rule becomes effective. Further, this rule does not apply to packages fabricated under previous versions of Part 71; however, previously fabricated packages are subject to multilateral approval, when used for international transport (§ 71.13(b)).

Expansion of Radionuclide List and Changes in Radionuclide Limits

Table A-1, in 10 CFR Part 71, Appendix A, lists the Type A package quantity limits (A_1 and A_2 values) for many radionuclides. The final rule increases the number of radionuclides listed, from 284 to 378. The final rule also adopts the revised A₁ and A₂ values contained in the 1985 edition of the IAEA regulations. As a result, 144 A_1 values previously listed in Table A-1 are being increased, and 73 are being decreased, while 129 A₂ values are being increased, and 95 decreased. In addition, the final rule modifies the method used to determine A_1 and A_2 values for unlisted radionuclides.

Simplification of Fissile Material Classes

The final rule revises the criteria for shipment of fissile material. Specifically, the rule eliminates the three fissile class designations currently used establishes a single set of criteria for all packages of fissile material, uses the transport index as the primary control for the number of fissile packages that may be transported together, and requires special arrangements for fissile packages that do not meet the established criteria.

Inclusion of Criteria for Air Shipment of Plutonium

The final rule amends Part 71 to include approval criteria for packages used to transport plutonium by air (§§ 71.64, 71.74, and 71.88). These criteria were developed as a result of Pub. L. 94–79, which prohibited NRC from licensing the air shipment of plutonium, in any form, until NRC certified to the Congress that a safe container had been developed. The NRC subsequently developed and certified package criteria to Congress and published the criteria in NUREG-0360, Qualification Criteria to Certify a Package for Air Transport of Plutonium, dated January 1978. This final rule incorporates these criteria. There are no corresponding criteria in IAEA regulations.

Modifications From Proposed Rule

The final rule differs from the proposed rule in several significant respects and are described as follows: 1. Package limit for Shipment of LSA and Surface-Containment-Object (SCO) Material. In its 1985 regulations, the IAEA added a limit of 10 mSv/hour (1 rem/hour) at 3 meters for the radiation level from the unshielded contents of LSA and SCO (Surface Contaminated Object) packages not designed to withstand accidents. This radiation level limit controls the external radiation exposures to individuals if an LSA package is severely damaged in a transportation accident.

The IAEA limit considers the loss of package shielding during an accident but it does not consider the possibility that a package's contents might be released and redistributed, causing a reduction in self-shielding of the contents. The reduction in self-shielding could result in potential accident radiation levels that significantly exceed IAEA's 10 mSv/hour (1 rem /hour) at 3 meters limit.

The IAEA dose rate limit provides a significant added degree of protection over the 1973 IAEA regulations (which specify no quantity limit for LSA packages). NRC and DOT did not believe, however that the IAEA limit provided the same level of safety for all types of LSA material, particularly for relatively large quantities of radioactive materials contained in dispersible LSA materials (e.g., resins and other media used in liquid radioactive waste treatment).

In lieu of the radiation level limit, DOT and NRC proposed a 2A1 quantity limit for all LSA packages. Although this proposal addressed the accident concern by directly limiting package quantity, it was not compatible with the IAEA provisions. Both agencies received many comments from industry on the proposed $2A_1$ quantity limit that objected to the impacts on occupational dose and shipping costs. Further, after a briefing on the draft final rule on December 8, 1994, the Advisory **Committee on Reactor Safeguards** (ACRS) issued a letter report, dated December 19, 1994, recommending, inter alia, that the requirements again be reevaluated with the objective of making them equivalent to the IAEA regulations.

After consideration of comments from ACRS and industry, DOT and NRC have agreed to adopt the IAEA LSA provisions. Accordingly, the final rule imposes a limit on the external radiation level at 3 meters from the unshielded contents of LSA–II, LSA–III, or SCO–II packages of 10 mSv/hour (1 rem/hour) (§ 71.10(b)).

2. The final rule delays imposing the LSA package external radiation level limit for 3 years. The effect of imposing

the LSA package limit is to reduce the quantity of LSA materials that can be transported in non-Type B, LSA packages. The final rule may increase demand for Type B packages, and there are very few currently available. NRC had proposed a 1 year delay in implementing the new LSA rules. Industry comments expressed the view that 1 year is not an adequate period of time to design a package, have it approved by NRC, and manufacture a reasonable number of Type B waste packages. NRC agrees, and has included a delay of 3 years from the effective date of this rule for implementation of this provision of the final rule (§71.52).

3. The proposed rule would have adopted $\hat{2}A_1$ as the threshold below which licensees are exempt from NRC requirements for packages containing LSA material (except for §§ 71.5, 71.88 and 71.53). Because NRC and DOT are adopting the IAEA LSA package limit, the final rule changes the exemption threshold to 1 rem/h at 3 m (§71.10(b)(2)). Thus, designs for packages used to ship LSA or SCO in quantities where the external dose rate exceeds 1 rem/h at 3 m from the unshielded material will be subject to NRC Type B package regulations. Package designs for lesser quantities of LSA or SCO will be self-certified, by package designers, as meeting applicable DOT IP-1, IP-2, IP-3, Type A, or strong tight, package regulations. [Licensees should note that DOT has prescribed, in its final rule, the use of IAEA Industrial Packages (IP-1, IP-2, and IP-3) for LSA and SCO material. For domestic transportation only, DOT also provides for the use of Type A, and strong tight, containers.]

4. For compatibility with IAEA and DOT requirements, a new, "§71.77 Qualification of LSA–III Material," has been added to Subpart F. This section prescribes assessment of LSA–III material leaching. (In the proposed rule, §71.77 contained "Tests for special form radioactive material." Those requirements have been moved to §71.75 "Qualification of special form material," in the final rule.)

Other Administrative Actions

The final rule corrects numerical errors in §§ 71.20(b)(3) and 71.24(b)(4) of the current rule (§§ (71.20(c)(3) and 71.24(c)(4), respectively, of the proposed rule). These errors, which were not identified at the time the proposed rule was published, resulted when the limit for graphite was expressed as an atomic ratio, instead of a mass ratio. The errors were inadvertently adopted, in Part 71, during a rulemaking in 1983, to make