

**Department of Energy**

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September 28, 2000

Secretary, U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Attention: Rulemaking and Adjudications staff

**MAJOR REVISION TO 10 CFR PART 71 - PACKAGING AND TRANSPORTATION
OF RADIOACTIVE MATERIAL; COMMENTS ON**

Reference: (a) Federal Register, Volume 65, Number 137, dated
July 17, 2000

Background: Title 10 of the Code of Federal Regulations Part 71 (10CFR71) contains requirements for packaging and transportation of radioactive material. In reference (a), the Nuclear Regulatory Commission (NRC) requested public comments on a proposed revision to 10CFR71. The primary reason for this proposed revision is to ensure compatibility with the most recent revision of the international standards for transporting radioactive material on which 10CFR71 is based.

Discussion: The enclosure contains Naval Nuclear Propulsion Program (NNPP) comments on the proposed revision to 10CFR71. Particular attention is directed to Issue 8 concerning "grandfathering" of previously approved packages. If Issue 8 is codified consistent with the international standard, all existing NNPP shipping Containers could become uncertifiable in as few as six years. This has no technical justification and would have a significant adverse impact on the ability of the Navy to refuel and defuel the Nation's nuclear powered warships.

Action: Please contact me at (703) 603-0760 if any clarifications or additional information is necessary.

B. K. Miles
Naval Reactors

Encl: (1) COMMENTS ON PROPOSED REVISION TO 10 CFR PART 71,
PACKAGING AND TRANSPORTATION OF RADIOACTIVE
MATERIAL

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SECY-02

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COMMENTS ON PROPOSED REVISION TO 10 CFR PART 71, PACKAGING AND
TRANSPORTATION OF RADIOACTIVE MATERIAL

Issue 1: Changing Part 71 to SI Units Only

1. The Naval Nuclear Propulsion Program (NNPP) currently uses U.S. customary units exclusively for all drawings and safety analysis reports. The NNPP uses both U.S. customary and SI units for shipping documents and container labels. Therefore, if 10CFR71 is revised to require use of SI units (exclusively or along with U.S. customary units), the NNPP will be forced to generate a separate set of drawings for transportation packages to reflect SI dimensions and perform analyses using SI dimensions. This change would add significant cost and potential for errors to the shipping container certification and shipping processes, while adding no benefit since NNPP packages are only used for domestic shipments.

2. Unit conversion produces an unnecessary risk for all related calculations. In the U.S., personnel routinely use and are familiar with U.S. customary units. During an unusual event or emergency situation, the sole use of SI units (on labels, shipping papers, etc.) could result in miscalculations of radiation exposure or contamination levels. The NNPP notes that the issue of poor conversion has received national attention with projects such as NASA's Mars Probe. Consistent with the NRC Metrification Policy, the NRC should not force licensees to use SI units for domestic shipments.

Issue 2: Radionuclide Exemption Values

3. Although the revised limits are not expected to create any significant burden to the NNPP, use of the new limits could create a cumbersome work practice for some shipments. All low-level shipments that are currently exempt will require a detailed evaluation to ensure that activity concentrations for each radionuclide are acceptable. For example, thoriated tungsten weld rods and soil from site excavations would require individual isotope analyses at an additional expense. The NNPP considers that the current 70 Bq/g activity concentration limit for domestic shipments should be retained to avoid creating this cumbersome work practice for shipments that are currently made routinely.

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Issue 3: Revision of A₁ and A₂

4. The changes discussed in this issue are not expected to have a significant impact on the NNPP.

Issue 4: Uranium Hexafluoride Package Requirements

5. The changes discussed in this issue are not expected to have a significant impact on the NNPP because the only shipments of UF₆ made by the NNPP are small samples with less than 0.1 kg UF₆ and less than a Type B quantity.

Issue 5: Introduction of Criticality Safety Index (CSI) Requirements

6. Assuming that the limits on the TI and CSI will be the same as ST-1, introducing the separate CSI may allow some NNPP shipments of radioactive material to be conducted more efficiently. However, additional effort would be required to add the CSI to package labels and shipping paperwork. The NNPP does not consider that this additional effort would be worth any benefit obtained.

Issue 6: Type C Packages and Low Dispersible Material

7. The changes discussed in this issue are not expected to have a significant impact on the NNPP because the NNPP does not anticipate any need to transport radioactive material by air in Type C containers.

Issue 7: Deep Immersion Test

8. The changes discussed in this issue are not expected to have a significant impact on the NNPP because most NNPP packages containing greater than 10⁵ A₂ are already evaluated for deep immersion or have been "grandfathered".

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Issue 8: Grandfathering Previously Approved Packages

9. Revising 10CFR71 to base "grandfathering" on two major revisions of the regulations could have a significant impact on NNPP shipments of radioactive material. The NNPP uses several older shipping containers that would require recertification. While these containers are technically acceptable for shipment, new analyses and design modifications would likely be required to bring these containers into compliance with current requirements. Certification of these older containers may be hindered or prevented by insufficient documentation of material condition and equipment history. Also, changes to administrative requirements (such as requiring ASME Code stamps) would make recertification of existing containers impossible. The NNPP considers that "grandfathering" should continue to be based on the technical significance of regulatory changes, not on an arbitrary number of changes to the regulations.

