UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 23, 1998

ALL AGREEMENT STATES
OHIO, OKLAHOMA, PENNSYLVANIA

TRANSMITTAL OF STATE AGREEMENTS PROGRAM INFORMATION (SP-98-019)

Your attention is invited to the enclosed correspondence which contains:

INCIDENT AND EVENT INFORMATION.....

PROGRAM MANAGEMENT INFORMATION...

TRAINING COURSE INFORMATION.....

TECHNICAL INFORMATION..... X GENERAL LICENSE: FISSILE MATERIAL

OTHER INFORMATION.....

Supplementary information: Enclosed for your information is a copy of a letter dated February 26, 1998, addressed to Dana K. Mourit, P.E., Director, Division of Environmental Engineering, North Dakota Department of Health, regarding the ability of the State to enforce the Agreement State equivalent of 10 CFR 71.18 and 71.20, the transportation of fissile material under a general license (enclosed). At the time of adoption, those requirements were designated Division 4 matters of compatibility under the "B.7" compatibility procedures.

In our response letter, we stated that we did not see any difficulty in the Agreement State either adopting or enforcing these requirements. The reason is that under the new compatibility policy and implementing procedures approved by the Commission by Staff Requirements memorandum dated June 30, 1997, 10 CFR 71.18 and 10 CFR 71.20 are designated compatibility Category D, for amounts of uranium-235 less than 350 grams, which is under Agreement State jurisdiction. Category D means that the provision is not required for purposes of compatibility. However, if a State chooses to adopt such a provision, the provision should be adopted in a manner to avoid any conflict, duplication or gap with the equivalent NRC requirement.

We also pointed out an error that was corrected in the final regulation (60 FR 50248). The correct sentence in 10 CFR 71.20(c)(3) should read: "The total mass of graphite present does not exceed 7.7 times the total mass of uranium-235 plus plutonium." The Statement of Consideration for the Final Rule explains that the reason for the difference between the final and draft regulation was an error based on use of an atomic ratio instead of a mass ratio.

Finally, we pointed out that 10 CFR 71.18 was amended (62 FR 5907), effective February 10, 1997, "to correct a recently discovered defect in the current regulations which could permit, in special circumstances, nuclear criticality to occur in shipments of fissile materials which are



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permitted to take place without specific Commission approval," as stated in the summary (62 FR 5907, February 10, 1997, Enclosure 2 of the Dana Mount letter). This amendment is different from the change in the multiplication factor discussed above. "This emergency final rule restricts the use of beryllium and other special moderating materials (i.e., graphite and deuterium) in the shipment of fissile materials and consigns quantity limits on fissile exempt shipments." The Commission requested public comment and staff is considering whether furt.. changes to the rule should be proposed for Commission approval based on public comment.

Given the very small quantities of fissile material in the possession of Agreement State licensees, the possibility that the defect in this regulation would create a safety issue with an Agreement State licensee is extremely remote. Nevertheless, we wanted to bring this matter to your attention in the event you plan to incorporate 71.18 into your regulations, or you may already have this provision in your regulations. If your State has such a regulation, we recommend a conforming correction should be made no later than 3 years from the effective date of the new adequacy and compatibility policy, September 3, 1997.

If you have any questions or comments, please contact me or the individual named below.

POINT OF CONTACT: Stephen N. Salomon
TELEPHONE: (301) 415-2368
FAX: (301) 415-3502
INTERNET: SNS@NRC.GOV

Paul H. Lohaus, Deputy Director
Office of State Programs

Enclosure:
As stated

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PAUL H. LOHAUS

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 26, 1998

Dana K. Mount, P.E., Director
Division of Environmental Engineering
North Dakota Department of Health
1200 Missouri Avenue, Room 304
P.O. Box 5520
Bismarck, ND 58506-5520

Dear Mr. Mount:

The comments below reflect our review of proposed revisions to North Dakota (ND) transportation regulations dated May 15, 1997 that were received electronically by the Office of State Programs on May 15, 1997, and by hard copy on May 28, 1997. They are the follow on comments mentioned in our letter to you dated August 6, 1997.

In your cover letter, you asked us to address 10 CFR 71.18 and 71.20 and the corresponding Sections 11 and 12 in ND Chapter 33-10-13. You asked about your ability to enforce these requirements since they are designated Division 4 matters of compatibility under the existing (at that time) "B.7" compatibility procedures. We do not see any difficulty in your either adopting or enforcing these requirements. Under the new compatibility policy and implementing procedures approved by the Commission by Staff Requirements Memorandum dated June 30, 1997 (Enclosure 1 describes the new compatibility categories), 10 CFR 71.18 and 10 CFR 71.20 are designated compatibility Category D, for amounts of uranium-235 less than 350 grams, which is under Agreement State jurisdiction, as you note in Tables 1 and 2. Category D means that the provision is not required for purposes of compatibility. However, if a State chooses to adopt such a provision (in North Dakota's case - issue the General License) the provisions should be adopted in a manner to avoid any conflict, duplication or gap with the equivalent NRC requirement.

