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Linear No-Threshold Model and Standards for Protection Against Radiation

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Linear No-Threshold Model and Standards for Protection Against Radiation; Notice of Docketing and Request for Comment

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Submitter Information

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General Comment

The three PRMs associated with this proposal do not provide a sufficient support for the suggested rule change.

This petition has only one citation, of which one of the petitioners is an author. At least one other petitioner (Dr. Doss) is associated with a nuclear-power advocacy organization (SARI). While the PRMs claim "there has never been scientifically valid support" for one alternative and "vast literature" for the other, these claims are vague and unsubstantiated, except by Dr. Marcus's own paper.

The petitioners claim not just a nonlinear exposure-effect relationship, but a U-shaped relationship (the hormesis model), suggesting that there is an exposure level below which the public would benefit from additional exposure. This would be a surprising finding, and as such should require a great deal of supporting evidence from a variety of sources, including oncology, health physics, and radiochemistry.

Furthermore, the hormesis model is not even needed to support most the proposed rule changes. In particular, the removal of ALARA from the regulations is equivalent to adding a threshold dosage below which no remediation is required. While additional evidence would still be required, supporting this change does not require supporting the hormesis hypothesis, or even demonstrating nonlinearity. Raising the public dose limit to the worker limit and removing special cases are also defensible on a much less surprising evidentiary basis (although again, this evidence must be presented).

While I agree with SARI and the petitioners that public perceptions of radiation risk are generally

incorrect and irrational, I don't recognize any causal relationship between NRC rules and public perception, nor have the petitioners attempted to establish such a relationship.

In short, the proposed rule changes may represent an improvement in NRC policy, but this proposal does not provide enough evidence to support the change, and as such should be rejected.