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Sierra Club Nuclear Waste Working Group
c/o 433 Orlando Ave., State College, PA 16803
August 7, 2003

RE: 10 CFR 71; 68 FR 123 pp.37986; NRC and DOT
Proposed Changes for 2005 in Requirements of
the 2003 version of the 1996 Edition for the
Safe Transport of Radioactive Materials (TS-R-1)

Mr. Michael Lesar, Chief
Rules and Directives Branch
Division of Administrative Services
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

6/26/03
68 FR 37986
(1)

Dear Mr. Lesar:

Please accept the following comments that are submitted on behalf of the Sierra Club, National Waste Committee, Nuclear Waste Working Group, concerning the proposed changes to the TS-R-1 (2003 version?) regulations that are scheduled for final IAEA adoption in 2005. Also, please make certain that they are forwarded to the appropriate individuals in the Department of Transportation.

It is our understanding that international approval of some of these proposed changes may necessitate revisions of 49 CFR Parts 100-185 and 10 CFR Part 71. Since the NRC chose to participate with the DOT at its sole public meeting held on July 22 in Washington, DC, rather than conduct its own public meeting in the Washington area or at any other location nationwide, *we trust -- and here formally request -- that the NRC will subsequently schedule more than a single opportunity for the public to ask questions, receive information, and to comment orally, as well as in writing, on this important safety issue at a future time before any changes are adopted.*

However, we want to begin with a question to which a prompt clarification will be greatly appreciated: *If there are no incompatibilities between the US DOT and NRC regulations and those adopted by IAEA, will any public meetings or hearings be held in this country at a future date before the final promulgation of changes in 49 CFR Parts 100-185 and 10 CFR 71?*

The 198-page document, available but not easily found on the NRC's web page, was unusually difficult to match with the request for comments. Is there additional information that was not provided but is necessary for deciphering the changes on which comments were sought? Greater clarity of introduction would have helped and been appreciated.

It appears that the present changes which have been endorsed by TRANSSC VIII and are the subject of this document are compared with texts in the TS-R-1 regulations developed for approval this year, 2003. It is not clear that 2003 regulations have yet been finally promulgated.

Template = ADM-013

E-RIDS = ADM-03
Add = J. Cook (SRC1)

Comments on only some of the proposed changes for the 2005 version of these regulations are submitted here. Throughout, we are particularly concerned about extent of the exemptions and exceptions from any regulatory control that are permitted for radioactive materials and wastes in transit. These regulations will presumably be utilized by and binding upon all nations that accept them. The current unsettled condition of international relations in many portions of the globe and the rise in the frequency and violence of terrorist attacks call for far more stringent controls of all radioactive materials and wastes. These changes move in the opposite direction, allowing a lesser degree of regulation and oversight. Those shipments that are exempted or excepted from control altogether constitute sources of contamination hazards for both people and environments. We therefore urge the NRC and DOT to recommend more restrictive requirements, or decline to approve and adopt these revised TS-R-1 Regulations.

Comments on Table 1:

We emphasize our particular concerns about exemptions and exceptions from regulatory control that are permitted for radioactive materials and wastes in transit. For example, at Proposed Changes #1 and #2 (Table 1, page 1), the TRANSSC VIII endorsed text states,

“The term ‘through or into’ specifically excludes ‘over’, i.e. the approval and notification requirements shall not apply to a country over which radioactive material is carried in an aircraft....”

This exemption is not acceptable. The history of air transport contains many crashes, some involving radioactive materials. If those must travel by air, then by all means they should be most carefully regulated, not exempted or excepted from control. They should be manifested and labeled and carefully monitored throughout the duration of the transport, with verification at points of departure and arrival at the minimum with assurance of security measures en route.

At Change #3 (Table 1, page 1), the *Consignor* is not required to be named in the transport documents. This means that there would be no responsible person to turn to for information or assistance concerning excepted or exempted materials in the event of accident, loss, theft or other need to know. These are not responsible regulatory practices. Manifests, labels, and other mechanisms of accountability should be required for all shipments of radioactive materials and wastes, and especially those via air transport in international air space.

Change #4 (Table 1, page 2) appears to mean the fissile nuclides in any material but, oddly, omits the phrase “any combination of these radionuclides” that is found in the 2003 TS-R-1 text. The difference in these two versions requires explanation. Retaining the wording “any combination” would appear to be a more conservative requirement. In view of the concerns of the public about depleted uranium and the internal damage that inhalation can cause, plus the excessively long hazardous life of natural and depleted uranium, we urge that neither natural nor depleted uranium be excepted or exempted from regulatory control.