We have reviewed Sections 11 and 12 and have two comments.

1. ND 33-10-13-12.3.c. General license - Fissile material, limited moderator per package states that, "The total mass of graphite present does not exceed one hundred fifty times the total mass of uranium-235 plus plutonium (emphasis added)." The correct multiplication factor is 7.7 from the final regulation (60 FR 50248), not 150 from the proposed regulation (53 FR 21550). The Statement of Consideration for the Final Rule explains that the reason for the difference was an error based on use of an atomic ratio instead of a mass ratio. You need to adopt this comment.

2. We would also like to point out that 10 CFR 71.18 was amended, effective February 10, 1997, "to correct a recently discovered defect in the current regulations which could permit, in special circumstances, nuclear criticality to occur in shipments of fissile materials which are permitted to take place without specific Commission approval," as stated in the summary (62 FR 5907, February 10, 1997, Enclosure 2). This amendment

is different than the change in the multiplication factor discussed above. "This emergency final rule restricts the use of beryllium and other special moderating materials (i.e., graphite and deuterium) in the shipment of fissile materials and consigns quantity limits on fissile exempt shipments." The Commission requested public comment and staff is considering whether further changes to the rule should be proposed for Commission approval based on public comment. Given the very small quantities of fissile material in the possession of Agreement State licensees, the possibility that the defect in this rule would create a safety issue with an Agreement State licensee is extremely remote. Nevertheless, we recommend that a conforming correction should be made to North Dakota's regulations no later than 3 years from the effective date of the new adequacy and compatibility policy, September 3, 1997.

Under our current procedure, a finding that a State regulation meets the compatibility and health and safety categories of the equivalent NRC regulation may only be made based on a review of the final State regulation. However, we have determined that if your proposed regulations were adopted incorporating the first comment and without other significant change, they would meet the compatibility and health and safety categories established in OSP Internal Procedure B.7.

We request that when the proposed regulations are adopted and published as final regulations, a copy of the "as published" regulations be provided to us for review. As requested in our All Agreement States Letter SP-96-027, "Request to Highlight Changes to Agreement State Regulations Submitted to NRC for Compatibility Review" (March 1, 1996), please highlight the final changes and send one copy in a computer readable format, if possible.

If you have any questions regarding these comments, the compatibility criteria, or the NRC regulations used in the review, please contact me or Dr. Stephen N. Salomon of my staff at (301) 415-2368, or INTERNET: SNS@NRC.GOV.

Sincerely,

Paul H. Lohaus, Deputy Director
Office of State Programs

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As stated

## Compatibility Category and H&S Identification for NRC Regulations

Key to categories:

| | |
|---|---|
| A = | Basic radiation protection standard or related definitions, signs, labels or terms necessary for a common understanding of radiation protection principles. The State program element should be essentially identical to that of NRC. |
| B = | Program element with significant direct transboundary implications. The State program element should be essentially identical to that of NRC. |
| C = | Program element, the essential objectives of which should be adopted by the State to avoid conflicts, duplications or gaps. The manner in which the essential objectives are addressed need not be the same as NRC provided the essential objectives are met. |
| D = | Not required for purposes of compatibility. |
| NRC = | Not required for purposes of compatibility. These are NRC program element areas of regulation that cannot be relinquished to Agreement States pursuant to the AEA or provisions of Title 10 of the Code of Federal Regulations. The State should not adopt these program elements. |
| H&S = | Program elements identified as H&S are not required for purposes of compatibility; however, they do have particular health and safety significance. The State should adopt the essential objectives of such program elements in order to maintain an adequate program. |

[Federal Register: February 10, 1997 (Volume 62, Number 27)]
[Rules and Regulations]
[Page 5907-5913]
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NUCLEAR REGULATORY COMMISSION

10 CFR Part 71

RIN 3150-AF58

Fissile Material Shipments and Exemptions

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

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SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations regarding the shipment of exempt quantities of fissile material and the shipment of fissile material under a general license. This emergency final rule restricts the use of beryllium and other special moderating materials (i.e., graphite and deuterium) in the shipment of fissile materials and consigns quantity limits on fissile exempt shipments. These amendments are necessary to correct a recently discovered defect in the current regulations which could permit, in special circumstances, nuclear criticality to occur in shipments of fissile materials which are permitted to take place without specific Commission approval. The regulatory defect is not indicative of unsafe fissile material shipments in the past. Rather, it was identified by Babcock & Wilcox (B&W) during preparation for shipment of an unprecedented type of fissile material that could result in nuclear criticality under current requirements. This unique material is produced as a waste product from processing of strategic material resulting from operations to commercially downblend weapons-usable fissile material from the former Soviet Union. Although this rule is being issued as an immediately effective final rule, the Commission is requesting public comment and will revise the rule if necessary.

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DATES: This final rule is effective on February 10, 1997. Comments must be received by March 12, 1997. If public comments require changes in

the rule, timely notice will be published in the Federal Register.

