation above, the ICRP were to expand their statement, "The LNT model is used for radiation protection purposes," to include a key qualifier like "The LNT model is used for radiation purposes *down to an acceptable dose range of 100 mrem to 2,000 mrem per year, taking into account societal, environmental, and economical factors,*" it would acknowledge the lack of scientific basis for the use of the LNT model in the low dose range. It would also bring clarity, simplicity, and consistency for environmental cleanup decisions, emergency response decisions, constructing less expensive nuclear power plants, improve risk communication for people fearful of medical imaging risks, and educate the population on where the measurable risks to radiation exposure reside. A statement like this should prevent the literal application of LNT to levels where the uncertainties are too great to have any scientific validity.

Thank you for your attention. Myself and past-presidents of the HPS who concur with this letter are listed below. Please let me know if you would like more information or how else I can assist any action you may decide to take.

Sincerely,



John J. Cardarelli II, PhD, CHP, CIH, PE  
President  
Health Physics Society

#### HPS Past-Presidents

- |   |                                     |
|---|-------------------------------------|
| 1. Eric Abelquist, PhD, CHP (2017-2018) | 5. Barbara Hamrick, CHP (2014-2015) |
| 2. Robert Cherry, PhD, CHP (2016-2017)  | 6. Darrell Fisher, PhD (2013-2014)  |
| 3. Eric Goldin, CHP (2019-2021)         | 7. Ronald Kathren, CHP (1989-1990)  |
| 4. Marvin Goldman, PhD (1994-1995)      |                                     |

Cc: The Honorable Jennifer Granholm  
Secretary  
U.S. Department of Energy  
1000 Independence Ave., SW  
Washington, DC 20585

Mr. Brett Burk, HPS Executive Director  
Mr. David Connolly, Congressional Liaison