Page 3 (Sierra Club comments on Proposed Changes to TS-R-1 Transportation Regulations)

Change #6 (Table 1, page 2) appears initially to except from activity limits, Section IV material restrictions, and other requirements Type 1-3 and Types A, B, C, and H(U) and H(M) industrial packages and other excepted packages. We believe that all packages containing radioactive materials or wastes should be subject to full regulatory control and should not be declared exempt from any requirements. The additional requirements for packages containing fissile material or uranium hexafluoride are mentioned but not specified.

At Change #10 (Table 1, page 4), it is troubling that the endorsers saw fit to remove the term "hazards" from the text. Moreover, there is a substantial difference in meaning between "ensure restriction of their exposure" in the 2003 text and "control their occupational exposure" in the new text. The former will produce stronger and better occupational regulation and protection.

In Change #11 (Table 1, page 5), we strongly support full record-keeping. It is unclear what "appropriate records" might mean. This needs clarification.

Change #14 (Table 1, page 9): We support required multilateral approval for all international transboundary transport; but no competent authority approval seems required for internal doses.

In Change #18, no justification is offered for exemption of amounts of uranium hexafluoride less than 0.1 kg; it is recommended that all shipments containing uranium hexafluoride meet all requirements for approval certificates.

The language of Change #20 appears to be an improvement over the existing TS-R-1 2003 text.

In Change #22, however, the substitution of "designer of the package" in the TRANSSC VIII version for "the name of the manufacturers" in the 2003 text seems unwarranted. It would be more informative to require both the names of designer and manufacturer, in the event of any performance failure during transit.

The permitted radiation levels in the TRANSSC VIII Change #23 of 2 mSv/hr and 0.1 mSv/hr at 2 meters are insupportably high, in view of recent research findings on the deleterious effects of very low radiation exposures. We recommend that these should be substantially reduced.

Change #24 in the text endorsed by TRANSSC VIII allows up to a 20% increase in the maximum radiation level at any external surface of the package from loss of shielding integrity, which is a less restrictive requirement than the existing 2003 TS-R-1 text. The more restrictive version should be adopted – preferably a lower percentage increase at the external surface.

It is not immediately evident in Change #25 whether a 20% increase in external surface radiation level means a higher radiation level than a 20% increase in the transport index of the package. Of the two, the lower, or even more reduced, radiation level should be adopted in regulation.

As for Change #26, the presence of insulation may well cause a package accessible surface to rise

above 50 degrees C; we note that during the week in which these comments are produced, some European reactors have required hosing with cool or cold water to reduce ambient temperatures in the unprecedented heat wave. The possibility of higher than expected thermal extremes should be factored into these regulations. Conservatism is prudent, allowing for unanticipated extremes.

At Change #27, the conservative course would be to disallow any exceptions for packages containing fissile material.

The endorsed text for Change #29 refers to the packages designed for the transport of fissile materials, whereas the existing text specifies that the fissile material shall be transported in a manner to meet the following set of requirements. The 2003 existing text version appears to be more restrictive than the text endorsed for 2005. If this is the case, unless it is demonstrated that the 2005 version is more protective, the 2003 wording should be retained.

It is recommended that no exceptions be allowed per *consignment* in Changes #31, #32, and #33.

Change #34 refers back to Change #32, paragraph 672 (a), which seems to indicate at 672(a)(i) that given amounts of fissile materials may be transported unpackaged. We believe this exception would be potentially unsafe and unwise and should be disallowed, if applicable.

If the alteration of wording in Change #35 is intended to refer to CSI limits relating to all fissile materials as well as other radioactive materials and wastes, then the altered version in the text endorsed by TRANSCC VIII would appear to be more inclusive and presumably safer.

In Change #37, no justification is given for any of the exceptions proposed. We recommend that the fissile materials described not be allowed to be excepted from regulatory control. The fissile materials in each package shipped combine with the contents of all other packages shipped. If excepted from regulation, they will enter the environment and be available, in concert with all other similarly unregulated fissile materials or other radioactive materials and wastes to comprise additive doses to members of the public who have no way of knowing of the contamination.

As for Change #38, it is admitted at the start that leakage may occur. Merely adding design features or statements or reassurance will not remove the possibility of leakage into or out of any package or containment system. It is therefore unwise and negligent to "assume absence of leakage" with respect to void spaces.

In Change #39 it is assumed that a sealed source will stay sealed and therefore may be excepted prescribed tests under specified conditions, one of which is a temperature test. We recommend that these sources not be exempted or excepted from any of the most rigorous of test procedures.

The height of the "free drop," described in Change #40 (b) and (c) is merely 0.3 m -- inadequate to test the resistance to puncture or other severe damage of the package. Entirely Insufficient. In subsection (a) (table 1, page 33), please correct the glaring grammatical error.

