



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

October 20, 2015

Mr. Victor M. McCree  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:** INTERIM STAFF GUIDANCE, "GUIDANCE FOR THE EVALUATION OF ACUTE CHEMICAL EXPOSURES AND PROPOSED QUANTITATIVE STANDARDS"

Dear Mr. McCree:

During the 628th meeting of the Advisory Committee on Reactor Safeguards, October 7-10, 2015, the Committee reviewed the staff's Interim Staff Guidance (ISG), "Guidance for the Evaluation of Acute Chemical Exposures and Proposed Standards." We had the benefit of discussions with representatives of industry, the Nuclear Energy Institute, and the NRC staff. We also benefitted from the referenced documents.

**RECOMMENDATION**

- The ISG, "Guidance for the Evaluation of Acute Chemical Exposures and Proposed Standards," should be issued.
- Once the staff has gained sufficient experience with it, the interim guidance should be incorporated into NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility."

**BACKGROUND AND DISCUSSION**

An essential element of the safety review of a fuel cycle facility is the Integrated Safety Analysis (ISA). An ISA identifies the frequency categories and consequence categories of event scenarios for the facility. Among the consequences of scenarios considered in

the ISA are acute chemical exposures to licensed materials or chemicals associated with or produced from licensed materials that could endanger the life of a worker or could lead to irreversible or serious health effects to any individual located outside the controlled area. A Memorandum of Understanding with the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency obligates NRC to have regulatory authority over chemicals associated with licensed nuclear material.

Chemical exposures can follow a variety of pathways including inhalation, ocular and dermal. Databases on exposure limits are best developed for the inhalation pathway. These quantitative exposure limits allow licensees to identify events with "high" or "intermediate" chemical exposure consequences as required in the NRC regulations. ISA summaries for most of the existing fuel cycle facilities have been approved by the NRC based on quantitative consideration of only the inhalation exposure pathway.

The NRC staff has identified some events at fuel cycle facilities involving dermal and ocular exposure. Notable among these are exposures to hydrofluoric acid. The staff has developed interim guidance to supplement the guidance in NUREG-1520 with respect to these other pathways for chemical exposure. The interim staff guidance provides information on when exposure standards are required, general criteria for approving proposed standards, and information sources that can be used by the staff in their review of proposed standards.

The proposed interim staff guidance is useful and should be issued. The guidance illuminates the various exposure data bases currently extant. It better aligns practices adopted at NRC with practices by OSHA. The additional information on dermal and ocular exposures is not expected to produce significant changes in the safety assessments of the existing fuel cycle facilities or cause changes in the chemical safety programs at these facilities. The impact of the guidance may be greater in the safety evaluations of new fuel cycle facilities or major modifications of existing facilities.

Once the staff has gained sufficient experience with it, the interim guidance should be incorporated into NUREG-1520.

Sincerely,

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John W. Stetkar  
ACRS Chairman

## REFERENCES

1. U.S. Nuclear Regulatory Commission, Final Draft Interim Staff Guidance, "Guidance for the Evaluation of Acute Chemical Exposures and Proposed Quantitative Standards," October 6, 2015 (ML15253A685).
2. Nuclear Energy Institute, "Interim Staff Guidance ZZ, Revision 0, Guidance for the Evaluation of Acute Chemical Exposures and Proposed Quantitative Standards (80 Fed. Reg. 11,692 and 80 Fed. Reg. 21274; NRC Docket 2015-0044," June 30, 2015 (ML15189A076).
3. U.S. Nuclear Regulatory Commission, "Interim Staff Guidance on Additional Guidance for Conducting a Chemical Safety Review Related to Acute Chemical Exposures and the Proposed Quantitative Standards Used to Assess the Consequences for the Integrated Safety Analysis," September 10, 2015 (ML15253A664).
4. U.S. Nuclear Regulatory Commission, NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," June 2015 (ML15176A258).
5. U.S. Nuclear Regulatory Commission, Information Notice 2007-22, "Recent Hydrogen Fluoride Exposures at Fuel Cycle Facilities," June 2007 (ML071410230).
6. Nuclear Energy Institute, "Chemical Exposures at Fuel Cycle Facilities," September 8, 2008 (ML083360632).
7. U.S. Nuclear Regulatory Commission, "Chemical Exposures at Fuel Cycle Facilities Licensed by the U.S. Nuclear Regulatory Commission," November 10, 2008 (ML082900889).
8. Nuclear Energy Institute, "Response to your November 10, 2008 letter on Chemical Exposures at Fuel Cycle Facilities," February 24, 2009 (ML090690732).
9. U.S. Nuclear Regulatory Commission, "Reply to your February 24, 2009 Letter Regarding Chemical Exposures at Fuel Cycle Facilities Licensed by the U.S. Nuclear Regulatory Commission," June 12, 2009 (ML090920296).
10. Nuclear Energy Institute, "Dermal and Ocular Quantitative Exposure Standard – Current Industry Programs are Adequate and NRC Proposed Approach is Impractical, Unnecessary, and Constitutes an Unanalyzed Backfit," March 26, 2014 (ML14086A267).
11. U.S. Nuclear Regulatory Commission, "Response to March 26, 2014, Nuclear Energy Institute Letter on Dermal and Ocular Quantitative Exposure Standard," September 15, 2014 (ML14251A150).

12. Nuclear Energy Institute, NRC Staffs Response to a March 26, 2014 Letter Addressing the Requirements Contained in 10 CFR 70.65, November 7, 2014 (ML14322B019).
13. Babcock & Wilcox Nuclear Operations Group, "Proposed Standard for Dermal and Ocular Quantitative Exposure," June 8, 2015 (ML15180A163).
14. U.S. Nuclear Regulatory Commission, "BWXT Nuclear Operations Group, Inc. – Proposed Standard for Dermal and Ocular Exposures (Technical Assignment Control Number L33377)," August 26, 2015 (ML15226A605).

12. Nuclear Energy Institute, NRC Staffs Response to a March 26, 2014 Letter Addressing the Requirements Contained in 10 CFR 70.65, November 7, 2014 (ML14322B019).
13. Babcock & Wilcox Nuclear Operations Group, "Proposed Standard for Dermal and Ocular Quantitative Exposure," June 8, 2015 (ML15180A163).
14. U.S. Nuclear Regulatory Commission, "BWXT Nuclear Operations Group, Inc. – Proposed Standard for Dermal and Ocular Exposures (Technical Assignment Control Number L33377)," August 26, 2015 (ML15226A605).

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