



EXECUTIVE ORDER 13650
ACTIONS TO IMPROVE CHEMICAL
FACILITY SAFETY AND SECURITY –
A SHARED COMMITMENT

REPORT FOR THE PRESIDENT

May 2014



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Message from the Working Group Tri-Chairs

Recent catastrophic chemical facility incidents in the United States prompted President Obama to issue Executive Order (EO) 13650 - *Improving Chemical Facility Safety and Security* on August 1, 2013, to enhance the safety and security of chemical facilities and reduce risks associated with hazardous chemicals to owners and operators, workers, and communities.

The EO directed the Environmental Protection Agency (EPA), the Department of Labor (DOL), the Department of Homeland Security (DHS), the Department of Justice, the Department of Agriculture, and the Department of Transportation to identify ways to improve operational coordination with State, local, tribal, and territorial partners; to enhance Federal agency coordination and information sharing; to modernize policies, regulations, and standards to enhance safety and security in chemical facilities; and to work with stakeholders to identify best practices to reduce safety and security risks in the production and storage of potentially harmful chemicals.

The EO established a Chemical Facility Safety and Security Working Group to oversee this effort, which is tri-chaired by the EPA, DOL, and DHS and includes leadership and subject matter experts from each of the above listed Departments and agencies. The Working Group, its member agencies, and the broader community of stakeholders have practices, operations, protocols, and policies that address chemical facility safety and security but all recognize that improvement is necessary and requires a shared commitment from all stakeholders. Emergency responders, in particular, have needs to be addressed and capabilities to be strengthened so that they can better manage threats and hazards in their communities.

This report summarizes Working Group progress, focusing on actions to date, findings and lessons learned, challenges, and priority next steps. The issuance of the report is a milestone, not an endpoint. Agencies, in coordination with the broad range of stakeholders, have transitioned to implementation of these priority actions, which will be completed over time. We recognize that the Federal Government must put in place a transparent, inclusive process with the engagement and commitment of all stakeholders.

The Working Group recognizes the invaluable contributions of the stakeholder communities that participated in each of the EO information-gathering efforts. This report highlights many of the comments we received, comments that provide context and underscore the findings and next steps. More information on the spectrum of stakeholder comments is available on the EO Webpage <https://www.osha.gov/chemicalexecutiveorder>.

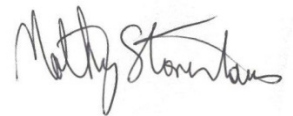
The Working Group strongly encourages stakeholders to continue to contribute to this dialogue by submitting successful practices to the chemical facility safety and security online best practices forum at <https://www.llis.dhs.gov/topics/chemical-facility-safety-and-security> or by providing direct feedback to the Federal departments and agencies via the EO docket or the eo.chemical@hq.dhs.gov email address.



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Executive Summary

ES.1 Introduction

Chemicals are an essential part of our economy and can improve the life, health, and well-being of people across our Nation. However, the handling and storage of chemicals at facilities can present safety and security risks that must be addressed. Executive Order (EO) 13650 - *Improving Chemical Facility Safety and Security* directs the Federal Government to:

- Improve operational coordination with State, local, and tribal partners;
- Enhance Federal agency coordination and information sharing;
- Modernize policies, regulations, and standards; and
- Work with stakeholders to identify best practices.

To accomplish these goals, the EO established a Federal interagency working group (Working Group) led by the Environmental Protection Agency (EPA), the Department of Labor (DOL), and the Department of Homeland Security (DHS) and including other departments and agencies involved in the oversight of chemical facility safety and security. Recognizing that stakeholders are essential to managing and mitigating the risks of potential chemical facility hazards, the Working Group initiated a robust stakeholder outreach effort to assist the workgroup in identifying successes and best practices.

A thorough analysis of the current operating environment, existing regulatory programs, and stakeholder feedback resulted in immediate actions and a consolidated Federal Action Plan of future actions to further minimize risks, organized by five thematic areas:

- Strengthening community planning and preparedness;
- Enhancing Federal operational coordination;
- Improving data management;
- Modernizing policies and regulations; and
- Incorporating stakeholder feedback and developing best practices.

