

## Rulemaking1CEm Resource

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**From:** RulemakingComments Resource  
**Sent:** Tuesday, November 10, 2015 3:35 PM  
**To:** Rulemaking1CEm Resource  
**Subject:** FW: Docket No. NRC-2015-0057

### DOCKETED BY USNRC—OFFICE OF THE SECRETARY

**SECY-067**

**PR#:** PRM-20-28, PRM-20-29, and PRM-20-30

**FRN#:** 80FR35870

**NRC DOCKET#:** NRC-2015-0057

**SECY DOCKET DATE:** 11/9/15

**TITLE:** Linear No-Threshold Model and Standards for Protection Against Radiation

**COMMENT#:** 457

**From:** dave mccooy [mailto:dave@radfreenm.org]  
**Sent:** Monday, November 09, 2015 10:36 PM  
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**Subject:** [External\_Sender] Docket No. NRC-2015-0057

RE: NRC-2015-0057 THE HORMESIS SNAKE OIL PETITION

**The petition to adopt hormesis as the basis for allowing greater worker and public exposure to ionizing radiation should be rejected by the NRC.** The petition takes us back to the days of drinking radium laced tonics to improve health and vitality and prolong life. Like the tobacco industry, the hormesis cult ignores the science of damaged DNA, mutagenicity, and latency periods for cancer. Radon is identified as being present in cigarettes as a carcinogen. Rather than improving their health, cigarette smokers are known to die much earlier, a fact lost on the hormesis quacks.

The payments under the Energy Employees Occupational Illness Compensation Program, a little-noticed federal program, represent a fraction of the staggering nationwide toll of a nuclear weapons industry born out of the Cold War: More than 104,000 sick workers have received almost \$11 billion in compensation and medical expenses. Some of these workers may have only received low doses of ionizing radiation, but it's obvious that the hormesis hypothesis didn't help them at all in preventing or curing any of the 23 different forms of cancer recognized under the program as being from radiation. Are petitioners disputing that many underground uranium miners who were exposed to radon didn't die of lung cancer at high rates.

The [Marshall Islands](#) Nuclear Claims Tribunal awarded more than \$2bn in personal injury and land damage claims arising from the nuclear tests but stopped paying after a compensation fund was exhausted.

200 young US Navy sailors exposed to Fukushima radiation have sued for multiple illnesses such as Leukemia, ulcers, gall bladder removals, brain cancer, brain tumors, testicular cancer, dysfunctional uterine bleeding, thyroid illnesses, stomach ailments and a host of other complaints unusual in such young adults. <http://enenews.com/sailors-won-major-battle-lawsuit-fukushima-exposures-200-people-navy-marines-leukemia-organs-removed-brain-tumors-cancer-blindness-govt-fukushima-terrible-tragedy-navy-threat-didnt-very-interes>

While the petitioners request adoption of their phony hormesis hypothesis, they decry the desire of the majority of the population not to be exposed to ionizing radiation from the nuclear industry. Why should the public accept a rule change that increases their exposure to more rather than less radiation? The petitioners ignore the wide range of radionuclides and the varying effects of those on public health. Dogs exposed to infinitesimal amounts of plutonium at Sandia Labs did not survive.

While hormesis advocates support higher levels of radiation exposure, their assertion that the LNT model results in greater risk to human health because of a lack of ionizing radiation is not confirmed by thousands of studies to the contrary. Consideration is lacking for the types of exposures from the various radionuclides that may target specific organs such as kidneys, brains or thyroid gland. Reducing the analysis of the hazard to only to mSv does not address the complexity of exposures.

The efforts of petitioners continue the dreary historical efforts of the DOE and NAS to hush up the dangers of exposure to non-background radiation. The suppression of the reports of Drs. John Gofman and Arthur Tamplin and later of Drs. Stewart and Mancuso are examples of agency efforts to downplay radiation effects on the public and industry workers. The BEIR III report was subject to revisionist efforts of industry to lower risk from low dose radiation by changing the assumption of linear dose-effects to a linear quadratic estimate. BEIR V concluded that the BEIR III revisionist risk estimates were substantially too low. BEIR V occurred in part because AEC/DOE miscalculated doses at Hiroshima underestimating radiation effects from gamma irradiation. [BEIR VII](#) found that “the balance of evidence from epidemiologic, animal and mechanistic studies tend to favor a simple proportionate relationship at low doses between radiation dose and cancer risk.”