ADDRESSES: Comments may be submitted either electronically or in written form. Mail written comments to: U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Docketing and Service Branch. Hand deliver comments to: 11555 Rockville Pike, Rockville, MD between 7:30 am and 4:15 pm Federal workdays. For information on submitting comments electronically, see the discussion under Electronic Access in the Supplementary Information Section. Copies of comments received may be examined at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC.

FOR FURTHER INFORMATION CONTACT: Naiem S. Tanious, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone (301) 415-6103, E-mail: INTERNET:NST@NRC.GOV

SUPPLEMENTARY INFORMATION:

Background

On September 11, 1996, an NRC fuel cycle facility licensee, Babcock & Wilcox, Naval Nuclear Fuel Division (B&W), notified NRC by telephone that it had discovered that the NRC and U.S. Department of Transportation (DOT) regulations (10 CFR 71.53 and 49 CFR 173.453, respectively) on fissile exempt shipments do not provide adequate criticality safety for certain shipments of fissile material \1\ (enriched uranium containing beryllium oxide.) Specifically, B&W discovered through calculations, that a shipment, intended to be shipped pursuant to Sec. 71.53(d), containing large amounts of an exempt concentration of enriched uranium in the presence of beryllium, could result in a nuclear criticality. \2\ B&W indicated that a beryllium oxide-enriched uranium mixture would be produced as a waste product from its processing of strategic material resulting from operations to commercially downblend weapons-usable fissile material from the former Soviet Union. B&W promptly notified the NRC of its concern, provided its calculations to the NRC, and made commitments not to make any such shipments. The NRC staff subsequently reviewed and verified B&W's calculations and determined that expeditious revisions to NRC regulations are needed to correct the deficiency because an inadvertent nuclear criticality in the public domain could involve fatalities, health effects from the resulting radiation, and extensive clean-up costs.

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\1\ Fissile material is defined in 10 CFR Part 71 and 49 CFR Part 173 as: Plutonium-238, plutonium-239, plutonium-241, uranium-233, uranium-235, or any combination of these radionuclides. Packages used for shipment of materials containing these radionuclides must meet specific standards and operating limits

designed to preclude nuclear criticality during transport, unless expected by specific regulations (e.g. 10 CFR 71.53 or 49 CFR 173.453).

\2\ For transportation purposes, nuclear criticality means a condition in which an uncontrolled, self-sustaining and neutron-multiplying fission chain reaction occurs. Nuclear criticality is generally a concern when sufficient concentrations and masses of fissile material and neutron moderating material exist together in a favorable configuration. The neutron moderating material cannot achieve criticality by itself in any concentration or configuration. It can enhance the ability of fissile material to achieve criticality by slowing down neutrons or reflecting neutrons.

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The criticality safety problem brought to NRC's attention with respect to Sec. 71.53 caused the NRC staff to review 10 CFR Part 71 to determine whether any other provisions of this Part might be similarly deficient. The general licenses in Secs. 71.18 and 71.22 provide for criticality control by limiting the quantity of fissile material in a single package (i.e., similar to the quantity-based fissile exemptions in 10 CFR 71.53). Section 71.18 also assigns a criticality transport index (pursuant to Sec. 71.4) to each package. These sections were found to have deficiencies comparable to those discovered in Sec. 71.53 in that there are no restrictions placed on special moderating materials (i.e., materials which would increase the number of neutrons available to cause fission as compared with ordinary water), and Sec. 71.22 has the additional deficiency of not limiting the total amount of fissile material in a conveyance. During the NRC staff's review, sections Sec. 71.20 and Sec. 71.24, which also provide general licenses, were found to be adequate in that the moderators of concern were excluded.

Packages for shipments made in accordance with a fissile material exemption in Sec. 71.53 or the general license in Sec. 71.18 or Sec. 71.22, are not required to be certified by NRC. The intent of Secs. 71.53, 71.18, and 71.22 is that any materials packaged and shipped in accordance with the limits in these sections (and the other applicable sections of 10 CFR Part 71 and 49 CFR Part 173) are incapable of an inadvertent criticality. The B&W analyses demonstrated that a deficiency exists in these requirements.

The NRC has already taken a number of actions to resolve the potential safety problem identified by B&W. First, the NRC obtained a commitment from B&W not to ship Be-U materials without prior NRC authorization and confirmed this commitment in a Confirmatory Action Letter (CAL) dated October 10, 1996. Subsequently, the CAL was superseded by an immediately effective Confirmatory Order Modifying License dated December 16, 1996, which imposed B&W's commitment as a legally binding license condition. The NRC had no reason to doubt B&W's earlier voluntary commitment because B&W had demonstrated its concern for safety by bringing the problem in the first place to the NRC's

attention. However, the NRC staff also believed that, given the significance of this issue for public health and safety, the NRC needed to exercise its full authority to assure itself and the public that the one licensee known to be in a position to make potentially unsafe shipments was legally prevented from doing so pending completion of this rulemaking.