This report highlights current activities to improve chemical facility safety and security and provides a plan for moving forward. It is important to emphasize accomplishing this strategy requires a shared commitment among facility owners and operators; Federal, State, tribal, and territorial governments; regional entities; nonprofit organizations; facility workers; emergency responders; environmental justice and local environmental organizations; and communities.

ES.2 Strengthening Community Planning and Preparedness

Facilities storing and using hazardous chemicals are found in all types of communities. Communities need to know where hazardous chemicals are used and stored, how to assess the risks associated with those chemicals, and how to ensure community preparedness for incidents that may occur. Communities must also take into consideration local geographic and

socioeconomic issues and address the differing needs of sensitive populations, for example, individuals with special medical needs, children, or those with transportation challenges. Strengthening communities' planning and preparedness requires a sound process.

Stakeholder Input

There is broad consensus in the stakeholder community that the most effective emergency planning occurs at the local level, with Local Emergency Planning Committees (LEPCs) and Tribal Emergency Planning Committees (TEPCs) providing a formal prevention and preparedness engagement structure. Stakeholder input noted that many of the LEPCs and TEPCs do not have the capabilities to conduct emergency planning and require training and resources, which has made it difficult for industry and others to engage in planning with LEPCs and TEPCs. Stakeholders underscored the importance of joint planning and exercising. State and local officials also identified the need for access to timely, usable, understandable information from facilities and the Federal Government for emergency response planning, land use planning, and identification of potentially noncompliant facilities (outliers).

Community members expressed concern about a perceived lack of effective communication from industry partners regarding incidents and general facility safety performance. Additional concerns were shared regarding local plans to shelter in place, evacuate, or relocate during an incident as well as recovery support to include consideration of community members with chronic special medical needs or those facing socioeconomic challenges. Communities adjacent to multiple facilities also raised concerns regarding the failure to address the specific vulnerabilities of lower-income communities, including environmental justice considerations.

Actions Taken

The Working Group took a number of steps to address these concerns, including:

1. DHS and EPA engaged with LEPCs and first responders across the country to identify and discuss potential methods to increase first responder preparedness and to share lessons learned across departments.
2. EPA continued to upgrade its Computer-Aided Management of Emergency Operations (CAMEO) suite to provide more useful and accurate information to emergency personnel and the public.
3. Federal Emergency Management Agency (FEMA) educated State Administrative Agencies on how the Homeland Security Grant Program allows risk-centric, capabilities-based planning and preparedness training for chemical incidents.

Future Actions to Strengthen Community Planning and Preparedness

The Working Group identified five priority action areas to help strengthen community planning and preparedness, to include:

1. Strengthening State Emergency Response Commissions (SERCs), Tribal Emergency Response Commissions (TERCs), LEPCs, and TEPCs.
2. Improving first responder and emergency management preparedness and response training.
3. Identifying and coordinating resources for SERCs, TERCs, LEPCs, and TEPCs to sustain planning and response efforts.

4. Expanding tools to assist SERCs, TERCs, LEPCs, and TEPCs in collecting, storing, and using chemical facility information.
5. Enhancing awareness and increasing information sharing with communities around chemical facilities.

ES.3 Enhancing Federal Operational Coordination

The chemical community is comprised of owners and operators; Federal, State, local, tribal, and territorial governments; regional entities; nonprofit organizations; and communities.

Communicating and coordinating across this diverse landscape requires an integrated effort to ensure activities are executed effectively and efficiently.

Stakeholder Input

Stronger collaboration within the Federal community for various chemical facility regulatory program requirements and information collection efforts is a crucial component of success. Many stakeholders also want close collaboration between State regulatory programs and other holders of key planning and prevention information. State and industry partners believe that enhanced regulatory coordination and outreach across the chemical community would facilitate compliance and address potentially noncompliant facilities. First responders, LEPCs, and community residents believe that information and data-sharing efforts need significant improvement. Specifically, they want to be able to easily obtain the most actionable information in a user-friendly format to support planning efforts yet with a recognition of the need to find the right balance for this access with the need to protect information due to safety and security considerations.