10. The significant impact discussed above would be further compounded if the regulations are revised every two years (consistent with the IAEA process) and "grandfathering" only applies for two revisions. For example, if full compliance with the ASME Code, including the need for a fabrication Code Stamp, is required by 10CFR71 (as discussed in Issue 14) and 10CFR71 is revised every two years, all existing NNPP packages would become uncertifiable in six years. This has no technical justification and would have a significant adverse impact on the ability of the Navy to refuel and defuel the Nation's nuclear powered warships.

Issue 9: Changes to Various Definitions

11. Without knowledge of how the revised definitions will be used in 10CFR71, the NNPP is unable to provide specific comments concerning the impact of the changes to definitions.

12. The proposed definitions of "confinement system" and "package" are indistinguishable for packages intended to transport fissile material. NRC should either use only one term for this concept or clearly distinguish between the two definitions. For example, would the "confinement system" or "package" be evaluated for accident conditions? If the proposed definition of "confinement system" is added, the term "competent authority" must also be defined.

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13. If the proposed definition of "package" is incorporated into 10CFR71, definitions of "excepted" and "industrial" packages must be added since these terms are not currently defined.

Issue 10: Crush Test for Fissile Material Package Design

14. The changes discussed in this issue would require some reanalysis of packages currently used for NNPP shipments, but the impact is not expected to be significant. The majority of NNPP packages weigh more than 1100 pounds.

Issue 11: Fissile Material Package Design for Transport by Aircraft

15. The changes discussed in this issue are not expected to have a significant impact on the NNPP because most NNPP shipments of radioactive material via air transport are excepted packages. The primary impact would likely be the use of ground transportation instead of air transportation for some shipments.

Issue 12: Special Package Approvals

16. The NNPP routinely demonstrates that all shipments, including reactor vessels and larger reactor compartments are made in compliance with 10CFR71. Therefore, any relaxation of requirements applicable to large packages could potentially reduce the cost of these shipments.

17. Because the NNPP ships entire reactor compartments (i.e., not only reactor vessels), NNPP considers that any special provisions should apply to large objects in general, instead of reactor vessels specifically. If special provisions are added, the term "large" must be defined with respect to both size and weight.

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Issue 13: Expansion of Part 71 Quality Assurance Requirements to Holders of, and Applicants for, a Certificate of Compliance

18. The changes discussed in this issue are not expected to have a significant impact on the NNPP because the NNPP satisfies the QA requirements of 10CFR71 throughout the process of applying for and obtaining a Certificate of Compliance.

Issue 14: Adoption of ASME Code

19. Requiring ASME Code Stamps for all shipping containers would be very costly to the NNPP, but would provide no benefit. Specifically, the NNPP does not agree that the administrative requirements in the ASME Code should be imposed on all licensees by requiring Code Stamps. The NNPP has a formal design and procurement process that has been developed and successfully used for more than fifty years to procure nuclear reactors, radioactive material shipping containers, and support equipment. This process does not exactly match the process prescribed in the ASME Code. Restructuring the NNPP design and procurement process to satisfy ASME requirements would be costly, would provide no additional assurance of product quality, and would force a separate process to be created that would be different from that used for other NNPP work. Note that the NNPP QA program was recently accepted by the Department of Energy Office of Civilian Radioactive Waste Management (OCRWM) for disposal of spent fuel in a geologic repository.

Issue 15: Adoption of Changes, Tests, and Experiments Authority

20. This change could reduce NNPP effort in the future by eliminating the need to obtain NRC agreement with minor package design changes.

21. This change should apply to all packages, not just dual purpose packages, subject to any specified limitations.

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Issue 16: Fissile Material Exemptions and General License Provisions

22. The changes discussed in this issue are not expected to have a significant impact on the NNPP. However, the NNPP provides the following two comments concerning the recommendations in section 4 of NUREG/CR-5342.

23. Recommendations 3 and 4 would institute a lower limit for regulated fissile than for regulated non-fissile radioactive materials based on the remote possibility that a critical amount of fissile material could be present in large quantities of very low concentrations. The NNPP considers that these different definitions introduce unnecessary complexity. The NRC should retain the same limit for fissile and non-fissile materials based on the low risk of criticality. It is noted that this concern is eliminated if the ST-1 definitions for regulated material are adopted (see Issue 2).

24. Recommendation 17 could require a TI for fissile excepted packages, including those excepted from marking and labeling requirements. This essentially eliminates the fissile excepted category, since now all packages of fissile material would require labels. The NNPP considers that this should be avoided, but if absolutely necessary to satisfy criticality concerns, the definitions of excepted packages should be revised to reduce the amount of fissile material present. Additionally, 10CFR71.53 and 49CFR173.453 should be made consistent with ST-1 in terms of placing upper limits on the fissile material in an individual package as well as the aggregate amount of fissile material in a fissile exempt consignment.

Issue 17: Double Containment of Plutonium (PRM-71-12)

25. The changes discussed in this issue are not expected to have a significant impact on the NNPP because NNPP packages that transport plutonium include double containment.

Issue 18: Contamination Limits as Applied to Spent Fuel and High Level Waste (HLW) Packages

26. The changes discussed in this issue are not expected to have a significant impact on the NNPP because NNPP containers

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are inspected prior to shipment to ensure that surface contamination levels are less than 450 pCi/100 cm² (2 Bq/cm²).

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