

## POLICY ISSUE (NOTATION VOTE)

August 5, 2011

SECY -11-0108

FOR: The Commissioners

FROM: R. W. Borchardt  
Executive Director for Operations

SUBJECT: REGULATION OF CHEMICAL SECURITY

### PURPOSE:

The purpose of this paper is to provide the Commission options and a staff recommendation for regulating chemical security at U.S. Nuclear Regulatory Commission (NRC) regulated facilities that are exempt from the Department of Homeland Security's (DHS) Chemical Facility Anti-Terrorism Standards (CFATS).

### SUMMARY:

In a memorandum to the Commission from James T. Wiggins titled, "Response to Commission Request for a Report on the Department of Homeland Security's Chemical Facility Anti-Terrorist Standards Applicability to Honeywell Metropolis Works Uranium Conversion Facility and Paducah Gaseous Diffusion Plant," dated March 9, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110620377), the staff committed to providing a paper for the Commission's consideration setting forth options for the regulation of chemical security at facilities regulated by the NRC and Agreement States. As a result, the staff developed three potential options for regulating chemical security at facilities subject to NRC and Agreement State regulation: (1) preserve the status quo by not imposing additional requirements; (2) require selected classes of licensees to prepare chemical security analyses and then submit revisions to their security plans for NRC review and approval; and (3) impose additional security requirements on selected classes of licensees through rulemaking. The staff recommends Option 3 because it will ensure the security of chemicals of interest (COI) at facilities regulated by the NRC and Agreement States, while ensuring safety and security of radioactive material while minimizing the resource burden on the NRC, DHS, and licensees.

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BACKGROUND:

In Section 550 of the DHS Appropriations Act for Fiscal Year (FY) 2007 (Public Law 109-295), Congress directed DHS to issue interim final regulations (1) establishing risk-based performance standards (RBPSs) for the security of chemical facilities determined by the DHS Secretary to present high levels of security risk and (2) requiring vulnerability assessments and the development and implementation of site security plans for chemical facilities. Section 550 provides that the regulations issued by DHS under that section shall not be applied, "to any facility subject to regulation by the Nuclear Regulatory Commission."

DHS has not interpreted that statutory language to exempt all facilities that are licensed by the NRC and Agreement States. Instead, in the Statement of Considerations accompanying its interim final CFATS regulation, DHS stated:

The Department...will apply the statutory exemption [for facilities subject to NRC regulation] to facilities where NRC already imposes significant security requirements and regulates the safety and security of most of the facility, not just a few radioactive sources. For example, a power reactor holding a license under 10 CFR Part 50, a special nuclear material fuel cycle [facility] holding a license under 10 CFR Part 70, and facilities licensed under 10 CFR Parts 30 and 40 that have received security orders requiring increased protection will all be exempt from 6 CFR Part 27. A facility that only possesses small radioactive sources for chemical process control equipment, gauges, and dials is not exempt. 72 Fed. Reg. 17688, 17699 (April 9, 2007).

DHS also promulgated a final rule specifying the list of COI and the quantities of those chemicals that present concerns. 72 Fed. Reg. 65396 (November 20, 2007).

During the NRC staff discussions with DHS on implementation of the statute, DHS made clear that there would be no dual regulation at exempted facilities or portions of exempted facilities that are licensed by the NRC and Agreement States. The NRC would have the exclusive regulatory authority to ensure adequate security of chemicals possessed by those NRC licensees.

NRC/DHS Memorandum of Understanding (MOU)

During its review of CFATS, the NRC staff determined that an exemption for some NRC-regulated facilities would result in a gap between NRC and DHS regulations in chemical security. At some NRC-regulated facilities, COIs in quantities of concern may be used or stored in areas outside the existing NRC required facility security footprint (e.g., owner controlled area), or the licensed activity may only have to implement minimal security requirements that may not adequately protect the chemicals. As a result, the NRC and DHS have worked together to reach agreement on which NRC or Agreement State regulated facilities are exempt from the DHS chemical security requirements. Exempt facilities are subject only to the NRC or Agreement State requirements.

Accordingly, the NRC and DHS entered into an MOU on March 31, 2011 (ADAMS Accession No. ML110940416), that specifies the classes of NRC and Agreement State-regulated facilities that are exempt from CFATS. The NRC staff had informed the Commission of its intent to enter

into the MOU and provided the Commission with the proposed text in SECY-11-0034, "Memorandum of Understanding Between the U.S. Nuclear Regulatory Commission and the U.S. Department of Homeland Security on Chemical Facility Anti-Terrorism Standards" (ADAMS Accession No. ML102720476).