Change #41 requires description of both physical and chemical states. This is positive. However, the allowed substitution of "calculative methods" for actual safety tests is not acceptable.

The meaning of Change #44 subsection (c) is unclear. It is also unclear why designs for and packages containing fissile material are excepted from the regulation.

In Change #47, calculational distances used are insufficient to provide appropriate protection. Throughout, measured, rather than calculated, values should be required. Change #47 allows unacceptable exemptions from regulation of some radioactive materials, thereby endangering the public. As elsewhere in these proposed regulations, there is not consideration of appropriate disposition of exempted radioactive materials and wastes when they reach their destinations.

Change #49 permits the use of packages absent required competent authority design approval under regulations nearly twenty years outdated (or fifteen years for the amended version when finalized in 2005). Criteria for measurement or evaluation of packaging and design safety are not stated. It is not specified in this section when older packaging and designs must be completely phased out, although that information may be provided elsewhere in the regulations. There is a requirement to meet the new edition of regulations specified for special form radioactive material; this is a positive, but it appears to be limited to design changes and the quantities of radioactive materials per package as determined by the competent authority – which will allow a lack of uniformity and certainty. We support the provision requiring new packaging after 2006 to meet the newest Edition of the Regulations.

However, the special form radioactive materials requirements described in Change #50 should be updated immediately upon adoption of the 2003 regulations, rather later.

Change #52 text endorsed by TRANSCC VIII should maintain a register of serial numbers, as is required in the existing 2003 text, and at Change #53, perhaps a result of numbering changes.

In Change # 54, the reference for the sum of the criticality indexes is unclear. Full protection should be provided, not that derived from a complicated combination of provisions.

We are supportive of Changes #55 and #56 -- although we recommend in subsection 56 (k) that specification of design by reference to the drawings only would be insufficient over time as the personnel who might need the detailed information will change.

In Change #57, subsection (t), the identity of the certifying official should be required for the paper trail. Careful and complete records must be mandatory.

At Change 58 (Table 1, page 50), any design alterations should have a clearly defined purpose of increasing safety, not merely affecting it.

Change 59 should require that all shipments should be placarded in plain languages that will be

understood in all nations or areas through which the radioactive cargo is transported.

In Change #60, the allowable 20% increase above the Table VII column 2 maximum in radiation level at the external surface would be excessive and should be reduced. Also, at #60, 625 (c) any additional shielding should be able to withstand more than stresses resulting from the "routine conditions of transport." This comment is also applicable to freight containers at Change #60, 627 (c)(ii) and (iii). All tests should be designed to withstand a maximum accident.

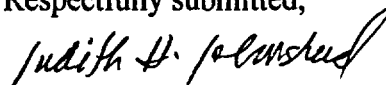
Change #61 appears to allow any radioactive materials at contamination levels below those of the IAEA Safety Series #115 to be exempted from regulation in transit. Such a threshold of allowed public exposures is contrary to the 1990 BEIR V Report of the National Research Council, and should not be adopted. Further, neither IAEA nor other nations' radiation exposure standards for the general public take into account the greater sensitivities of maximally susceptible individuals and classes of people at higher risk, such as the elderly, pregnant women, infants, and those with other health impairments. The risk estimates used to set these limits are flawed and do not afford adequate or acceptable protection. The exemption tables should not be permitted, nor should the calculated dose constraints to an ill-defined "critical group" utilized in Change #61.

At Change #62, regulations should specify that all numbering, marking, and labeling for transboundary shipments must be easily identifiable and understandable in all languages that would be encountered in the areas affected in transit. At subsection 549 (d) and (e), prescribed descriptions should be specific and complete.

Change #63 permits the use of an "As Low As Practicable" non-fixed contamination limit on the external surfaces of shipping packages at levels of 4 Bq/cm² for beta, gamma, and some alpha emitters and 0.4 Bq/cm² for other alphas, and these "limits are averaged over an area of the surface. This is not sufficiently protective of the public's safety and health. Moreover, the shipping packages for intensely irradiated nuclear fuel are allowed, as routine, external surface contaminations 100 times values in paragraph 508. These levels of contamination for radioactive materials and wastes in transit -- and the risks they impose upon members of the public, who are uninformed in consequence of exemption, are unacceptably high.

In conclusion, the use of this "performance-based, risk-informed" regulation is not adequately protective of the health and safety of the American people. These revised proposed IAEA TS-R-1 transportation regulations should be rejected by DOT and NRC, and the U.S. public should be fully protected from added radiation exposures resultant from radioactive materials and waste transportation.

Respectfully submitted,



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