On December 5, 1996, NRC also issued NRC Information Notice 96-63 to all NRC licensees authorized to possess special nuclear material. The purpose of this information notice was to alert all such licensees to this problem so that any of them who might be in a position to make potentially unsafe shipments could take appropriate measures.

The NRC also brought this problem to the attention of the U.S. Department of Transportation (DOT) and the U.S. Department of Energy (DOE). DOT is a co-regulator of fissile material shipments and is currently revising its parallel regulations in 49 CFR Part 173 on an expedited basis. DOE makes many shipments of fissile exempt material each year.

Discussion

The safety problem uncovered by the B & W calculations, and verified by the NRC, involves quantities, geometries, and concentrations of fissile materials and moderators which could result in criticality when shipped in compliance with sections of the regulations for which criticality analyses are not required. The current regulations (fissile exemptions in Sec. 71.53 and the general licenses in Secs. 71.18 and 71.22) are based on the assumption that water is the only moderator which might be present in fissile exempt shipments. These rules are assumed to provide inherent criticality safety without a need for shippers to perform separate analyses. However, some moderators (herein referred to as special moderating materials) can increase the number of

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neutrons available to cause fission as compared to ordinary water and result in the potential for criticality in shipments where these moderators are present, even though the shipments are in compliance with 10 CFR 71.53 and 49 CFR 173.453.

Until recently, the presence of special moderating materials in significant quantities in NRC-regulated shipments of fissile exempt materials was not anticipated. However, certain international initiatives, including efforts of reduction in stockpiles of strategic material by processing for commercial use, have resulted in the greater likelihood of inclusion of these materials in NRC regulated shipments. The materials proposed to be shipped by B&W, which prompted this final rule, resulted from such a source. A recent contract was awarded to B&W to process weapons-usable enriched uranium materials from the Republic of Kazakstan. The waste product of the processing, a uranium-beryllium

filtercake, met the fissile exemption provisions in 10 CFR 71.53(d) and 49 CFR 173.453(d). However, B&W used a computer model of the enriched uranium-beryllium oxide waste packages, to demonstrate that if the packages were loaded for shipment into a sea-land container, and at the regulatory fissile exempt concentration limit, adequate confidence in nuclear criticality safety would not have been provided. NRC has verified through independent analyses that the concerns raised by the B&W analysis are valid and apply to other geometries and moderating characteristics as well. To guard against inadvertent criticality, this final rule restricts shipments of fissile material with three special moderating materials: beryllium, graphite, and deuterium.

However, limiting beryllium, graphite, and deuterium to trace quantities would not completely eliminate the possibility of criticality in fissile exempt or generally licensed shipments. There is also a need to limit the quantity of material in a single consignment (the B&W criticality model calculations were performed using 200 cm high infinite slab configuration). The problem of a lack of control on the total amount of fissile exempt material in an exempt shipment, was originally identified during the revision process for the 1996 Edition of the International Atomic Energy Agency's (IAEA's) ``Regulations for the Safe Transport of Radioactive Material,'' Safety Series No. 6, 1996. The problem was addressed in Safety Series No. 6, 1996, by adopting a consignment limit on the amount of fissile exempt material that a shipper could transport as a private carrier or deliver to a common carrier for shipment. The NRC cannot presently enforce a limit on the total quantity of fissile material in a common carrier shipment because the regulations do not require a transport index for each package or require shipment by exclusive use. The latter would restrict the ability to use common carriers, while requiring a transport index would negate much of the advantage gained by the exemption. Consignment limits are enforceable and represent a practical operating limit that would prevent the potentially unsafe accumulation of fissile exempt materials during shipment.

Therefore, this final rule restricts special moderating materials and includes consignment limits on shipments of fissile materials under the provisions of Secs. 71.22 and 71.53. This final rule also restricts special moderating materials under the provisions of Sec. 71.18. Together these changes will eliminate the possibility of inadvertent criticality during shipments made in compliance with 10 CFR 71.18, 71.22, or 71.53. The NRC anticipates that DOT will issue parallel revisions to 49 CFR Part 173. Accordingly, NRC and DOT are coordinating the necessary revisions to 10 CFR Part 71 and 49 CFR Part 173.

Compatibility With the IAEA Standards

On September 9, 1996, the Board of Governors of the IAEA approved the 1996 revisions to Safety Series No. 6. Among the changes in these revised IAEA regulations are that consignment limits and limits on the types of moderators were placed on the fissile exemptions in paragraph

672 of Safety Series No. 6, 1996. The changes to 10 CFR Part 71 made by this rulemaking are generally compatible with the changes made to IAEA Safety Series No. 6 1996. Future revisions to 10 CFR Part 71 and 49 CFR Part 173 are planned by NRC and DOT, respectively, to bring them into general accord with other sections of IAEA Safety Series No. 6, 1996.