Under the MOU, DHS and the NRC have agreed that the NRC will have sole responsibility for the chemical security of all COIs at power reactors; Category I, II, and III fuel cycle facilities; uranium enrichment plants; and uranium conversion and deconversion facilities. At some facilities where the NRC or an Agreement State regulates only a portion of a site, only that portion of the site regulated by the NRC or an Agreement State would be exempt from the DHS requirements. Categories of licensees at which DHS may have a regulatory role, based on consultation between the two agencies, include non-power reactors, and some radioactive materials licensees.

### Chemical Security Study

To aid in the development of the MOU and the staff's assessment of whether additional chemical security requirements are needed at NRC-regulated facilities, the NRC staff contracted with Sandia National Laboratories (SNL) to evaluate how facilities that fall under the CFATS exemption for NRC-regulated facilities provide security for chemicals at their sites. DHS placed facilities with chemicals of interest in quantities of concern into four risk-based tiers, with the higher risk facilities being subjected to greater security controls. The SNL study identified similarities and differences among current practices for the protection of chemical inventories at NRC-licensed facilities, and how the DHS CFATS regulations envision the protection of those inventories. Additionally, SNL compared NRC regulations and orders with the 18 CFATS RBPS metrics for the COIs that are used or stored within NRC-licensed facilities.

Based on its review of the SNL study, the NRC staff has placed NRC-regulated facilities into three categories:

- Facilities with limited or no changes needed in order to address chemical security. These facilities include (1) panoramic irradiator facilities, except for sterilization irradiators that are collocated with a chemical sterilization operation using ethylene oxide; (2) non-power reactors; (3) nuclear power plants; and (4) radioactive source manufacturing and distribution facilities. This conclusion is based on the security already in place and the limited quantities of COIs that these facilities have on site. Changes to COI types, quantities, or locations could necessitate additional measures for chemical security.
- Facilities with large chemical holdings and significant NRC-regulated material holdings where imposition of additional NRC chemical security controls may be warranted. These facilities include (1) fuel conversion and deconversion facilities; (2) fuel enrichment facilities; (3) fuel fabrication facilities; and (4) panoramic irradiator facilities collocated with a chemical sterilization operation using ethylene oxide. This categorization is based on the potential for large quantities of COIs in conjunction with a significant amount of nuclear and radioactive materials. Changes in the types of COIs used or their storage locations may be necessary, or the NRC may need to take regulatory action to extend the security footprint to encompass these areas.

- Facilities with significant chemical holdings and limited radioactive or nuclear materials and that are appropriate for DHS regulation. These facilities include chemical manufacturing and distribution facilities with NRC-licensed (or Agreement State-licensed) fixed and portable gauges at discrete locations in the facility. This categorization is based on the small NRC or Agreement State regulatory footprint at these types of facilities. Based on the NRC/DHS MOU, these facilities are not exempted from the DHS CFATS regime and are subject to the imposition of DHS chemical security requirements.

#### DISCUSSION:

As a result of staff's analysis, and taking into account the MOU with DHS, the staff has developed three potential approaches to chemical security at NRC-regulated facilities subject to the CFATS exemption. These options, discussed below, are to (1) preserve the status quo and not impose additional chemical security requirements for any classes of licensees; (2) require selected classes of licensees to prepare chemical security analyses and then submit revisions to their security plans for NRC review; or (3) impose additional security requirements on selected classes of licensees through rulemaking.

The staff has notified the Agreement States about the chemical security legislation, identified the types of State-regulated facilities affected by the legislation, and informed the Agreement States about the staff's activities to determine a path forward in the regulation of NRC-regulated facilities subject to the CFATS exemption. The staff has reviewed the classes of exempt facilities regulated by Agreement States and concluded that a limited number of Agreement States may have licensees that possess COI. The staff will continue to engage stakeholders on chemical security matters, including the Organization of Agreement States, after receiving Commission direction on the regulation of chemical security. In particular, potential impacts on Agreement State licensees warrant further examination and coordination.

#### OPTIONS:

##### **Option 1—Do Not Impose Additional Chemical Security Requirements**

Currently, all NRC-regulated facilities are required to comply with relevant safety and environmental regulations promulgated by both Federal and State agencies that pertain to the safe use, storage, and disposal of chemicals. For fuel cycle facilities, the NRC's safety regime for chemical protection provides adequate protection against chemical risks produced from licensed materials, facility conditions which affect the safety of licensed material, and hazardous chemicals produced from licensed material (see Title 10 of the *Code of Federal Regulations* (10 CFR) Section 70.64(a)(5)). For on-site chemicals not falling under the purview of 10 CFR 70.64(a)(5), the NRC has not imposed safety or security requirements except through orders.

