

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

[Docket No. PRM-50-90]

[NRC-2008-0279]

Natural Resources Defense Council;
Receipt of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking; Notice of receipt.

SUMMARY: The Nuclear Regulatory Commission (NRC) has received and requests public comment on a petition for rulemaking dated March 24, 2008, filed by the Natural Resources Defense Council (petitioner). The petition was docketed by the NRC and has been assigned Docket No. PRM-50-90. The petitioner is requesting that the NRC amend the regulations that govern domestic licensing of production and utilization facilities, and special nuclear material to establish a date when the NRC will no longer license the use or export of highly enriched uranium (HEU) except for restricted use by a few specialized facilities. The petitioner believes that the amendment is needed to protect the public from potential exposure to an improvised nuclear explosive device made with HEU and used by terrorists.

DATE: Submit comments by (75 days following publication in the *Federal Register*).

Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: You may submit comments by any one of the following methods. Please include the following number (PRM-50-90) in the subject line of your comments. Comments on petitions submitted in writing or in electronic form will be made available for public inspection. Personal information, such as your name, address, telephone number, e-mail address, etc., will not be removed from your submission.

Mail comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Attention: Rulemaking and Adjudications staff.

E-mail comments to: rulemaking.comments@nrc.gov. If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at (301) 415-1677. Comments can also be submitted via the Federal eRulemaking Portal <http://www.regulations.gov>.

Hand deliver comments to 11555 Rockville Pike, Rockville, Maryland, between 7:30 am and 4:15 pm on Federal workdays.

Publicly available documents related to this petition may be viewed electronically on the public computers located at the NRC Public Document Room (PDR), Room O1 F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The PDR reproduction contractor will copy documents for a fee.

Publicly available documents created or received at the NRC after November 1, 1999 are also available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this site, the public can gain entry into the NRC's Agencywide Documents Access and Management System (ADAMS), which provides text and image files of NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC PDR Reference staff at 1-800-397-4209, 301-415-4737 or by e-mail to pdr.resource@nrc.gov.

For a copy of the petition, write to Michael T. Lesar, Chief, Rulemaking, Directives and Editing Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. The petition is also available electronically in ADAMS at ML080940052.

FOR FURTHER INFORMATION CONTACT: Michael T. Lesar, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Telephone: 301-415-7163 or Toll-

Free: 1-800-368-5642 or E-mail: Michael.Lesar@NRC.Gov.

SUPPLEMENTARY INFORMATION:

Background

The NRC has received a petition for rulemaking dated March 24, 2008, submitted by the Natural Resources Defense Council (petitioner). The petitioner requests that the NRC amend 10 CFR Part 50, ADomestic Licensing of Production and Utilization Facilities;@ 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material" and other applicable regulations. Specifically, the petitioner requests that 10 CFR 50.64, "Limitations on the use of highly enriched uranium (HEU) in domestic non-power reactors" and portions of Part 70 that govern licensing of production of calibration or reference sources be amended to establish a date when the NRC will no longer license the civilian use of HEU. The petitioner also requests that applicable regulations governing export of HEU be amended to establish a time table to prohibit further transport and use of HEU.

The NRC has determined that the petition meets the threshold sufficiency requirements for a petition for rulemaking under 10 CFR 2.802. The petition was docketed by the NRC as PRM-50-90 on April 1, 2008. The NRC is soliciting public comment on the petition for rulemaking.

Discussion of the Petition

The petitioner requests that the NRC establish a date to no longer license the civilian use of HEU. The petitioner states that the basis for this request is bolstered by an article written by Thomas B. Cochran and Matthew G. McKinzie, "Detecting Nuclear Smuggling," that appears in the April 2008 edition of Scientific American magazine. The petitioner states that the NRC should not license civilian use of HEU after December 31, 2009 (or an alternative date) except for use as reactor fuel at the MITR-II facility at the Massachusetts Institute of Technology (MIT), the Heavy Water Test Reactor at the National Institute of Standards and Technology (NIST),

and the MURR facility at the University of Missouri. The petitioner also states that these facilities should be required to work with the NRC to establish dates when these reactors must be converted to low enriched uranium (LEU) fuel and report annually to NRC the progress toward fuel conversion.

The petitioner also requests that the NRC establish a date when HEU can no longer be exported, citing the export of HEU to licensees in Canada for Mo-99/Tc-99m medical isotope production during the past five years. The petitioner states that a ban on the NRC-licensed civilian use and export of HEU should apply to all facilities except for blending down of existing HEU to LEU fuel for civilian power reactors and to lower concentrations (20 to 40 percent U-235) of HEU for use at the MIT, NIST, and MURR facilities. The petitioner also states that HEU used for weapons and naval propulsion reactor fuel, spent fuel and radioactive waste regulated by 10 CFR Part 72, the use of HEU under exemptions in §§ 70.11-70.17, and small quantities for production of calibration or references sources covered under §§ 70.19 and 70.20 should remain exempt from the proposed amendment.