Actions Taken

The Working Group took a number of actions to enhance Federal operational coordination, including:

1. The Working Group initiated a pilot in the New York-New Jersey area bringing together regional Federal employees and State and local agencies to serve as a test-bed, confirming lessons learned, collecting and assessing best practices, informing other initiatives directed by EO 13650, and developing novel solutions to address safety and security challenges.
2. Members of the Working Group engaged the Chemical Safety Board (CSB) to identify possible updates to existing memorandums of understanding between CSB and EPA, CSB and Occupational Safety and Health Administration (OSHA), and CSB and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF).

Future Actions to Enhance Federal Operational Coordination

The Working Group identified three priority action areas to help enhance operational coordination, including:

1. Coordinating EO implementation activities.
2. Establishing standard operating procedures (SOPs) for Federal coordination at the National and regional levels.

3. Cross training Federal chemical facility safety and security field personnel to provide awareness of related regulatory programs.

ES.4 Improving Data Management

The EO charged the agencies with developing a coordinated, flexible, data-sharing process, to address the need to optimize available information. While Federal agencies collect valuable information on chemical facility safety and security, differing formats and management of these data do not fully support interagency compliance analysis. This was evident as the Working Group Agencies worked to share data across the respective systems. Currently, there is no chemical security and safety data clearinghouse that contains all of the data points germane to all Federal agency regulations.

Stakeholder Input

Stakeholders identified concerns with duplicative databases and the need for multiple entries of the same or similar data. This duplication stems in part from multiple regulatory programs that developed and evolved over decades, with each incorporating technologies and data collection requirements independent of one another (often due to differing statutory requirements). Stakeholders expressed the need to improve current data-sharing practices, and suggested creating a single system capable of handling all Agencies' facility reporting requirements.

Actions Taken

The Working Group took a number of actions to improve data management, including:

1. EPA updated its Substance Registry Service (SRS) and the Facility Registry Service (FRS), to include relevant OSHA Process Safety Management (PSM) and DHS Chemical Facility Anti-Terrorism Standards (CFATS) data.
2. Members of the Working Group engaged in data sharing across regulatory programs—such as the DHS CFATS program and EPA's Risk Management Program (RMP)—to help locate potentially non-compliant facilities by identifying facilities that had registered with one regulatory program but not the other.
3. EPA Region 8 tested a new Emergency Response (ER) Planner system that aggregates chemical facility and infrastructure data from various Federal and State databases and displays it on an interactive Geographic Information System (GIS) application.
4. DHS worked with all State Homeland Security Advisors (HSAs) to show them how to access information on CFATS facilities within their jurisdictions.
5. DHS engaged trade associations to foster outreach to potentially noncompliant facilities that have not been engaged in the past and to help raise awareness about chemical facility security regulations.

Future Actions to Improve Data Management

The Working Group identified four priority actions areas that it will take to improve data management, including:

1. Establishing a dedicated cross-agency team of experts to standardize data and develop a common facility identifier.

2. Aggregating data from across the Federal agencies and establishing a single Web-based interface for data collection.
3. Improving information tools for regulated chemicals.

ES.5 Modernizing Policies and Regulations

EO 13650 directed the Working Group to modernize key policies, regulations, and standards. In support of this requirement, the Working Group reviewed existing programs, recommendations from the safety and security communities, and feedback from the EO listening sessions, as well as investigative reports of major incidents. From this review, the Working Group published a preliminary list of options for improving chemical facility safety and security for stakeholder comment.

Stakeholder Input

Many stakeholders expressed the need to modernize policies and regulations, while others said the focus should be on better enforcement of existing standards. Some industry groups expressed their belief that no new regulations are necessary. Opinions varied greatly on topics such as safer alternatives, information sharing, emergency planning, and enhanced coverage of ammonium nitrate.

Chemical facility workers, LEPCs, first responders, and professional associations suggested actions that could be taken by industry to increase safety and security in and around chemical facilities, including empowering workers and encouraging employee participation in all elements of process safety such as reporting programs (for near misses and process upsets), investigating accidental releases, and participating in process hazard analyses. There was agreement among facility owners and operators, plant workers, community members, environmental and union organizations of the importance of prevention of risks including the benefits of implementing safer alternatives where possible. There was, however, no consensus about the role of government in the implementation of safer alternatives.

Some stakeholders were concerned about how to address the proximity of chemical facilities to residents and sensitive populations such as schools and hospitals. Community residents expressed an interest in participating in citizen advisory groups to further engage in planning and prevention efforts, and influence any future policy or regulatory changes.