Because of the actions taken to date, the NRC could determine not to impose additional chemical security requirements. Instead, it could encourage NRC licensees to take voluntary actions to increase the security of COIs at their facilities. This could include recommendations for the placement of COIs within areas that already have security requirements imposed by the NRC, provided that doing so would not be detrimental to safety or security of licensed material or facilities.

*Option 1—Pros*

Most NRC- and Agreement State- regulated facilities that are subject to NRC and Agreement State regulation of chemical security under the MOU with DHS already maintain adequate protection of COIs on their sites due to the co-location of secured nuclear materials and COIs. The NRC could choose to not expend NRC, Agreement State, and licensee resources to augment chemical security requirements at the limited number of facilities where application of the DHS CFATS regime could result in imposition of additional chemical security controls.

*Option 1—Cons*

Without NRC chemical security requirements for COIs at NRC-regulated facilities exempt from CFATS, a regulatory gap will exist at a limited number of facilities. This would be contrary to the goals and purposes underlying the Congressional mandate to enhance chemical security. If chemicals are located outside secured areas regulated by NRC or Agreement States, they may be less secure than would be required by CFATS regulations. This could create inconsistent protection for chemical hazards at different facilities.

**Option 2—Require Selected Classes of Licensees to Prepare Chemical Security Analyses and Submit Revisions to Their Security Plans for NRC Review**

This approach, which would be implemented through rulemaking or issuance of an order, would parallel the DHS approach. Option 2 would entail NRC and Agreement States categorizing (tiering) facilities based on the DHS Top-Screen and Security Vulnerability Assessment Web-based tools. The DHS tools address consequence, vulnerability, threat, and risk determination (see enclosure for a description of the DHS process for security vulnerability assessment). Through issuance of an NRC regulation, order, or license condition, licensees would be required to employ the online DHS Site Security Plan tool to determine whether existing protection measures are in compliance with the scoring algorithm for each of the 18 RBPSs. After completing their site security evaluation using the DHS tool, if enhanced security measures are warranted, licensees would revise their security plans and submit them for review and approval. Typically, a licensee's compliance with their security plan is a condition of the NRC- or Agreement State- issued license. Implementation of this option will require that DHS allow NRC and Agreement State licensees access to and use of their Site Security Plan tools. Alternatively, DHS could agree to provide the NRC with a copy of the tools. The NRC staff has not discussed either alternative with DHS.

The NRC staff is developing proposed revisions to 10 CFR Part 73, "Physical Protection of Plants and Materials," security requirements, discussed in more detail below. If the Commission adopts this option, the scope of that rulemaking could potentially be expanded to encompass any new chemical security requirements. The NRC staff will closely coordinate activities to impose requirements with the Agreement States.

*Option 2—Pros*

This option would provide a consistent approach between DHS and the NRC for the regulation of chemical security at NRC- and Agreement State- regulated sites. This option would ensure that all COIs are protected to at least DHS CFATS.

*Option 2—Cons*

Adoption of Option 2 may create conflicting priorities as licensees integrate site-specific protective strategies and make changes to their site security plans. The SNL study indicates that population density outside of the site boundary is a key factor in the DHS determination of a facility's risk-based tier. The reliance on the DHS approach that uses population density in neighboring communities differs from the NRC approach of assessing safety consequences at fuel cycle facilities as outlined in 10 CFR 70.61, "Performance Requirements." This would require the NRC to rely on DHS's Chemical Facility Anti-Terrorism Standards and assessment tools, even though the NRC has no role in the development or modification of the tools. This could result in regulatory instability and greater uncertainty if DHS were to change the tool or its regulatory approach.

**Option 3— Impose Additional Requirements on Selected Classes of Licensees Through Rulemaking**

Under this option, the NRC would engage in rulemaking to establish independent chemical security requirements for CFATS-exempt NRC- and Agreement State- licensed facilities. The regulatory approach to protecting COIs would be similar to that used to protect radioactive or other materials within NRC's jurisdiction. The NRC would compare nuclear and radioactive material categorization with COI thresholds. The NRC would then determine the appropriate level of security and impose controls that would be equivalent to the existing security controls placed on licensees possessing materials within NRC's jurisdiction (see enclosure for a discussion of performance requirements in 10 CFR 70.61 and proposed 10 CFR Part 40, "Domestic Licensing of Source Material").