One area in which this final rule for 10 CFR Part 71 is not compatible with IAEA Safety Series No. 6, 1996, paragraph 672 is that graphite was added as a special moderating material in the 1995 revisions to 10 CFR Part 71 (60 FR 50248), but does not appear in IAEA Safety Series No. 6, 1996. [Graphite is limited by the current general licenses in 10 CFR 71.20 and 71.24.] The NRC believes that it is appropriate to continue to limit graphite (being a special moderating material) in domestic regulations for shipment of fissile material. Therefore, the revisions to the fissile exemptions in 10 CFR 71.53 and the general licenses in 10 CFR 71.18 and 71.20 provide for exclusion of other than trace quantities of graphite.

Alternatives Considered

To determine the appropriate amendments to 10 CFR 71.18, 71.22, and 71.53, the NRC staff considered the following three alternatives:

1. The No-Action Alternative. This alternative is not acceptable to the NRC. Shipments of fissile material (Be-U mixtures) meeting the fissile material exemption requirements could be made in a configuration that does not maintain criticality safety during transport. Therefore, this alternative was not pursued.

2. Eliminate the fissile material exemption. This alternative is not acceptable to the NRC. Elimination of fissile material exemption, while solving the criticality safety problem identified by B&W, would create other problems. Many packages, such as those containing low-level radioactive waste materials (e.g., ion-exchange resins), contain only trace concentrations of fissile nuclides, which are incidental to the overall radioactivity of the package contents, and criticality events are not credible for shipments of these packages. The Sec. 71.53 fissile material exemptions are applied for these shipments, and there is a continuing need to provide for this application. Elimination of Sec. 71.53 would place an additional burden and cost on many shippers whose shipments posed no criticality safety concerns. Therefore, this alternative was not pursued.

3. Revise the fissile material exemptions in Sec. 71.53 and the general licensees in Secs. 71.18 and 71.22 to exclude the presence of special moderating materials such as beryllium, deuterium and graphite in other than trace quantities, and place consignment limits on shipments. Together these changes solve the criticality safety problem identified by B&W and the related problem of the potential accumulation of an unsafe quantity of fissile materials in a shipment. Given the limited number of affected shipments and the small number of licensees involved, some additional costs on shippers may be expected because

they can no longer use the fissile material exemptions and general licenses for materials with beryllium, deuterium and graphite in other than trace quantities, and because some shipments may have to be divided to meet the consignment limits. It keeps the exemption and general license provisions available for other shippers.

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This alternative was chosen by the NRC staff, and is the basis for the following specific changes in Secs. 71.18, 71.22, and 71.53.

Changes in 10 CFR 71.18, 71.22, and 71.53

Section 71.18

The title of Sec. 71.18: General license: Fissile material, limited quantity per package, remains the same. Also paragraphs (a), (b), and (c) in Sec. 71.18 remain the same. The old paragraph (d) in Sec. 71.18 is replaced by three new paragraphs: (d), (e), and (f). The new paragraph (d) covers general licenses for packages containing no more than a type A quantity of radioactive material where fissile material is mixed with substances having an average hydrogen density greater than water (defined in Sec. 71.20). The new paragraph (e) restricts the quantity of beryllium, graphite, or hydrogenous material enriched in deuterium in a package to no greater than 0.1% of the fissile material mass. The new paragraph (f) is a modification of the old paragraph (d) that includes a simplified formula for calculation of the minimum transport index.

Section 71.22

The title of Sec. 71.22: General License: Fissile material, limited quantity, controlled shipment, remains the same. Also paragraphs (a), (b), and (c) in Sec. 71.22 remain the same. The old paragraph (d) is modified with the addition of a new table and accompanying formula which restrict the mass of uranium-235 and other fissile material in a controlled shipment. The table gives both new limits of 290 g and 180 g for uranium-235 and other fissile materials, when these materials are mixed with substances having hydrogen density greater than water; the table also gives the old Sec. 71.22 limits for shipments of U-235 and other fissile material when mixed with substances having a hydrogen density less than or equal to water. The new paragraph (e) restricts the quantity of beryllium, graphite, or hydrogenous material enriched in deuterium in a package to no greater than 0.1% of the fissile material mass. Paragraph (f) is the same as old paragraph (e).

Section 71.53

The title of Sec. 71.53 remains the same. The introductory

paragraph restates the old Sec. 71.53 language that packages are exempted from the fissile material standards of Sec. 71.55 and Sec. 71.59; however, the same paragraph restricts these exempted packages to only situations when beryllium, graphite, or deuterium is not present in quantities exceeding 0.1% of the fissile material mass. A new paragraph (a) is added which contains a formula and an accompanying table to limit individual consignment, but also includes the requirements in old paragraphs (a), (b)(1) and (2), and (d) . The remainder of Sec. 71.53 (paragraphs (b), (c), and (d)) is essentially the same as the old Sec. 71.53 (paragraphs (c), (f), and (e)).

