

RULEMAKING ISSUE  
(Notation Vote)

March 4, 2010

SECY-10-0022

FOR: The Commissioners

FROM: R. W. Borchardt  
Executive Director for Operations

SUBJECT: PROPOSED RULE: DOMESTIC LICENSING OF SOURCE  
MATERIAL – AMENDMENTS/INTEGRATED SAFETY ANALYSIS  
(RIN 3150- AI50)

PURPOSE:

To request Commission approval to publish a proposed rule, in the *Federal Register*, that would amend 10 CFR Part 40. The proposed amendments would primarily require source material licensees possessing significant amounts of uranium hexafluoride (UF6) to perform integrated safety analyses (ISAs) similar to the ISAs performed by 10 CFR Part 70 licensees and set possession limits for UF6 for determining licensing authority (U.S. Nuclear Regulatory Commission (NRC) or Agreement States).

BACKGROUND:

Health and safety risks at Part 40 fuel cycle facilities authorized to possess significant quantities of UF6 are a combination of radiological and chemical hazards. The chemical hazards come primarily from hydrogen fluoride (HF), a highly reactive and corrosive chemical. HF evolves spontaneously from UF6, when UF6 is exposed to moisture in the air, thus posing a substantial inhalation and skin absorption hazard to workers and the public. An accident in 1986 involving UF6 and HF killed a worker at the Sequoyah Fuels facility. NRC staff considers an ISA -- a structured, risk-informed approach for evaluating the consequences of facility accidents -- to be necessary at Part 40 fuel cycle facilities authorized to possess significant quantities of UF6. Such facilities -- e.g., uranium conversion and deconversion facilities -- are not subject to the

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10 CFR Part 70, Subpart H (“Additional Requirements for Certain Licensees Authorized To Possess a Critical Mass of Special Nuclear Material”) ISA requirements, even though their operations entail similar hazards.

Based on the Part 40 safety concerns the Commission issued Staff Requirements Memorandum (SRM) M070308B, “Staff Requirements – Briefing on NMSS Programs, Performance, and Plans” on March 22, 2007. The SRM directed the staff to propose options for rulemaking that would require major Part 40 facilities (e.g., uranium conversion and deconversion facilities) to complete an ISA similar to that currently required in 10 CFR Part 70 Subpart H. The SRM further directed the staff to inform the Agreement States that the NRC “will regulate future major fuel cycle facilities licensed under 10 CFR Part 40.” A letter, dated April 13, 2007, was sent to the Agreement States informing them of the Commission’s directive.

In response to SRM M070308B, the staff, in SECY-07-0146, “Regulatory Options for Licensing New Uranium Conversion and Depleted Uranium Deconversion Facilities” (August 24, 2007), recommended that the Commission:

(1) Approve keeping the Starmet and Aerojet Ordnance facilities under Agreement State jurisdiction and, if similar new facilities are proposed in Agreement States in the future, NRC would retain jurisdiction of only those facilities that exceed the threshold quantity limits discussed below in Recommendation 2.

(2) Approve conducting a rulemaking to amend Part 40. This would require new applicants and existing licensees for Part 40 fuel cycle facilities with UF<sub>6</sub> or uranium tetrafluoride (UF<sub>4</sub>) inventories greater than 10,000 kilograms (or alternative threshold quantity) to meet ISA requirements similar to those required in Part 70, Subpart H. These new ISA requirements would not apply to existing Part 40 facilities currently undergoing decommissioning. If new applicants submit license applications before the completion of the rulemaking, the NRC would issue orders establishing the Part 70, Subpart H, requirements as part of the licensing basis for the application review.

The Commission issued an SRM for SECY-07-0146, dated October 10, 2007, approving the above recommendations. The Commission stated that Agreement State licensees that were decommissioning would not be subject to ISA requirements, and that if new license applications are submitted before the completion of the rulemaking, “the staff shall impose 10 CFR Part 70, Subpart H, performance requirements as part of the licensing basis for the application review.” The agency has since received a license application on December 30, 2009, from International Isotopes, Inc., to which the above statement will apply.

As directed in the SRM, the NRC held a public meeting on February 22, 2008, to discuss the scope of the proposed rulemaking and to seek input on the proposed threshold quantities for determining when a facility will be regulated by the NRC or an Agreement State. The industry stakeholders that would be impacted by the rulemaking attended the meeting, either in person or via teleconference. All participants also were encouraged to send in written comments. Input from the public meeting and comments were considered in developing this proposed rule. The NRC staff determined that UF<sub>4</sub> does not pose a comparable risk as UF<sub>6</sub> at facilities affected by this rulemaking. In a memorandum to the Commission dated June 9, 2009, the staff informed the Commission of its intention not to pursue an ISA rulemaking for licensees possessing UF<sub>4</sub> in any quantity. Also, based on staff evaluation, the recommended threshold of

10,000 kilograms (kg) of UF<sub>6</sub> that was proposed in SECY-07-0146 for defining a major Part 40 fuel cycle facility was reduced to 2,000 kg (4400 lb). This reduction is based on the fact that both the Occupational Safety and Health Administration and the U.S. Environmental Protection Agency have established 450 kg (1000 lb) of HF as the threshold for requiring additional safety analyses. These agencies have determined through modeling and experience that accidents involving 450 kg of HF can induce irreversible or other serious, long-lasting health effects, or even fatalities, over a significant distance (typically 100 meters or more). Thus, the staff determined that a possession limit of 2000 kg of UF<sub>6</sub>, which has the potential to release 450 kg of HF, is an appropriate threshold to require an ISA and for the NRC to be the sole licensing authority.