Actions Taken

The Working Group took a number of actions related to modernizing chemical facility safety and security policies and regulations, including:

1. The Working Group published a solicitation of public input on options for policy, regulation, and standards modernization.
2. OSHA published a Request for Information (RFI) on the agency's PSM standard and other related chemical standards to determine, among other things, whether these standards can, and should, be expanded to address additional regulated substances and types of hazards.

3. Working Group agencies, often with input from other stakeholders, also developed and disseminated various advisories or guidance materials across Federal program areas to inform and support communities, industries, and local officials.
4. EPA expanded its inspector training curriculum to include advanced process safety training courses in several key areas such as mechanical integrity codes and standards, root cause investigation, and human error prevention. Notably, prior to the issuance of the EO, EPA published revised guidance for RMP Inspectors to ensure employee representatives participate in all RMP inspections.
5. DHS conducted over 100 compliance assistance visits (CAVs) to date in FY 2014 to assist CFATS-regulated facilities in understanding and meeting the program's risk-based security standards.

Future Actions to Modernize Policies and Regulations

The Working Group identified ten priority action areas to modernize chemical facility safety and security policy and regulations, including:

1. Modernizing OSHA's PSM standard to improve safety and enforcement.
2. Modernizing EPA's RMP regulation.
3. Enhancing ammonium nitrate safety and security.
4. Promoting safer technology and alternatives.
5. Building a stronger CFATS program.
6. Developing guidance and outreach programs to help industry understand process safety and security requirements and best practices.
7. Working with States to improve Safe Drinking Water Act measures to prevent and prepare for chemical spills.
8. Working with Congress to strengthen and increase OSHA monetary and criminal penalties.
9. Working with Congress to pursue statutory amendment to the Safe Explosives Act.
10. Improving process for notification of stored explosives to fire authorities.

ES.6 Incorporating Stakeholder Feedback and Developing Best Practices

To gather the concerns of stakeholders, establish best practices, and collect lessons learned from a broad spectrum of stakeholders, the Working Group organized listening sessions around the Nation; held meetings with key State, local, and industry stakeholders; and established public dockets.

Stakeholder Input

Community partners expressed a strong desire for continued stakeholder engagement and a mechanism to share information in a simple, coordinated manner. Community residents and organizations believe they should be included in the majority of efforts described in the EO to ensure the local perspective is represented. They also want to share their perspectives on alignment with the Executive Order 12898 – *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*. Stakeholders promoted their best practices, including stewardship programs, safer alternatives, community engagement, and effective State and local planning efforts. Stakeholders believe there are lessons they can learn from one another, enabling all facilities around the Nation to be safer and more secure.

Actions Taken

The Working Group took a number of actions related to incorporating stakeholder feedback and developing best practices, including:

1. Solicited feedback via listening sessions, Webinars, meetings with stakeholder groups, attending stakeholder conferences and collecting information through public dockets, engaging nearly 1,800 participants across the country, and generating input from over 25 States.
2. Development and launch of an online repository such that stakeholders involved in chemical facility safety and security can submit and access best practices. The newly launched repository can be found at <https://www.llis.dhs.gov/topics/chemical-facility-safety-and-security>.

Future Actions to Incorporate Stakeholder Feedback and Develop Best Practices

The Working Group identified two priority action areas to ensure stakeholder feedback continues to be incorporated and best practices are shared, including:

1. Continue to solicit stakeholder feedback and conduct regular outreach as actions in this report are pursued.
2. Capture and share best practices with all stakeholders.

ES.7 Conclusion

Preparedness is an ongoing, evolving process. We hope to see the momentum established since the release of the EO carried forward through improved coordination structures, enhanced information sharing mechanisms and technologies, updated and streamlined regulations, and more effective enforcement of the Nation's laws.

Details and specific activities to be taken to accomplish the priority actions from the thematic areas are outlined in the Federal Action Plan section that follows and are further detailed in the report. Many of these actions have already been put in place or will be instituted in the next year, while the success of other improvements relies on longer-term planning, coordination, and action.