Good Cause for Immediate Adoption

The Commission is promulgating this emergency final rule because the problem of regulatory safety limits over quantities and concentrations of fissile material and moderators, which has been demonstrated to permit criticality in at least one proposed shipment, is an important safety issue meriting immediate corrective action. An accidental nuclear criticality in the public domain would very likely involve fatalities, health effects from the resulting radiations, and extensive clean-up costs.

Shipments of fissile exempt material are normally made without any associated criticality analysis because in the past it has been assumed that the regulations provide inherent criticality safety. However, B&W's contemplated shipment demonstrates that this assumption is not correct for all possible types of shipments. While the Commission expects that B&W's commitment, as expressed in the NRC's Confirmatory Order, not to undertake shipments without the prior approval of the NRC, and the Information Notice issued to all licensees authorized to possess special nuclear material, will prevent an unsafe shipment from occurring pending revision of its rules, the Commission does not track shipments by licensees made under the provisions of 10 CFR 71.18, 71.22, or 71.53. Moreover, the nature of the materials being imported and shipped domestically has recently changed due to initiatives with the States of the former Soviet Union to reduce weapons-usable material such as high-enriched uranium. The materials B&W had intended to ship were byproducts from processing this type of material. Shipments made under 10 CFR 71.18, 71.22 or 71.53 are made without specific NRC approval and the possibility exists that a licensee could unwittingly make an unsafe shipment in reliance upon the present rules. Thus, the Commission must amend its rules quickly to prevent unsafe shipments from occurring.

For the reasons stated above, the Commission finds good cause, pursuant to Section 553(b)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 553(b)(B)), to dispense with notice and prepromulgation public comment as being impracticable and contrary to the public interest. Further, the Commission finds, pursuant to Section 553(d)(3) of the APA (5 U.S.C. 553(d)(3)), that good cause exists for making these amendments immediately effective because the need to have these

regulations in place outweighs the inconvenience, if any, to licensees who may need to alter shipping plans.

Nevertheless, the Commission is providing a 30-day post-promulgation public comment period during which interested persons are invited to submit their comments to the Commission. Within a reasonable time after the end of the comment period, the Commission will publish a statement in the Federal Register containing an evaluation of the significant comments received and any revisions of the rule to be made as a result of the comments.

Electronic Access

Comments may be submitted electronically, in either ASCII text or WordPerfect format (version 5.1 or later), by calling the NRC Electronic Bulletin Board (BBS) on FedWorld. The bulletin board may be accessed using a personal computer, a modem, and one of the commonly available communications software packages, or directly via Internet. Background documents on the rulemaking are also available, as practical, for downloading and viewing on the bulletin board.

If using a personal computer and modem, the NRC rulemaking subsystem on FedWorld can be accessed directly by dialing the toll free number (800) 303-9672. Communication software parameters should be set as follows: parity to none, data bits to 8, and stop bits to 1 (N,8,1). Using ANSI or VT-100 terminal emulation, the NRC rulemaking subsystem can then be accessed by selecting the ``Rules Menu'' option from the ``NRC Main Menu.'' Users will find the ``FedWorld Online User's Guides'' particularly helpful. Many NRC subsystems and data bases also have a ``Help/Information Center'' option that is tailored to the particular subsystem.

The NRC subsystem on FedWorld can also be accessed by a direct dial phone number for the main FedWorld BBS, (703) 321-3339, or by using Telnet via Internet: fedworld.gov. If using (703) 321-3339 to contact FedWorld, the NRC subsystem will be accessed from the main FedWorld menu by selecting the ``Regulatory, Government Administration and State Systems,'' then selecting ``Regulatory Information Mall.'' At that point, a menu will be

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displayed that has an option ``U.S. Nuclear Regulatory Commission'' that will take you to the NRC Online main menu. The NRC Online area also can be accessed directly by typing ``/go nrc'' at a FedWorld command line. If you access NRC from FedWorld's main menu, you may return to FedWorld by selecting the ``Return to FedWorld'' option from the NRC Online Main Menu. However, if you access NRC at FedWorld by using NRC's toll-free number, you will have full access to all NRC systems, but you will not have access to the main FedWorld system.

If you contact FedWorld using Telnet, you will see the NRC area and menus, including the Rules Menu. Although you will be able to download

documents and leave messages, you will not be able to write comments or upload files (comments). If you contact FedWorld using FTP, all files can be accessed and downloaded but uploads are not allowed; all you will see is a list of files without descriptions (normal Gopher look). An index file listing all files within a subdirectory, with descriptions, is available. There is a 15-minute time limit for FTP access.

Although FedWorld also can be accessed through the World Wide Web, like FTP, that mode only provides access for downloading files and does not display the NRC Rules Menu.

For more information on NRC bulletin boards call Mr. Arthur Davis, Systems Integration and Development Branch, NRC, Washington, DC 20555-0001, telephone (301) 415-5780; e-mail AXD3@nrc.gov.

Finding of No Significant Environmental Impact: Availability

The Commission has determined, under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment, and therefore an environmental impact statement (EIS) is not required.

