

## Rulemaking1CEm Resource

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**To:** Rulemaking1CEm Resource  
**Subject:** FW: Comments of Citizen Power Regarding Docket ID NRC-2015-0057

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**SECY-067**

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**FRN#:** 80FR35870

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

**SECY DOCKET DATE:** 11/19/15

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

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**From:** Ted Robinson [mailto:robinson@citizenpower.com]  
**Sent:** Thursday, November 19, 2015 6:08 PM  
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**Subject:** [External\_Sender] Comments of Citizen Power Regarding Docket ID NRC-2015-0057

Comments of Citizen Power Regarding Docket ID NRC-2015-0057

Citizen Power strongly opposes the Petitions of Carol Marcus, Mark Miller, and Mohan Doss requesting that the Nuclear Regulatory Commission (NRC) amend its “Standards for Protection Against Radiation” regulations and change the basis of those regulations from the linear no-threshold model of radiation protection to the radiation hormesis model.

These Petitions represent a minority view among scientists regarding the impact of doses of radiation 100 mSv and under. Although there is some evidence that there may be, in some circumstances, a slight hormesis effect from low levels of radiation, the Petitions mischaracterize both the scientific literature’s support of hormesis and the applicability of the existing literature to a wholesale change in the existing standards.

The claim of the Petitioners that the scientific literature strongly supports the hormesis model is clearly not supported by reality. The vast majority of scientific literature supports the linear no-threshold model unequivocally. For example, the BEIR VII, Phase 2 comprehensive meta-analysis by the United States National Academy of Sciences' National Research Council found that "the scientific research base shows that there is no threshold of exposure below which low levels of ionizing radiation can be demonstrated to be harmless or beneficial." This result has been replicated by the United States National Research Council, the National Council on Radiation Protection and Measurements, and the United States Environmental Protection Agency.

The studies cited by the Petitioners themselves do not support the contention that allowable public doses should be raised to worker doses. It is true that many of these studies suggest there may be a hormesis effect in some cases. However, the Petitioners overstate the certainty that such an effect exists. For example, in her Petition Carol Marcus states that the Radiation Effects Research Foundation’s (RERF’s) *Studies of the Mortality of Atomic Bomb Survivors, report 14, 1950-2003: An overview of cancer and noncancer diseases* shows “a hormetic effect for all solid cancers in the 0.3-0.7 Gy (30-70 rad) dose range.” The authors of that study, on the other hand, do not have a definitive explanation for the lower cancer rates though they consider selection bias (the people who experienced lower exposure tended to

be more rural) as a possible explanation. Although a hermetic effect could account for the lower rates, it is not even the most likely explanation.

The Petitioners appear to not only “cherry-pick” the studies they cite, but also the data within the studies. While the RERF study, for instance, generally supports a linear no-threshold model, the Petitioners pick out narrow information subsets that support their contentions. The report itself states that “the dose–response relationship for these sites has tended to show an approximately linear increase with radiation dose.” Although it is unclear which universe of studies the Petitioners examined to reach their conclusions, it appears that they reviewed a large number of studies and then selected that data which supported their conclusion. This is not a proper basis for amending the current regulations. Therefore, Citizen Power believes that the NRC should reject the Petitions before them.

Citizen Power is a nonprofit public policy, research, education and advocacy organization based in Pittsburgh, Pennsylvania working on behalf of those less advantaged and those without a voice, to provide and further improve vital human services. Citizen Power focuses primarily on two areas of societal needs – energy and health care. On the energy side, Citizen Power works to promote the increased use of renewable energy and energy-efficiency technologies.

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