The petitioner believes its proposed amendment will establish “an urgently needed precedent that HEU is simply too dangerous for continued commercial use.” The petitioner also states that other countries will not likely ban civilian use of HEU as long as similar use of HEU is permitted in the U.S. and would signal other countries “the imperative of eliminating vulnerable sources of HEU.” The petitioner further states that eliminating civilian HEU use is absolutely necessary because the greatest threat to the U.S. is the risk that terrorists will use HEU to make an improvised nuclear explosive device.

The petitioner notes that it is very easy to construct an improvised nuclear explosive device with HEU in sufficient quantities and that assembly instructions for these devices are widely available by computer. The petitioner states that a one-kiloton surface burst from a nuclear explosion can produce comparable casualties at some U.S. locations as the 21-kiloton

airburst over Nagasaki, Japan during World War II. The petitioner is also concerned that HEU cannot be reliably detected by radiation portal monitors currently used at ports and other border crossings, and that monitors are useless if bypassed in noting that millions of illegal aliens and much contraband have entered the U.S. The petitioner states that eliminating HEU at its source should be this country's highest priority because of the high national security risk and that existing Federal programs are moving far too slowly to combat the threat.

The petitioner also notes that no commercial U.S. power reactors use HEU fuel and that no future plans to use HEU in NRC-licensed power facilities exist. The petitioner further states that NRC continues to license the civilian use of HEU to fuel seven existing research and test reactors that have not converted to LEU fuel yet, citing the NRC-licensed BWXT Lynchburg Technology Center that manufactures reactor fuel for several of these reactors. The petitioner is not aware of any other civilian use of HEU other than for the export to Canada for use in producing Molybdenum-99 (Mo-99) for Technetium-99m (Tc-99m) production, the most widely used medical isotope.

The petitioner states that 10 CFR 50.64 prohibits continued use of HEU fuel in domestic non-power reactors if an LEU fuel alternative is available. The petitioner estimates that the three HEU-fueled TRIGA-type research reactors at Oregon State University, the University of Wisconsin and Washington State University, will be converted to LEU during the next two years.

The petitioner also notes that the MIST, NIST, and MURR facilities are working with the Department of Energy (DOE) to develop LEU alternatives but is skeptical that DOE's estimate to convert these facilities will occur by 2014. The petitioner does not know if the only other facility in the U.S., a small (100 megawatt-thermal) Nuclear Test Reactor (NTR) at General Electric's Vallecitos Nuclear Center used for radiography is scheduled for conversion but notes that the newer and larger LEU-fueled TRIGA facility at the McClellan Nuclear Radiation Center is also used for radiography.

The petitioner notes that the NTR is a joint venture of General Electric Company (GE) and Hitachi and has been permitted to continue to operate on HEU fuel by annually certifying to the NRC that DOE does not have the funding for conversion to LEU. The petitioner states that because GE and Hitachi can afford to promptly convert the NTR to LEU fuel without Federal support, the NTR should be shut down before it is refueled if these firms believe the conversion is not worth the investment. The petitioner also notes that NRC has authorized a two to three year supply of HEU for export to Canada for Mo-99/Tc-99m medical isotope production. The petitioner suggests that the Canadian firm, MDS Nordion, that extracts the Mo-99/Tc-99m from the HEU could use LEU material because at least two other Mo-99 producers have been doing so “for more than 30 years.” Although MDS Nordion would incur an additional expense associated with the conversion, the petitioner believes it would be “a small price to pay for the elimination of HEU.”

The petitioner does not believe that establishing a firm date for ending civilian use of HEU will be detrimental to medical isotope production. However, the petitioner suggests that the NRC could authorize use of 20 to 40 percent-enriched HEU for a limited time if evidence is presented that complete elimination of HEU would not be practical for the MURR and MDC Nordion facilities. The petitioner states that a “reduction from 93.5 percent enriched-HEU to 40 percent would only increase the target material requirement for Mo-99 production by a factor of about 2.3.” The petitioner also states that approximately four times more 40 percent-enriched HEU would be required to make a one-kiloton improvised nuclear explosive device than using 93.5 percent enriched-HEU.

The petitioner concludes that because there is no known civilian use of HEU, including use as reactor fuel or for medical isotope production, that cannot be performed by using LEU, and that the high national security risks of HEU use clearly outweigh the benefits, the NRC should no longer license the civilian use and export of HEU.

The petitioner requests that the NRC conduct a rulemaking to establish the proposed amendments as detailed in this petition for rulemaking.

Dated at Rockville, Maryland, this 20th day of May 2008.

For the Nuclear Regulatory Commission.

/RA/

Annette L. Vietti-Cook,
Secretary of the Commission.