Petitioners refer to Chernobyl where thyroid cancer increased a year later in children under 15. Petitioners then claim it was the result of screening, not radiation exposure to radioactive iodine. Petitioners claim some conflict of interest between NRC and EPA radiation programs based on the Linear Non-Threshold (LNT) approach but fail to elucidate the basis for the allegation. Petitioners quibble about different conclusions between the French and BEIR VII regarding radium watch painters and fetal studies. The examples are too minimal to place reliance on the hormesis hypothesis to lower radiation standards for workers or the public. The fact is radium watch dial painters died prematurely with disfiguring cancers and osteomyelitis of the upper and lower jaw. The conclusions of the petitioners regarding Hiroshima in utero victims and Chernobyl victims are at odds with legions of other studies. See for example, *A review of forty-five years study of Hiroshima and Nagasaki atomic bomb survivors. Brain*

*damage among the prenatally exposed.* Otake M, Schull WJ, Yoshimaru H, J Radiat Res. 1991 Mar;(Suppl 32):249-64.

Petitioners are asking for the general public to now be exposed to as much radiation as are the atomic industry workers.

Comparing natural background radiation to inhalation of a low level dose of plutonium or Cesium-137 or I-129 is pure nonsense. But it's the kind of twaddle the NRC, as a nuclear power booster, is unfortunately entertaining with the 3 petitions.

Risk assessment modeling when it comes to nuclear exposure of the public should be the most conservative possible. Hormesis is not conservative:

Although examples of apparent stimulatory or protective effects can be found in cellular and animal biology, the preponderance of available experimental information does not support the contention that low levels of ionizing radiation have a beneficial effect. The mechanism of any such possible effect remains obscure. At this time, the assumption that any stimulatory hormetic effects from low doses of ionizing radiation will have a significant health benefit to humans that exceeds potential detrimental effects from radiation exposure at the same dose is unwarranted.

Source: [Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2.](#)

Of course it is the BEIR report that the nuclear industry would like to overturn due to liability exposure and the certainty of accidents from an aging nuclear power infrastructure that NRC is willing to relicense for many coming decades. The rationale for buying into hormesis is to raise exposure standards for nuclear power plants, decommissioning, for transportation and disposal of nuclear waste and cleanup after nuclear accidents or terrorist attacks.

The petitions are scientifically defective and fail to demonstrate any technical basis justifying their proposed rule change.

The petitioner recommends the following changes to 10 CFR part 20:

(1) Worker doses should remain at present levels, with allowance of up to 100 mSv (10 rem) effective dose per year if the doses are chronic.

(2) ALARA should be removed entirely from the regulations. The petitioner argues that "it makes no sense to decrease radiation doses that are not only harmless but may be hormetic."

(3) Public doses should be raised to worker doses. The petitioner notes that "these low doses may be hormetic. The petitioner goes on to ask, "why deprive the public of the benefits of low dose radiation?"

(4) End differential doses to pregnant women, embryos and fetuses, and children under 18 years of age.

(1) The petition presents no information to show that increased doses to workers will not result in more cancers.

(2) Petitioners present no information to demonstrate that radiation doses to workers are harmless, let alone that the magic of hormesis will repair radiation damage.

(3) There is no reason to expose the public to radiation levels that workers are willing to assume. There is no scientific data to show that the type of radiation released from nuclear power plants and accidental explosions and fires like at the Waste Isolation Pilot Plant (Carlsbad, NM) and public exposure to releases of plutonium and americium such as occurred will not result in increased cancers, or will improve public health as argued by petitioners.

(4) Again, there is no data presented by petitioners to show that radiation doses to embryos, fetuses, etc., does not result in additional cancers.

German studies on the increase in all cancers and the doubling incidence of childhood leukemia for children less than 5 yrs old living within 5 km of a nuclear power plant argue against the hormesis poppycock.

<https://www.nirs.org/radiation/radhealth/kikkcommentary0709joe.pdf>

The hormesis petitioners ignore the potential for the additional effects of radiation on the immune system combined with the everyday toxic pollutants that abound in food, air, soil and water.

Deny the petitions. It makes NRC look ridiculous even to be considering the petitions.

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**Hearing Identifier:** Secy\_RuleMaking\_comments\_Public  
**Email Number:** 1254

**Mail Envelope Properties** (9f2857ab1e154b4c86eebe800154f621)

**Subject:** FW: Docket No. NRC-2015-0057  
**Sent Date:** 11/10/2015 3:34:33 PM  
**Received Date:** 11/10/2015 3:34:39 PM  
**From:** RulemakingComments Resource

**Created By:** RulemakingComments.Resource@nrc.gov

**Recipients:**  
"Rulemaking1CEM Resource" <Rulemaking1CEM.Resource@nrc.gov>  
Tracking Status: None

**Post Office:** HQPWMSMRS03.nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	9989	11/10/2015 3:34:39 PM

**Options**  
**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**