In collaboration with the many partners referenced throughout this report, we will continue to work together to increase the safety and security of chemical facilities, of the workers who are

the lifeblood of the industry, and of the surrounding communities. It is a shared commitment, and every stakeholder has an important role to play in chemical facility safety and security. We are striving to improve safety and security of chemical facilities with our partners on behalf of the American public.

Federal Action Plan

The Working Group established an action plan focused on improving the safety and security of chemical facilities. These actions are described in depth in the report.

Strengthening Community Planning and Preparedness

| 1. Strengthening State Emergency Response Commission (SERC), Tribal Emergency Response Commission (TERC), Local Emergency Planning Committee (LEPC), and Tribal Emergency Planning Committee (TEPC) |
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| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Work with SERCs and TERCs to develop on-line training on the key requirements under Emergency Planning and Community Right-to-Know Act (EPCRA) including supervising and coordinating the activities of LEPCs/TEPCs and collecting, managing, using, and making available chemical information. • Develop guidance and training for, and hold regional workshops with, LEPCs and TEPCs to reinforce their authorities, roles, and responsibilities and to identify barriers to meet their requirements for development and implementation of local emergency response plans, including ways to engage and solicit chemical facility involvement in the emergency planning process. • Offer Webinars and other communication tools to promote LEPCs and TEPCs use of the Comprehensive Preparedness Guide 101(CPG 101), Version 2.0 <i>Developing and Maintaining Emergency Operations Plans</i>. • Coordinate with local jurisdictions to expand the public notification of incidents at local chemical facilities via the Integrated Public Alert and Warning System (IPAWS). • Add layers of data to the Department of Homeland Security (DHS) Infrastructure Protection Gateway for LEPCs/TEPCs and SERCs/TERCs to identify regulated and unregulated facilities on a map. • Distribute explosives licensee and permittee contact information to vetted members of the SERCs who have explosives storage in their jurisdiction. • Leverage industry associations to provide their members with information on EPCRA roles and responsibilities and share best practices for facility involvement with LEPCs and TEPCs. • Strengthen technical assistance and guidance to LEPCs and TERCs throughout the Nation to help local and tribal emergency planners understand and use chemical facility information to help better protect communities. • Share certain data elements of CFATS, RMP, PSM, and MTSA data with first responders, State agencies, TEPCs, and LEPCs. |
| Medium Term (prior to the end of FY2016) |
| <ul style="list-style-type: none"> • Develop a compendium of successful best practices for LEPCs and TEPCs on implementing chemical emergency prevention, preparedness, and response programs. • Update National Response Team (NRT) guidance for developing and reviewing Hazardous Materials Emergency Plans based on lessons learned and new technologies. • Launch an initiative to connect Federal- and State-level subject matter experts to LEPCs and TEPCs to provide technical assistance on access and use of the various chemical regulatory databases. |
| 2. Improving First Responder and Emergency Management Preparedness and Response Training |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Compile on the Executive Order (EO) Website a list of specific chemical safety and security trainings for first responders and emergency planners. • Hold public meetings to gather stakeholder input as Occupational Safety and Health Administration (OSHA) considers developing a new comprehensive emergency response and preparedness standard to integrate requirements of existing OSHA standards. • Work with Congress to ensure all emergency responders - whether private sector, public |

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| employees, or volunteers - receive equal coverage under workplace safety and health standards, taking into account economic feasibility. |
| 3. Identifying and Coordinating Resources for SERCs, TERCs, LEPCs, and TEPCs to Sustain Planning and Response Efforts |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Compile preparedness funding information sources on the Chemical EO Website. • Encourage SERCs and LEPCs to work with the State Administrative Agency to ensure the “Hazardous Chemical Release (accidental)” threat is appropriately captured and prioritized in the Threat and Hazard Identification and Risk Assessment (THIRA) process to improve capabilities and resource requirements necessary to address risks such as chemical hazards and incidents. |
| Medium Term (prior to the end of FY2016) |
| <ul style="list-style-type: none"> • Provide a compendium of resources (e.g., grants, technical assistance, fee systems, mutual aid opportunities, private sector funding) and best/successful practices for funding and support and provide this to SERCs, TERCs, LEPCs, and TEPCs by the end of FY2015. |
| 4. Expanding Tools to Assist SERCs, TERCs, LEPCs, and TEPCs in Collecting, Storing, and Using Chemical Facility Information |
| Medium Term (prior to the end of FY2016) |
| <ul style="list-style-type: none"> • Improve the Computer-Aided Management of Emergency Operations (CAMEO) suite to expand analytical capability and promote information sharing. • Develop and provide a complete Web-based version of CAMEO that States can host on their own servers. |
| 5. Enhancing Awareness and Increasing Information Sharing with Communities around Chemical Facilities |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Develop and issue recommendations for how facilities, local emergency planners, and State officials could share information to improve emergency planning, preparedness, and prevention at all levels, including communities. • Work to share additional data, including specific elements of Risk Management Program (RMP) data and Process Safety Management (PSM) and RMP violation information, with the general public. |