Under this option, the staff would identify COIs to determine whether sufficient quantities are present to require an evaluation of the consequences resulting from a malicious or other event that could result in chemical releases. The COIs included would be those in the DHS list in Appendix A to the CFATS regulations, as well as any additional chemicals that the NRC may deem to pose comparable risks. When the minimum threshold is exceeded, the staff would develop criteria to determine the appropriate level of security and controls required for the given amount of COI present at the facility. These criteria would take into account the impact on the plant population and the effect on a hypothetical person at the site boundary, consistent with 10 CFR 70.61.

It is anticipated that any chemical security requirements would be imposed under Common Defense and Security, rather than Public Health and Safety. It has been determined by the General Counsel that NRC has existing authority to regulate chemical security. There is a high likelihood that many state regulators may not have existing regulatory authority, and would require legislative changes to obtain that authority. It is also believed that a very small number of Agreement State licensees would have chemicals that would be regulated under NRC's authority.

If this option is adopted, the staff would include chemical security for CFATS-exempt licensees in the revision of the Fuel Facilities security regulations of 10 CFR 73 (with conforming changes to be made in 10 CFR 37, 40, 50, and 70 to incorporate by reference the Part 73 requirements). This would require a marginal increase in resources already planned for the 10 CFR Part 73 rulemaking.

### *Option 3—Pros*

Incorporating chemical security requirements into existing NRC regulations will result in a graded approach and risk-informed, performance-based regulation, consistent with NRC practice and policies. This approach will require licensees to protect COIs outside the existing security area, when necessary. This approach would also limit potential security and regulatory gaps and provide regulatory stability.

### *Option 3—Cons*

The elements of the chemical security program at selected licensees subject to the NRC chemical security requirements could differ from those at comparable facilities subject to the DHS requirements because of different regulatory approaches. However, the NRC staff believes that the level of security would likely be comparable. Additional resources above those already budgeted would be required to incorporate chemical security into the NRC regulatory framework.

### RECOMMENDATION:

The staff recommends Option 3. This option eliminates the regulatory gap and potential security gaps for COIs and provides a consistent approach for handling risks posed by chemical and radiological hazards at NRC-licensed facilities. Using this approach, the NRC and Agreement States (if their facilities are encompassed) would impose a regulatory requirement for enforcing chemical security controls at CFATS-exempt facilities and materials. This would represent an approach that is most similar to what the NRC currently uses to regulate the safety and security of nuclear and radioactive materials at NRC-licensed facilities. Adapting and incorporating chemical security into the existing security infrastructure provides for an integrated approach to safety and security and aids in prioritizing targets and response strategies.

The staff does not recommend adoption of Option 1 because regulatory gaps and potential gaps in protection can occur when relying on voluntarily action to identify and implement security for COIs. The staff also does not recommend Option 2. While this approach would ultimately retain NRC regulatory authority and oversight, it is less predictable and may result in a lack of regulatory stability as CFATS regulations or DHS methodologies change.

Once the Commission makes a decision and provides the staff with the requirements, the staff will develop the plan and schedule associated with the implementation of the Commission-approved option.

**RESOURCES:**

The resources identified in the tables below are in addition to the budgeted resources allocated for the Fuel Facilities Security Rulemaking currently underway.

