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From: RulemakingComments Resource
Sent: Wednesday, November 25, 2015 8:38 AM
To: Rulemaking1CEm Resource
Subject: Comment on PRM-20-18, PRM-20-29, and PRM-20-30
Attachments: NRC-2015-0057-DRAFT-0538.pdf

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: 11/18/15

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

COMMENT#: 589

Hearing Identifier: Secy_RuleMaking_comments_Public
Email Number: 1398

Mail Envelope Properties (1d1609b5ca314f31bd1be78ef01e146e)

Subject: Comment on PRM-20-18, PRM-20-29, and PRM-20-30
Sent Date: 11/25/2015 8:38:15 AM
Received Date: 11/25/2015 8:38:17 AM
From: RulemakingComments Resource

Created By: RulemakingComments.Resource@nrc.gov

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

Post Office: HQPWMSMRS02.nrc.gov

Files	Size	Date & Time
MESSAGE	298	11/25/2015 8:38:17 AM
NRC-2015-0057-DRAFT-0538.pdf		73243

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

PUBLIC SUBMISSION

As of: 11/23/15 2:12 PM
Received: November 18, 2015
Status: Pending_Post
Tracking No. 1jz-8mbx-dmkj
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-0538

Comment on FR Doc # 2015-20722

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General Comment

November 18, 2015

To Secretary

U.S. Nuclear Regulatory Commission Washington, D.C. 20555-0001

ATTN: Rulemaking and Adjudications Staff

SUBJECT: Docket ID NRC-2015-0057

These comments are in response to three petitions sent to the NRC in February 2015, NRC Docket number NRC-2015-0057. The petitions are closely related and ask the NRC to amend regulation 10 CFR 20, which limits how much ionizing radiation the general public can get, on top of background radiation (not including medical exposures) and to workers at NRC regulated facilities.

The petitions for rulemaking were filed by D. Carol Marcus (PRM-28), Mr. Mark Miller (PRM-29), and Dr. Mohan Doss (PRM-30). On the Web at <http://www.regulations.gov/#!documentDetail;D=NRC-2015-0057-0010>

Low-dose, cumulative radiation is not less harmful than the same dose delivered all at once.

Richardson, et al this year, in examining data from more than 250,000 exposed workers (adult male, external

exposure records) find:

The study provides a direct estimate of the association between protracted low dose exposure to ionizing radiation and solid cancer mortality. Although high dose rate exposures are thought to be more dangerous than low dose rate exposures, the risk per unit of radiation dose for cancer among radiation workers was similar to estimates derived from studies of Japanese atomic bomb survivors. Quantifying the cancer risks associated with protracted radiation exposures can help strengthen the foundation for radiation protection standards.

AND in the Conclusions section:

Follow-up of large cohorts of nuclear industry workers has been ongoing for over 30 years; our data now yield sufficient statistical information to permit relatively precise estimates of cancer mortality risk in a population for whom average cumulative doses are about 20 mGy. These findings represent a substantial addition to the scientific basis for understanding the risks of cancer from protracted, low -dose rate, exposure to ionizing radiation; and underscore the value of the substantial efforts being made in France, the UK, and the USA to continue gathering data for these worker studies.[

Failure of current regulations to protect both public and workers sufficiently.

The agency responsible for establishing "acceptable" levels of exposure to ionizing radiation is the U.S. EPA (it took over for the US Radiation Council when it was created). The US EPA's standards are based on a risk-goal of 1 cancer (incidence) in 1 million people exposed. The EPA sometimes allows a higher risk range of 1--10 cancers (incidence) in every 1000 people exposed. The published (by NRC in 1990) risk evaluation of NRC's broadest regulation (100 millirems a year over a 70 year lifetime) results in an estimated 3.5 fatal cancers per 1000 exposed. A rough conversion to cancer incidence is 7 cancers per 1000 or 1 in 142. Since this is not adjusted for gender or age at time of exposure, this is a low ball.

One cancer in 142 is not inside the risk-range that EPA delivers for the bio-hazards it regulates directly. Since NRC is not currently delivering adequate protection, any change in 10CFR20 (radiation standards) or ALARA (as low as reasonably achievable) should be to reduce radiation exposure, not increase it.

Reasons that Federal agencies regulate on the basis of no safe dose, and should continue.

Nearly all published studies have featured adult males; all radiation regulation is rooted in the era of assuming a "Standard Man" was the recipient of the radiation. Radiation regulation permits radioactivity and direct radiation of the general public including children, developing embryos and fetuses and primary germ cells (that are or will be eggs and sperm for the next generation) in all of these. The assumptions based on adults are not sufficient to factor the impacts on juvenile and reproductive phases. It is vital that the base-line assumption be the need to protect the human, and all other species life-cycle, and therefore that no amount of ionizing radiation is "safe."

For all of these reasons I urge the NRC Staff to reject these petitions.

Thank you for this opportunity to comment,

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