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From: RulemakingComments Resource
Sent: Tuesday, September 29, 2015 11:00 AM
To: Rulemaking1CEm Resource
Subject: Comment on NRC-2015-0057 - PRM-20-28, PRM-20-29 & PRM-20-30
Attachments: NRC-2015-0057-DRAFT-0315 public.pdf

DOCKETED BY USNRC—OFFICE OF THE SECRETARY

SECY-067

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

FRN#: 80FR35870

NRC DOCKET#: NRC-2015-0057

SECY DOCKET DATE: 9/9/15

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

COMMENT#: 322

Hearing Identifier: Secy_RuleMaking_comments_Public
Email Number: 1110

Mail Envelope Properties (885b85f9342a48d9a8e42952acfe0300)

Subject: Comment on NRC-2015-0057 - PRM-20-28, PRM-20-29 & PRM-20-30
Sent Date: 9/29/2015 11:00:27 AM
Received Date: 9/29/2015 11:00:29 AM
From: RulemakingComments Resource

Created By: RulemakingComments.Resource@nrc.gov

Recipients:
"Rulemaking1CEm Resource" <Rulemaking1CEm.Resource@nrc.gov>
Tracking Status: None

Post Office: HQPWMSMRS03.nrc.gov

Files	Size	Date & Time
MESSAGE	295	9/29/2015 11:00:29 AM
NRC-2015-0057-DRAFT-0315 public.pdf		106464

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

PUBLIC SUBMISSION

As of: 9/25/15 9:56 AM
Received: September 09, 2015
Status: Pending_Post
Tracking No. 1jz-8116-i1dq
Comments Due: November 19, 2015
Submission Type: Web

Docket: NRC-2015-0057

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-0315

Comment on FR Doc # 2015-20722

Submitter Information

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General Comment

This comment is in response to Docket ID NRC-2015-0057.

I do not support changing the Standards for Protection Against Radiation from a linear, no-threshold (LNT) model to a hormesis model.

First, several task groups that have evaluated the available data to determine the best model for the health effects from low doses of ionizing radiation including: BEIR VII (2007), ICRP Publication 99 (2005), NCRP 136 (2001), and UNSCEAR (1993, 2000). The findings of these task groups do a good job summarizing the available data through 2007. All of the previously mentioned task groups came to the same conclusion; that based on the available data, the best model for the health effects from low-levels of ionizing radiation is the LNT model.

Second, there is a growing body of data looking at large populations with exposure to low levels of ionizing radiation supporting the LNT theory. Two studies looking at patients exposed to CT (Pearce et al., 2012 and Mathews et al., 2013) found increases in cancer incidence that was consistent with current LNT models. More recently and more importantly, a study looking at a large cohort of radiation workers (Leuraud et al., 2015) found an increase in leukemia that was consistent with the current LNT models.

Third, while there is some evidence indicating that there is no increase in cancer risk from low doses of ionizing radiation or that it could even be hormetic, it remains to be seen under what circumstances these results may apply to radiation workers. The dose rate is a very important and often overlooked variable in these studies leading to dramatically different results. Radiation workers are likely to be exposed to a broad range of dose rates making it difficult to generalize the health effects.

Finally, the ramifications from moving to a less conservative model for protection from radiation are large. If hormesis is incorrect or only applies under certain circumstances, removing the "as low as reasonably achievable" (ALARA) principle could result in a large number of excess cancers. While I agree with the growing movement that our understanding of the effects of low doses of ionizing radiation is incomplete, I do not think this is a valid reason to move to a less conservative model for protection. If anything, until we fully understand the health risks, we should continue to employ the most conservative approach, which is to follow the LNT model and the ALARA principle.

For these reasons, I do not support changing the Standards for Protection Against Radiation at this time. Until we have a more thorough understanding of the health risks from low doses of ionizing radiation and all the parameters that impact it, we should continue to follow the ALARA principle.

Attachments

Leuraud 2015

Pearce 2012

Mathews 2013

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The attachment can be viewed at the following internet addresses:

<http://www.sciencedirect.com/science/article/pii/S2352302615000940>

[http://dx.doi.org/10.1016/S0140-6736\(12\)60815-0](http://dx.doi.org/10.1016/S0140-6736(12)60815-0)

<http://www.bmj.com/content/346/bmj.f2360.full.pdf+html>