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June 29, 2000

U. S. Department of Transportation
Dockets Management System
The Records Center, Room 8421
400 Seventh Street, S. W.
Washington, D. C. 20590-0001

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RE: Docket No. RSPA-99-6283 (HM-230), Hazardous Materials Regulations; Compatibility with the Regulations of the International Atomic Energy Agency

Dear Sir or Madam:

The United States Enrichment Corporation (USEC) operates two gaseous diffusion plants and as such, ships thousands of cylinders of uranium hexafluoride (UF₆) each year to domestic and international facilities. USEC also ships other radioactive materials, e.g., low level radioactive waste and mixed waste as well as several non-radioactive hazardous materials.

USEC appreciates DOT's efforts to harmonize the domestic hazardous materials regulations with the international requirements, "Regulations for the Safe Transport of Radioactive Material, No. ST-1." However, there are areas of ST-1 that should be addressed and/or modified before being adopted in the U.S. The enclosed pages contain USEC's specific comments on ST-1.

In addition, USEC is commenting on several areas of current sections of 49 CFR that could be strengthened, e.g., the need to (1) clarify/define the packaging type for radioactive materials, since they fit neither the bulk nor non-bulk definitions, (2) incorporate features of packagings found in DOT Exemptions, (3) revise application and notification processes associated with exemptions, (4) revise references to ANSI N14.1 and (5) acknowledge the acceptability of small sample containers for exempt quantities of UF₆.

If there are questions regarding these comments, please contact me at (301) 564-3422.

Sincerely,

M. Elizabeth Darrough, Ph.D.
Director, Transportation Programs

Enclosure

cc:

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USEC COMMENTS ON DOT'S
ADVANCED NOTICE OF RULEMAKING
DOCKET NO. RSPA-99-6283 (HM-230)

Comments on ST-1

Paragraph	Recommended Change	Basis for change
ST-1: 310	<p>For excepted packages, the shipper's signature on the shipping papers should be sufficient documentation the appropriate packaging type was selected for the material being shipped.</p> <p>A graded approach for QA should be used, with consideration of current controls/programs.</p>	<p>Given the low levels of radioactive material contained in excepted packages and the corresponding low potential for risk, these packages should not be subject to the full provisions of the QA program outlined in ST-1.</p> <p>The QA requirements should be commensurate with the level of potential risk of a package. The requirements found in 49 CFR 173.411, 173.415, 173.474 and 173.475 are adequate for safe shipment. Shipping and handling of UF₆ is controlled by an NRC-approved NQA-1 QA program for facility operations.</p>
ST-1: 310	<p>Acknowledge that the 2S sample containers are acceptable for continued shipment.</p>	<p>The 2S packaging is a 7A Type A package, shipped inside another 7A Type A container, and are compliant with ANSI N14.1.</p> <p>The 2S containers are shipped as a fissile excepted quantity and hold 4.9 lb. (2.22 kg) of UF₆.</p> <p>Changing the requirements for shipping the 2S containers would create burdensome operational changes and cost for USEC, with questionable safety benefit.</p> <p>Although there are only about 25 of these containers currently shipped each year between USEC's Paducah and Portsmouth plants, planned changes to business operations in future years will require a ten-fold increase to those shipments in a continuous flow between the two plants.</p>
ST:1 629	<p>Clarify that the requirements of ISO-7195 and ANSI N14.1 are equivalent.</p>	<p>ISO-7195 and ANSI-N14.1 provide an equivalent level of safety. The two committees communicate with each other in an attempt to harmonize the two standards. However, minor variations do occur. USEC has regulatory commitments to comply with ANSI N14.1 and it would be impractical and costly to have to comply with redundant standards.</p>