Option	Office	FY 2012		FY 2013		FY 2014		TOTAL	
		FTE	\$K	FTE	\$K	FTE	\$K	FTE	\$K
<b>Option 1</b>  Continue the Current Approach to Chemical Security	<b>NSIR</b>	<b>0.0*</b>	<b>0</b>	<b>0.0*</b>	<b>0</b>	<b>0.0*</b>	<b>0</b>	<b>0.0</b>	<b>0</b>
	NMSS	0.0	0	0.0	0	0.0	0	0.0	0
	FSME	0.0	0	0.0	0	0.0	0	0.0	0
	NRR	0.0	0	0.0	0	0.0	0	0.0	0
	OGC	0.0	0	0.0	0	0.0	0	0.0	0
	ADM	0.0	0	0.0	0	0.0	0	0.0	0
<b>Option 2</b>  Adopt Much of the DHS Approach to Chemical Security by Direct Reference	<b>NSIR</b>	<b>1.0</b>	<b>0</b>	<b>1.0</b>	<b>400</b>	<b>1.0</b>	<b>400</b>	<b>3.0</b>	<b>800</b>
	<b>NMSS</b>	<b>0.2</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0.6</b>	<b>0</b>
	FSME	0.0	0	0.0	0	0.0	0	0.0	0
	<b>NRR</b>	<b>0.2</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0.6</b>	<b>0</b>
	OGC	0.0	0	0.0	0	0.0	0	0.0	0
	ADM	0.0	0	0.0	0	0.0	0	0.0	0
<b>Option 3</b>  Adopt an Approach that Follows the Current NRC Methods for Nuclear and Radioactive Materials	<b>NSIR</b>	<b>0.2</b>	<b>0</b>	<b>0.3</b>	<b>200</b>	<b>0.2</b>	<b>0</b>	<b>0.7</b>	<b>200</b>
	<b>NMSS</b>	<b>0.1</b>	<b>0</b>	<b>0.1</b>	<b>0</b>	<b>0.1</b>	<b>0</b>	<b>0.3</b>	<b>0</b>
	FSME	0.0	0	0.0	0	0.0	0	0.0	0
	<b>NRR</b>	<b>0.2</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0.6</b>	<b>0</b>
	OGC	0.0	0	0.0	0	0.0	0	0.0	0
	ADM	0.0	0	0.0	0	0.0	0	0.0	0
<b>Total for Recommended Option 3</b>		<b>0.5</b>	<b>0.0</b>	<b>0.6</b>	<b>200</b>	<b>0.5</b>	<b>0.0</b>	<b>1.6</b>	<b>200</b>

\*In Option 1, if directed to initiate a voluntary effort to improve chemical security, the Office of Nuclear Security and Incident Response (NSIR) would need (0.2) full-time equivalent staff (FTE) and \$(0) K per year for FY 2012, FY 2013, and FY 2014.

All resource requirements for the three proposed options would fall under the Fuel Facilities and Materials User Business Lines. Option 1 represents the current status quo with no resources required. If directed to initiate a voluntary effort to improve chemical security, NSIR will transfer 0.2 FTE from other programs in the current budget request in FY 2012.

For Options 2 and 3, the staff intends to include chemical security in the potential revision of 10 CFR 73. Therefore, the resources discussed reflect an increase of the resources already planned for the 10 CFR 73 rulemaking for Fuel Facilities security. For Option 2, the resource estimate is based on the need to develop regulatory guides in support of the rulemaking, as well as significant coordination effort required with DHS and the Agreement States. Regulatory Guide (RG) development would require significantly more contractor effort because it would entail developing an infrastructure to support an oversight program fundamentally different from the approach used by the NRC to regulate nuclear and radioactive materials. Option 2 shows a resource estimate of 1.4 FTE for FY 2012 and 1.4 FTE and \$400K for FY 2013. NSIR, the



Office of Nuclear Material Safety and Safeguards (NMSS), and the Office of Nuclear Reactor Regulation (NRR) would need additional resources to implement this option. For Option 3, the resource estimate is also based on the need to develop RGs in support of the rulemaking. However, such RG development would require significantly less contractor effort than under Option 2 because the regulatory approach aligns with normal NRC processes. Option 3 identifies resource estimates of 0.6 FTE for FY 2012 and 0.6 FTE and \$200K for FY 2013. NSIR, NMSS, and NRR would need additional resources to implement Option 3. For all options, the Office of Federal and State Materials and Environmental Management Programs (FSME) has budgeted for the rulemaking, and estimates no additional resources needed.

Staff is recommending Option 3. For Option 3 in FY 2012, NSIR, NMSS, and NRR will reallocate resources to cover the FTE request. For FY 2013, NSIR will reallocate resources to cover the FTE needed and will address the contract support during the FY 2013 budget process. The resources for FY 2014 and beyond will be addressed through the Planning, Budgeting, and Performance Management process.

COORDINATION:

The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections. OGC has reviewed this Commission paper and has no legal objection.

**/RA/**

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Executive Director  
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Enclosure:  
Background Information on CFATS

Office of Nuclear Material Safety and Safeguards (NMSS), and the Office of Nuclear Reactor Regulation (NRR) would need additional resources to implement this option. For Option 3, the resource estimate is also based on the need to develop RGs in support of the rulemaking. However, such RG development would require significantly less contractor effort than under Option 2 because the regulatory approach aligns with normal NRC processes. Option 3 identifies resource estimates of 0.6 FTE for FY 2012 and 0.6 FTE and \$200K for FY 2013. NSIR, NMSS, and NRR would need additional resources to implement Option 3. For all options, the Office of Federal and State Materials and Environmental Management Programs (FSME) has budgeted for the rulemaking, and estimates no additional resources needed.

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Enclosure:  
Background Information on CFATS

ADAMS Accession No.: ML111460426

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