The Commission's ``Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes,'' NUREG-0170, dated December 1977, is NRC's generic EIS, covering all types of radioactive material transportation by all modes (road, rail, air, and water). The total limited quantity impacts were included in the overall transportation risk assessment in NUREG-0170 and found to be acceptable. The radiological safety impact estimates in this EIS clearly bound the impacts for limited quantity shipments of fissile material containing special moderating materials.

This final rule affects only a small subset of the limited quantity shipments, i.e., those that contain both fissile material and special moderating materials. NUREG-0170 does not specify the annual number of limited quantity, fissile material shipments containing special moderating materials, but does estimate that 50,000 NRC-certified fissile material packages (used for larger quantities of, and/or more highly enriched, fissile materials) would be shipped in 1985. The number of shipments affected by this final rule is a small fraction of the NRC certified fissile package shipments because fissile materials containing special moderating materials are less common than moderately enriched fissile materials.

The options available to licensees under this final rule include shipping the material using different administrative controls (i.e., shipping it as a fissile material and not using the quantity-limited exemption/general license) or reducing the special moderating material concentration to specified limits. The NRC staff believes the first option may prove more economical because the increase in cost in making a single shipment under fissile material controls is less than that involved in reducing or removing the special moderating material. Under

this option, the same number of shipments are made as before the rule change, but shipments of fissile materials containing special moderating material would be made in NRC certified packages. Under the latter option, the concentration of special moderating material might be reduced through additional processing, perhaps involving dilution or extraction. This option may involve additional transportation, either due to the increase in shipment volume due to dilution, or the transportation of extracted materials. Since the quantities of affected fissile materials are relatively small, staff believes the additional transportation would also be small.

The two options provide the added nuclear criticality safety control the rule seeks, either through the use of NRC-certified packages, and the administrative controls associated with their use, or through the reduction of the concentration of special moderating materials to an acceptably low level. Thus, the ultimate environmental impact of the rule is beneficial in that criticality safety is increased.

Paperwork Reduction Act Statement

This final rule does not contain a new or amended information collection requirement subject to requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, approval number 3150-0008.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Small Business Regulatory Enforcement Fairness Act

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the NRC has determined that this action is not a major rule and has verified this determination with the Office of Information and Regulatory Affairs, Office of Management and Budget.

Backfit Analysis

The NRC has determined that a backfit analysis is not required for this final rule because these amendments do not involve any provisions that would require backfits as defined in 10 CFR Part 50.109(a)(1).

List of Subjects in 10 CFR Part 71

Criminal penalties, Hazardous materials transportation, Nuclear materials, Packaging and containers, Reporting and recordkeeping

requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 552 and 553, the NRC is adopting the following amendments to 10 CFR Part 71.

PART 71--PACKAGING AND TRANSPORTATION OF RADIOACTIVE MATERIAL

1. The authority citation for Part 71 continues to read as follows:

Authority: Secs. 53, 57, 62, 63, 81, 161, 182, 183, 68 Stat. 930, 932, 933, 935, 948, 953, 954, as amended sec. 1701, 106 Stat. 2951, 2952, 2953 (42 U.S.C. 2073, 2077, 2092, 2093, 2111, 2201, 2232, 2233, 2297f); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 71.97 also issued under sec. 301, Pub. L. 96-295, 94 Stat. 789-790.

2. Section 71.18 is revised to read as follows:

Sec. 71.18 General license: Fissile material, limited quantity per package.

(a) A general license is issued to any licensee of the Commission to transport

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fissile material, or to deliver fissile material to a carrier for transport, without complying with the package standards of subparts E and F of this part, if the material is shipped in accordance with this section.

(b) The general license applies only to a licensee who has a quality assurance program approved by the Commission as satisfying the provisions of subpart H of this part.

(c) Except as provided in paragraph (d) of this section, this general license applies only when a package contains no more than a Type A quantity of radioactive material, including only one of the following:

(1) Up to 40 g of uranium-235;

(2) Up to 30 g of uranium-233;

(3) Up to 25 g of the fissile radionuclides of plutonium, except that for encapsulated plutonium-beryllium neutron sources in special form, an A<INF>1 quantity of plutonium may be present; or

(4) A combination of fissile radionuclides in which the sum of the ratios of the amount of each radionuclide to the corresponding maximum amounts in paragraphs (c) (1), (2), and (3) of this section does not exceed unity.

(d) For packages where fissile material is mixed with substances having an average hydrogen density greater than water, this general license applies only when a package contains no more than a Type A quantity of radioactive material, including only one of the following:

(1) Up to 29 g of uranium-235;

(2) Up to 18 g of uranium-233;

(3) Up to 18 g of fissile radionuclides of plutonium, or

(4) A combination of fissile radionuclides in which the sum of the ratios of the amount of each radionuclide to the corresponding maximum amounts in paragraphs (d) (1), (2), and (3) of this section does not exceed unity.

(e) Except for the beryllium contained within the special form plutonium-beryllium sources authorized in paragraph (c) of this section, this general license applies only when beryllium, graphite, or hydrogenous material enriched in deuterium is not present in quantities exceeding 0.1% of the fissile material mass.