<p>ST-1: 629</p>	<p>Acknowledge that packagings containing less than 0.1 Kg of UF₆ should be exempt from paragraph 629.</p>	<p>The small packagings, e.g., P-10, Hoke and pinch tubes, contain less than 0.1 Kg of UF₆ and have historically been shipped as "Fissile Exempted." At the IAEA's meeting in March 2000, it was acknowledged that these ST-1 sections were incorrect and that cylinders containing less than 0.1 Kg of UF₆ should be exempt from paragraph 629. Shipments of the UF₆ sample containers are almost always made by air. Air shipment is important to allow facilities time to analyze the samples before the commercial quantities of UF₆ are accepted. Conditions of the customer contracts and/or facility licensing require that analysis of sample material be expedited to ensure that the material meets the specifications and is consistent with the facility's operating procedures. There are no overpacks available that could be used for these containers. Interrupting shipments of the small containers could have a major impact upon the UF₆ industry because several hundred of the sample containers are shipped each year in the USA.</p>
<p>ST-1: 630</p>	<p>Clarify that the testing requirements are not applicable to cylinders containing heels or clean empty and new cylinders which have never been exposed to UF₆.</p>	<p>Cylinders containing heels are routinely shipped under certificate USA/0411/AF. The heels of the 48-inch and 30-inch cylinders weigh more than 0.1 Kg. Without this clarification, one could interpret that ST-1 requirements apply to clean, empty and new cylinders.</p>
<p>ST-1: 630 and ST-2</p>	<p>Clarify and publish the acceptance criteria for package testing. Cylinder "rupture" or "failure" should be defined as tearing or failure of the cylinder shell. Minor leakage through or around the valve or other engineered penetration into the cylinder wall would not constitute failure. Acknowledge, based on existing data and analysis, that the 48-inch cylinder complies with the performance test criteria sufficient for an H(M) certificate</p>	<p>After more than ten years of research, the IAEA's Coordinated Research Program has no definitive, corroborated results. The tests conducted were not representative of the hypothetical accident conditions; the ratio of cylinder surface area to UF₆ mass was greater than what would be obtained during the hypothetical accident conditions. Because the IAEA test cylinder was only 1/3 the length of an actual cylinder, there was less UF₆ available to absorb the heat than would be found in an actual cylinder. Thus, more heat was allowed to enter the test cylinder than would enter an actual cylinder. The results do not illustrate failure of the 48" cylinder to comply with the thermal test requirements. A testing program would cost \$2 - \$3 million and would take two to three years. Tests performed by the U. S. Government indicate that the 48" cylinder would comply with the drop and</p>

		<p>puncture testing.</p> <p>The ST-1 testing requirements are overly conservative with no commensurate safety benefit. These cylinders have a history of nearly 50 years of safe shipments.</p> <p>It is highly unlikely that the thermal test conditions would be found in real life, e.g., it is difficult to achieve a fully engulfing fire, even under test conditions.</p> <p>There is a low probability of risk in shipping the 48-inch cylinders.</p> <p>The hazard of depleted or natural UF₆ is its corrosivity, not its radioactivity.</p> <p>The regulatory standard for Class 8 (corrosive) materials should be consistent.</p> <p>The 48" cylinders are fabricated to ANSI N14.1 standards, with requirements for design pressure, design temperature, transport temperature and volume.</p> <p>Cylinders in use are National Board registered and meet all requirements of the ASME Boiler and Pressure Vessel Code Section 8, Division 1.</p> <p>If regulators require the 48-inch cylinder to have an overpack, even though test results are inconclusive, shipments of these cylinders may be even less safe than they are today.</p> <p>Shipping the 48" cylinders in overpacks could increase shipping risks that would outweigh any benefits overpacks may provide.</p> <p>Facility and transport workers would face increased risk in loading, unloading and transporting the 48" cylinders in overpacks.</p> <p>Shipping cylinders in overpacks would decrease the number of packages per conveyance, thus increasing the number of shipments (thousands per year) and creating additional risks to the public.</p>
ST-1 General	USEC agrees with the comments developed by the Nuclear Energy Institute's Transportation Task Force.	See NEI comments on ST-1.

Comments on 49 CFR

Section	Recommendation	Basis
107	Provide a notification to users of packagings when another user or a manufacturer obtains a DOT exemption for that packaging. Send a copy of the exemption and/or revision to users and those who have “party to” status.	Users of a package may not be aware that a fabricator has changed the package and obtained a DOT exemption for that change. While DOT’s website does contain a listing of all exemptions, it is impractical and inconvenient for users to have to comb through the list on a regular basis to see which of these exemptions may apply to their packages.
107.107	Change the requirements for “party to” status to show that package users with “party to” status do not need to apply for renewal of “party to” status every time the exemption is renewed. Assume that the “party to” status is maintained unless the user notifies DOT otherwise.	The features of many of the current exemptions, e.g., DOT-E 11347, 11868, etc., will not change. Therefore, users of these packages will need to retain “party to” status as long as the exemptions are current. Considerable savings would occur to both the package users and to DOT if the users did not have to apply for renewal of “party to” status every time the exemption is renewed.
171.8	Change the definitions to show a separate category for radioactive materials packaging. Eliminate radioactive packaging from the bulk and non-bulk packaging definitions.	The UF ₆ industry practices indicate that radioactive materials packagings do not fit the bulk/non-bulk categorization, e.g., markings on these packagings are customarily less than 2” in height and many have the UN identification number affixed to them. The 30” and 48” UF ₆ cylinders used to ship enriched UF ₆ have capacities greater than 882 pounds and 119 gallons—quantities too large for a non-bulk packaging—yet they do not fit the bulk packaging definition because the UF ₆ is loaded into an intermediate form of containment.
171.71, 173.417 and 173.418	Remove reference to the document, ORO-651 and its successor document, USEC-651.	ORO-651 was superseded by USEC-651 in 1995 when USEC took over management of the gaseous diffusion plants. In the 1999 update of USEC-651, the statement is made that it is neither a standard nor a regulation and should not be considered as such. Referencing the document in 49 CFR creates confusion and implies that USEC-651 has some authority when in fact it is simply a general description of how the USEC plants are operated.
172.300 Subpart D, Marking	Maintain the marking requirements as they currently are in 49 CFR.	Current marking requirements are adequate for safe shipments.
172.400 Subpart E, Labeling	Maintain the labeling requirements as they currently are in 49 CFR.	Current labeling requirements are adequate for safe shipments.