#### DISCUSSION:

The NRC is proposing to amend Part 40 to require applicants or licensees with a possession limit of 2000 kg or more of UF<sub>6</sub> to conduct an ISA and submit an ISA summary. In the rulemaking, NRC would assert jurisdiction over all applicants and licensees that possess 2000 kg or more of UF<sub>6</sub>, regardless of whether the affected facility is in an Agreement or non-Agreement State. The new ISA requirements would be similar to requirements found in Part 70, Subpart H, which are applicable to fuel fabrication and new enrichment facilities.

The rulemaking would add an additional evaluation criterion for applicants or licensees who submit an evaluation in lieu of the emergency plan required by § 40.31(j). The evaluation would have to demonstrate that an acute chemical exposure from licensed material or hazardous chemicals produced from licensed material due to a release, would result in neither irreversible nor mild transient health effects to a member of the public offsite. If such an evaluation is not submitted, an emergency plan must be submitted in accordance with § 40.31(j)(3).

Part 40 would be administratively restructured to create subparts. Included in the restructuring would be the addition of a new subpart titled, "Additional Requirements for Certain Licensees Authorized to Possess 2000 kilograms (4400 lb) or More of Uranium Hexafluoride." The rulemaking would also add definitions to § 40.4 that pertain to the proposed ISA requirements. These definitions are essentially the same as those used in Part 70, Subpart H.

Amending 10 CFR Part 40 to require an ISA for those licensees authorized to possess 2000 kg or more of UF<sub>6</sub> supports the NRC's 2008–2013 Strategic Plan in the areas of safety and organizational excellence. In the area of safety, the proposed rule supports Safety Goal Strategy 1 (develop, maintain, and implement licensing and regulatory programs for material users to ensure the adequate protection of health and safety), by requiring an ISA. An ISA enhances safety by requiring a risk informed assessment to identify and rank potential accidents. Safety is further enhanced by the development of a safety program that includes the requirement to describe items relied on to prevent or mitigate an accident and a description of how these items will be maintained.

The staff is developing guidance documents which will parallel the existing guidance for the ISA requirements in Part 70, Subpart H, (i.e., Standard Review Plan, NUREG-1520). The guidance will provide a cross walk between the identical sections in Part 40 and Part 70. It will also highlight differences between the parts, i.e., criticality. This guidance will be in draft following publication of the proposed rule.

SPECIFIC AREAS FOR PUBLIC COMMENT

In the proposed *Federal Register* notice (Enclosure 1), the NRC staff plans to seek specific public comments on two issues. One issue is the proposed provision to require an additional evaluation criterion in § 40.84(d) for chemical hazards. This criterion is not currently required for any fuel cycle facility. Specific discussion on this issue is located in question H of Section II, and in § 40.84(d) in Section II (Discussion of Proposed Amendments by Section).

The second issue the NRC staff plans to seek specific public comment on is the new reporting requirements in § 40.88 for 1-hour and 24 hour reports. Specific discussion on this issue is located in § 40.88(a) and (b) in Section III (Discussion of Proposed Amendments by Section).

AGREEMENT STATE ISSUES:

In SRM-M070308B (March 22, 2007), the Commission directed the staff to inform the Agreement States that the NRC would be the sole regulator for future major fuel cycle facilities under 10 CFR Part 40. The NRC sent a letter to the Agreement States (ML071030304) on April 13, 2007, notifying them of the Commission's directive.

There are no Agreement State compatibility issues because the NRC is reserving future licensing authority. Facilities located in Agreement States that hold 2000 kg or more of UF6 – but which are undergoing decommissioning -- would be exempt from the rule.

RECOMMENDATIONS:

That the Commission:

1. Approve for publication, in the *Federal Register*, the proposed amendments to Part 40 (Enclosure 1).
2. Note:
  - a. That the proposed amendments will be published in the *Federal Register*, allowing 75 days for public comment.
  - b. That the Chief Counsel for Advocacy of the Small Business Administration will be informed of the certification and the reasons for it, as required by the Regulatory Flexibility Act, 5 U.S.C. 605(b).
  - c. That a draft Regulatory Analysis has been prepared for this rulemaking (Enclosure 2).
  - d. That a draft Environmental Assessment has been prepared for this rulemaking (Enclosure 3).
  - e. That appropriate Congressional committees will be informed of this action.
  - f. That a press release will be issued by the Office of Public Affairs when the proposed rulemaking is filed with the Office of the Federal Register.

- g. Office of Management and Budget (OMB) review is required and a clearance package will be forwarded to OMB no later than the date the proposed rule is submitted to the Office of the Federal Register for publication.

RESOURCES:

To complete the rulemaking, 1.5 full-time equivalent positions will be required. These resources are within existing budget allocations.

COORDINATION:

The Office of the General Counsel has no legal objection to the proposed rulemaking. The Office of the Chief Financial Officer has reviewed this Commission Paper for resource implications and has no objections. The rule suggests changes in information collection requirements that must be submitted to OMB no later than the date the proposed rule is forwarded to the *Federal Register* for publication.

***/RA by Martin Virgilio for/***

R. W. Borchardt  
Executive Director  
for Operations

Enclosures:

1. *Federal Register* Notice
2. Draft Regulatory Analysis
3. Draft Environmental Assessment

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