

## **Rulemaking1CEm Resource**

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Linear No-Threshold Model and Standards for Protection Against Radiation

**Comment On:** NRC-2015-0057-0086

Linear No-Threshold Model and Standards for Protection Against Radiation; Extension of Comment Period

**Document:** NRC-2015-0057-DRAFT-0472

Comment on FR Doc # 2015-20722

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## General Comment

See attached file(s)

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## Attachments

NRC response

The signatories of PRM-20-30 as well as the letter of PRM-20-28/29 put it very well that clearly there are competing philosophies at stake when we consider the use of the LNT theory. The two greatest variables in this conflict are education and politics, the former of which I believe is \*the\* more important variable.

When I started working in the nuclear industry, I was an environmentalist at heart, a scientist in mind, and an aspiring achiever. But since I only knew about radiation, radioactive materials and its effects from an academic standpoint, I had absolutely no practical experience with radiation, rad materials, or being in a nuclear facility in which to base an understanding beyond that of ordinary citizens. In the beginning I was suspicious as to what I might discover in this new workplace, yet at the same time, curious as to what I may learn. Thus I was willing to give this new line of work a fair shake. In time I have come to learn a few things from being on the front-lines of radiation safety that most people never experience much less comprehend, which I can concede, can easily lead to misunderstanding and distrust of those who are in "the know". Some of those maxims are:

1. Rad workers have one very good incentive to work safely apart from the warm, fuzzy feeling one gets when they know they have done things "by the book" or that the public is safe: they don't get fired from their jobs.
2. It takes the magnitude of a criticality event for someone to suffer debilitating injuries from external radiation while former KGB-spy Litvenenko died from a pin-head's worth of polonium. Since doses are not borne equally, I would rather take a whole-body, external dose over an uptake any day.
3. Relatively very few people know what goes on in a nuclear facility, both small and big picture. Outside of that group of people, who can seriously be an authority of what practices are proper and which are not?
4. We are being irradiated every day of our lives and my additional occupational dose creates absolutely no consequence to my health and wellbeing. I know this because there is a check-out clerk working at a Walmart in Denver, Colorado who receives more dose from naturally-occurring sources than I do from both natural and occupational combined and it has already been demonstrated that his chances of getting sick [from radiation exposure] are no different than mine.
5. It amazes me how rad materials are kept locked away, distant from the public in containers of profoundly high integrity, whether in transport or in general storage, when ordinary, 87-octane gasoline are transported and stored in significantly higher quantities, in containers of lesser integrity and security, in greater frequencies, and with a greater access to the public despite that it is a known carcinogen (greater health aspect), extremely flammable (safety aspect), and can cause harm nearly immediately (when introduced to humans or sources of ignition). The level of consideration with implementing engineered safeguards and administrative regulations with rad materials in contrast with other hazardous materials are not appropriately proportionate in the context of risk and hazard.

In the public comments responding to this docket, I have read dozens of submissions that were left by individuals and the first thing I searched for is their *experience* and *background*. The overwhelming majority of opposing comments offer no supporting evidence, technical justification, or some description of what qualifies these people with their opinion. It amazes me on how negative and critical one can be without first-hand knowledge and yet leaves no opportunity to learn something from the other side of the argument (reminds me of a younger self who was just as suspicious but willing to be convinced otherwise). I have spent five years working in a DOE laboratory, "swinging a meter" on the front lines of radiation safety. I have worked side-by-side with laborers, scientists, and contractors from various crafts in accelerator facilities, nuclear/chemical engineering facilities, and rad waste handling/processing facilities all within the same laboratory. I have worked in conditions requiring double-tyveks with PAPR respirators performing a variety of "hot" (for contamination) jobs, including processing close-handled TRU waste, investigating "unknown" packages, attending to personnel and non-personnel contamination events, and providing coverage for high-risk radiological work. I have worked with the lab's dosimetry program and rose through the ranks to become a Health Physicist. I have spent three years on the NRC side managing a radiation safety program in a reactor facility and I'm currently working in a (nuclear)

power generation plant providing technical expertise in a support role. I have a Bachelor's degree in Physics and a Master's in Health Physics.

Through formal education, I have come to learn and understand the nuances of the biological effects of radiation as well as the decades of evolution radiation safety has achieved from the industry's advances in knowledge, technology, and resources. Through experience, I have come to learn the connections and associations between my education and the front-line practical applications. This is why I believe in hormesis and imposing the LNT philosophy is not appropriate for all doses below our currently regulated limit. I do believe that doses that are known and proven to cause harm *should* be limited and regulated, but limiting and regulating something that is "noise in the background" is not proven science, is not relevant prudence, it just does not make sense.

Anyone who has a fear of radioactive materials (or is reading my comment) should not think that I am biased because I work in the industry; they should know that I am *profoundly* biased because it was my entire working and learning experience that has transformed my position from a critic of radiation into a cheerleader for hormesis. It is perfectly natural to fear the unknown, but one should ask somebody who has actually had experience in this line of work for their opinion. Nobody working for Greenpeace, Nuclear Information Resource Service, Public Citizen, Critical Mass, or any of those other anti-nuke groups has had ANY experience *actually in the industry*. If there is anybody from the industry who is in opposition to hormesis or removing the LNT guidance, I would take their opinion with more weight than someone without such a background who is paranoid and/or fearful because the former would at least know what they're talking about and so would we.

I have spoken to great lengths about knowledge and experience, here is the political component. My understanding of the politics is that legislation is behold to their political party (and constituents), which is also ultimately accountable to the voting population (constituents). Many politicians have served multiple terms, which makes them in my opinion a "career politician". While the desire to serve the public is an admirable character trait, it is not required in order to win an election and I believe many have become very comfortable with the "job" of public office and the desire for service is no longer the motivating interest. When a significant proportion of constituents have a similar, yet unfounded, fear of nuclear materials or radiation, the legislator is behold to oblige the constituents. They don't take a role in this already politically sensitive topic by educating the public and convincing them otherwise. If appeasing the concerned public (instead of educating them) helps their time in office, or even prepares a potential re-election, I believe that this will be their motivation. An example of what political power can do in the face of reasoning and necessity can be demonstrated with the closing of Yucca Mountain. As early as the 1990s, Senator Harry Reid (D-Nevada) has been in opposition to the repository and he has initiated law suits to thwart the efforts and objectives of the repository and used his senatorial powers to strip funding for the agency (DOE) and repository. In 2012, he and President Obama reached an agreement to shut down the repository throwing our country's best and *only* opportunity to safely disposition of high-level waste. Reid was staunchly of a NIMBY (not in my back-yard) position prior to Obama taking office. It is conceivable that he is uneducated as to the effects of radiation (and almost certainly without experience in the nuclear industry as almost all politicians are), but clearly he is very *educated* since he has a BA in political science and history as well as a JD. Thus I wonder if his political position in closing Yucca Mountain is out of personal fears or acting on the behalf of those of his constituents.

In closing, it may not suffice to say that opinions and passions of those who are neither experienced nor knowledgeable in the subject matter of concern lack substance. It is also equally biased to consider a philosophy that is grounded in structured regulation because radiation, contamination, and its effects on humans, objects, surfaces, and the environment are governed by the laws of physics, not rules in 10CFR20. We should respond based on what rad materials do, physically, chemically, and biologically. In conclusion, I am in support with abolishing the philosophy and usage of LNT in 10CFR20 regulations. It is time to apply known science to best practices and lessons learned.

Adam Jandeska  
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