(f)(1) Except as specified in paragraph (f)(2) of this section for encapsulated plutonium-beryllium sources, this general license applies only when, a package is labeled with a transport index not less than the number given by the following equation, where the package contains x grams of uranium-235, y grams of uranium-233, and z grams of the fissile radionuclides of plutonium:

Minimum Transport Index = (0.25x + 0.33y + 0.4z).

(2) For a package in which the only fissile material is in the form of encapsulated plutonium-beryllium neutron sources in special form, the transport index based on criticality considerations may be taken as 0.025 times the number of grams of the fissile radionuclides of plutonium.

(3) Packages which have a transport index greater than 10 are not authorized under the general license provisions of this part.

3. Section 71.22 is revised to read as follows:

Sec. 71.22 General license: Fissile material, limited quantity, controlled shipment.

(a) A general license is issued to any licensee of the Commission to transport fissile material, or to deliver fissile material to a carrier for transport, without complying with the package standards of Subparts E and F of this part, if limited material is shipped in accordance with this section.

(b) The general license applies only to a licensee who has a quality assurance program approved by the Commission as satisfying the provisions of Subpart H of this part.

(c) This general license applies only when a package contains no more than a Type A quantity of radioactive material and no more than 400 g total of the fissile radionuclides of plutonium encapsulated as plutonium-beryllium neutron sources in special form.

(d) This general license applies only when:

(1) The mass of fissile radionuclides in the shipment is limited such that the

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where X and Y are the mass defined in the table following paragraph (d)(2) of this section; or

(2) the encapsulated plutonium-beryllium neutron sources are in special form and the total mass of fissile radionuclides in the shipment does not exceed 2500 g.

Permissible Mass Limits for Shipments of Fissile Material

| Fissile material | Fissile material mass (g) mixed with substances having a hydrogen density less than or equal to water | Fissile material mass (g) mixed with substances having a hydrogen density greater than water |
|---|---|---|
| Uranium-235(X) | 500 | 290 |
| Other fissile material(Y) | 300 | 180 |

(e) Except for the beryllium contained within the special form plutonium-beryllium sources authorized in paragraphs (c) and (d) of this section, this general license applies only when beryllium, graphite or hydrogenous material enriched in deuterium is not present in quantities exceeding 0.1% of the fissile material mass.

(f) This general license applies only when shipment of these packages is made under procedures specifically authorized by DOT, in accordance with 49 CFR Part 173 of its regulations, to prevent loading, transport, or storage of these packages with other fissile material shipments.

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4. Section 71.53 is revised to read as follows:

Sec. 71.53 Fissile material exemptions.

Fissile materials meeting the requirements of one of the paragraphs in (a) through (d) of this section are exempt from fissile material classification and from the fissile material package standards of Secs. 71.55 and 71.59, but are subject to all other requirements of this part. These exemptions apply only when beryllium, graphite, or

hydrogenous material enriched in deuterium is not present in quantities exceeding 0.1 percent of the fissile material mass.

(a) Fissile material such that

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for an individual consignment, where X and Y are the mass limits defined in table following paragraph (a)(3) of this section, provided that:

(1) Each package contains no more than 15 g of fissile material. For unpackaged material the mass limit of 15g applies to the conveyance; or

(2) The fissile material consists of a homogeneous hydrogenous solution or mixture where the minimum ratio of hydrogen atoms to fissile radionuclide atoms (H/X) is 5200 and the maximum concentration of fissile radionuclides within a package is 5 g/liter; or

(3) There is no more than 5g of fissile material in any 10 liter volume of material and the material is packaged so as to maintain this limit of fissile radionuclide concentration during normal transport.

The Requirements for Packages Containing Fissile Material

| Fissile material | Fissile material mass (g) mixed with substances having an average hydrogen density less than or equal to water | Fissile material mass (g) mixed with substances having an average hydrogen density greater than water |
|---|---|---|
| Uranium-235(X) | 400 | 290 |
| 1Other fissile material(Y) | 250 | 180 |

(b) Uranium enriched in uranium-235 to a maximum of 1 percent by weight, and with total plutonium and uranium-233 content of up to 1 percent of the mass of uranium-235, provided that the fissile material is distributed homogeneously throughout the package contents and does not form a lattice arrangement within the package.

(c) Liquid solutions of uranyl nitrate enriched in uranium-235 to a maximum of 2 percent by weight, with a total plutonium and uranium-233 content not exceeding 0.1 percent of the mass of uranium-235, and with a minimum nitrogen to uranium atomic ratio (N/U) of 2.

(d) Plutonium, less than 1 kg, of which not more than 20 percent by mass may consist of plutonium-239, plutonium-241, or any combination of these radionuclides.

Dated at Rockville, Maryland, this 4th day of February, 1997.

For the Nuclear Regulatory Commission.
John C. Hoyle,
Secretary of the Commission.
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