172.400 Subpart E, Labeling	Acknowledge the special conditions of small packages.	Some of the smaller packages are not large enough to hold all of the labels.
172.400 Subpart E, Labeling	Allow labels to be affixed to cylinders with sturdy ties, if necessary.	Old cylinders may have rusty surfaces, making it impossible for a label to stay affixed to them. (The label will not stay stuck to a surface that is not smooth.) Laminated labels tied to the cylinder valve are a safe and efficient way to communicate the contents of a cylinder in cases where labels will not adhere to it.
172.500 Subpart F, Placarding	Allow the use of the UN numbers, e.g., UN2978 or UN2977, instead of the "radioactive materials" placards.	This would bring domestic shipping practices into alignment with international shipping practices.
172.500 Subpart F, Placarding	Maintain the placarding requirements as they currently are in 49 CFR.	The current placarding requirements are adequate for safe shipment.
173.410 and 173.412	Allow continued shipment of the 2S sample bottles for domestic shipment of UF ₆ .	The 2S packaging is a 7A Type A package, overpacked by another 7A Type A container, and are compliant with ANSI N14.1. The 2S containers are shipped as a fissile excepted quantity and hold 4.9 lb. (2.22 kg) of UF ₆ . Changing the requirements for shipping the 2S containers would create burdensome operational changes and cost for USEC, with questionable safety benefit. Although there are only about 25 of these containers currently shipped each year between USEC's Paducah and Portsmouth plants, planned changes to business operations in future years will require a ten-fold increase to those shipments in a continuous flow between the two plants.
173.417 and 173.420	Revise these sections to indicate that compliance could be with the <i>intent</i> of ANSI N14.1, rather than a <i>verbatim</i> compliance.	Because changes to either ANSI N14.1 or 49 CFR are often out-of-step, the fact that they reference each other sometimes creates conflicting and/or confusing instructions. Because a verbatim compliance is often impractical, if not impossible, package users often have to seek DOT exemptions. This creates an unnecessary burden on both the user and DOT, with questionable effect on safety.
173.417, 173.420, 178.356 and 178.358	Incorporate conditions of DOT-Exemptions #10460, 11347, 11381, 11416, 11868 and 12242 into the regulations.	These exemptions are applicable to UF ₆ shipments. Maintaining these exemptions and "party to" status, where applicable, creates additional administrative cost and the opportunity for mistakes in shipping paper preparation and packaging marking.
173.420 and 173.425	Acknowledge in the regulations that small containers used to ship fissile excepted/limited quantity materials are exempt	The small sample bottles, e.g., Hoke, P-10 and pinch tubes, are used to ship small quantities (containing 65, 10 and 10 grams, respectively) of UF ₆ . Because the material is of such a small quantity, there is no need

	from the requirement to comply with ANSI N14.1.	for the sample materials to be shipped in a pressure vessel.
178.358-1	Change the gross weight of the 21PF-1 package from a maximum of 3,725 kilograms (8,200 pounds) to a maximum of 3,991 kilograms (8,800 pounds).	The industry has been shipping under a DOT exemption for several years, to allow shipment of the actual weight of the package. Certificate USA/4909/AF references the correct package weight of 8,800 pounds. Having the correct weight listed in section 178 will eliminate the need for the DOT exemption.
178.358-1	Incorporate the information in DOT-3 11347 and 11381 into the regulations.	The fabricator has made some permanent changes to the 21 PF-1 and 20 PF overpacks, as reflected in the referenced exemptions. If the changes are noted in the regulations, the exemptions will not be needed. Constant renewal of exemptions is costly both to package users and to DOT.