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PETITION RULE PRM 20-26
(70 FR 34699)



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Secretary
Nuclear Regulatory Commission
Washington, DC 20555-0001

DOCKETED
USNRC

August 30, 2005 (10:00am)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Re: James Salsman Petition for Rulemaking, Docket No. PRM-20-26

Dear Sir/Madam:

The National Mining Association (NMA) opposes the petition for rulemaking submitted by James Salsman on May 6, 2005 regarding amending NRC regulations to modify exposure and environmental limits of heavy metal radionuclides. See 70 Fed. Reg. 34699. The Salsman petition requests that NRC revise its 10 CFR 20 regulations that specify limits for ingestion and inhalation occupational values, effluent concentrations, and releases to sewers, for all heavy metal radionuclides with nonradiological chemical toxicity hazards exceeding their radiological hazards so that those limits properly reflect the hazards association with reproductive toxicity, danger to organs and all other known nonradiological aspects of heavy metal toxicity. While the petition broadly addresses all heavy metal radionuclides, the focus appears to be on uranium. The petitioner states that the regulations were designed to address only the radiological hazard of uranium, and not the heavy metal toxicity, which is known to be about six orders of magnitude worse. He also alleges that the annual inhalation values of uranium are too high – derived to avoid immediate kidney failure only, without regard to reproductive toxicity – and not derived with sufficient care to avoid allowing lethal exposures. The Salsman petition contains scientific and regulatory inaccuracies and therefore, cannot be approved.

NMA represents producers of most of America's coal, metals, industrial and agricultural minerals; manufacturers of mining and mineral processing machinery and supplies; transporters; financial and engineering firms; and other businesses related to coal and hardrock mining. These comments are submitted by NMA on behalf of its member companies who are NRC uranium recovery licensees. In addition, NMA supports the comments submitted by the Wyoming Mining Association.

NRC's Regulations Are Designed to Address Both Radiological and Nonradiological Hazards

Salsman asserts that the 10 CFR 20 regulations are designed only to address the radiological hazard of uranium. On the contrary, the Uranium Mill Tailings Radiation Control Act (UMTRCA) amended the Atomic Energy Act to ensure that standards were established to address the nonradiological hazards associated with uranium. (See 42 U.S.C. § 2022(b)(1)(EPA must set standards "for the protection of the public health, safety, and the environment from the radiological and non-radiological hazards associated with processing and with the possession, transfer, and disposal of byproduct material") and 42 U.S.C. § 2114(a)(NRC must insure management of 11e.(2) byproduct material that both conforms with the EPA standards and

serves “to protect the public health and safety and the environment from radiological and nonradiological hazards”). NRC specifically implements this provision of UMTRCA by providing standards for uranium intake that acknowledge that uranium toxicity as a heavy metal to the kidney is greater than its radiotoxicity. 10 CFR 20.1201(e), which contains occupational dose limits for adults, states “in addition to the annual dose limits, the licensee shall limit the soluble uranium intake by an individual to 10 milligrams in a week in consideration of chemical toxicity (see footnote 3 of appendix B to part 20).” Clearly, UMTRCA and the current regulations account for the chemical toxicity of uranium.

Salsman’s Assertion About the Magnitude of Uranium Toxicity Is Contradicted by Recent NIOSH Study

Salsman’s petition states that uranium toxicity “is known to be about six orders of magnitude worse” than the radiological hazards associated with uranium. This statement is contradicted by a recent study of uranium mill workers conducted by the National Institute of Occupational Safety and Health (NIOSH). The study, “Mortality Among a Cohort of Uranium Mill Workers: An Update” (accepted for publication on March 27, 2003 - *Occup Environ Med* 2004; 61:57–64) states:

Mortality from all causes was less than expected, which is largely accounted for by fewer deaths from heart disease than expected. Mortality from all malignant neoplasms was also less than expected.

Clearly if the chemical toxicity of uranium was “*about six orders of magnitude worse*” than its radiotoxicity as Salsman suggests, then increased mortality would have been evident among the cohort of uranium millers.

Petition’s Statements Regarding Reproductive Effects Are Unfounded

The petition also discusses reproductive effects to support the assertion that changes to the standards are needed. The petition contends amendments are needed so the “limits properly reflect the hazards associated with reproductive toxicity...” The petitioner’s concerns regarding reproductive effects are unfounded. From reviewing other remarks Salsman has made on the internet, it appears that he is relying in part on the following paper to support his contentions about reproductive effects: “A Review of the Effects of Uranium and Depleted Uranium Exposure on Reproduction and Fetal Development” (*Toxicology and Industrial Health* 2001; 17: 180-191) (See <http://www.vanderbilt.edu/radsafe/0412/msg00270.html>). This paper discusses reproductive effects from uranium exposure in rats. While this paper discusses the toxicological effects of exposure to uranyl nitrate hexahydrate on rats, it clearly states:

Fifty male/female pairs were fed diets of Purina Fox Chow containing 2% uranyl nitrate hexahydrate [UO₂ (NO₃)₂] for seven months and were then placed on control diets of Purina Fox Chow for an additional five months.

A diet containing two- (2) percent uranyl nitrate represents a huge uranium intake. At this huge dose the paper concluded “under the given conditions, uranium exposure had an adverse effect

on rat reproductive functions in the absence of inanition.” This effect was only observed in a diet that consisted of two- (2) percent uranyl nitrate hexahydrate, which is far in excess of any dose allowed by current regulation. This paper in no way challenges the current uranium dose limits (radiological or chemical).

To evaluate the validity of Salsman’s statements about reproductive effects, NRC should review a recent paper entitled “Uranium Deposition and Retention in a USTUR Whole Body Case.” Health Physics 86(3) pp. 273-284 (March 2004). (Attachment 1 to these comments.) This paper discusses the autopsy of a person with a documented occupational intake of uranium. The intake was a result of the subject’s work as a power operator, utility operator, and metal operator for 28 years in a facility that processed and handled radioactive materials. The paper concludes: “the relative amount of uranium in the various organs of this case were lung > skeleton > spleen > liver > kidney, which is in agreement with other reported observations from the literature...” The study also concluded that the “autopsy results disclosed findings not uncommon in the aged with no indication of pathology possibly attributable solely to exposure to uranium.” Clearly based upon this paper, uranium concentration in the reproductive organs is not a major issue. At best the reproductive organs would rank sixth and in fact, the testis rank seventh in order of uranium concentration in Table 3 of the paper.

Comments of Dr. Nancy Standler MD, PhD Provide Further Support for Denial of Salsman Petition

Dr. Nancy Standler MD, Ph.D. (a pathologist with a doctorate from the Department of Radiation Biology and Biophysics of the University of Rochester) reviewed the Salsman petition and provides additional specific scientific data to refute his contentions about the hazards of uranium toxicity and reproductive effects. NRC must review these comments prior to making a determination on the Salsman petition. Dr. Standler’s letter is Attachment 2 to these comments.

Thank you for the opportunity to provide comments on this petition for rulemaking. If you have any questions, please contact me at 202/463-2627 or kswweeney@nma.org.

Sincerely,



Katie Sweeney
Associate General Counsel

From: "Sweeney,Katie" <KSweeney@nma.org>
To: <SECY@nrc.gov>
Date: Mon, Aug 29, 2005 1:38 PM
Subject: National Mining Association Comments on PRM-20-26

Attached are the comments of the National Mining Association regarding the Petition for Rulemaking submitted by James Salsman on May 6, 2005. (See 70 Fed. Reg. 34699)

If you have any questions or problems opening the attachment, please contact me.

Katie Sweeney
Associate General Counsel
National Mining Association
202/463-2627

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Subject: National Mining Association Comments on PRM-20-26
Creation Date: Mon, Aug 29, 2005 1:38 PM
From: "Sweeney,Katie" <KSweeney@nma.org>

Created By: KSweeney@nma.org

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