Enhancing Federal Operational Coordination

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| 1. Coordinating EO Implementation Activities |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Establish a Chemical Facility Safety and Security Executive Committee and a National Working Group that will (1) be responsible for Federal interagency coordination and collaboration on the implementation of the actions identified in this report, (2) maintain visibility on the progress being made in the Regional Working Group, and (3) provide assistance and support as needed. • Establish Chemical Facility Safety and Security Regional Working Groups that will be responsible for establishing and implementing a structure for regular briefings and feedback from all stakeholders regarding the actions identified in this report. • Ensure that Federal agencies engaged in the implementation actions are familiar with EO 12898 <i>Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations</i> within 6 months of the release of this report. |
| 2. Establishing Standard Operating Procedures (SOPs) for Federal Coordination at the National and Regional Levels |
| Medium Term (prior to the end of FY2016) |
| <ul style="list-style-type: none"> • Disseminate the templates of the SOPs developed from the New York-New Jersey Pilot and require that each Regional Response Team (RRT) develop SOPs tailored to their respective regions. Templates will be distributed within 90 days of this report and the remaining RRTs will develop their SOPs within 1 year. |

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| <ul style="list-style-type: none"> Expand the cross-training of field staff that is currently underway for DHS and United States Coast Guard (USCG) to include other regulatory programs. |
| 3. Training Federal Chemical Facility Safety and Security Regulatory Programs Field Personnel |
| Medium Term (prior to the end of FY2016) |
| <ul style="list-style-type: none"> Develop an interagency resource to describe Federal programs relevant to chemical facility safety and security and include key items each program considers its most frequent or critical violations. Expand the cross training of field staff that is currently underway for CFATS and MTSA to include other regulatory programs |

Improving Data Management

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| 1. Standardizing Data |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> Establish a dedicated cross-agency team of experts to begin work on developing a common facility identifier and data terminology within 30 days of this report. |
| 2. Aggregating Data from Across the Federal Agencies and Establishing a Single Web-Based Interface for Data Collection |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> Complete the exchange of relevant data among all Working Group members, in accordance with existing agency and/or program policies and requirements within 90 days of this report. |
| Medium Term (prior to the end of FY2016) |
| <ul style="list-style-type: none"> Use the Environmental Protection Agency's (EPA's) Facility Registry Service (FRS) as a central repository to link data from multiple agencies to assist with identifying noncompliant facilities and/or other potential compliance issues. Build the capability for each Agency's database to automatically share information with the FRS as new facility registration information is entered. This will allow each separate Agency's database to provide updates and receive new facility records in real time. The continual exchange of data among programs will provide a consolidated and comprehensive facility profile. Use FRS or other appropriate systems to increase information sharing from Federal regulatory programs with the public while maintaining the appropriate balance between safety and security. |
| 3. Improving Information Tools for Regulated Chemicals |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> Expand Substance Registry Services (SRS) to include Maritime Transportation Security Act (MTSA) and the Bureau of Alcohol, Tobacco, Firearms and Explosives' (ATF) List of Explosive Materials based on the needs of industry members, State and Federal regulators, and other stakeholders. Link agency systems to the records in the SRS to increase chemical regulatory awareness. |

Modernizing Policies and Regulations

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| 1. Modernizing OSHA's PSM Standard to Improve Safety and Enforcement |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> Clarify confusing and misunderstood policies. <ul style="list-style-type: none"> Revise the current interpretation of "retail facilities" based on comments received in OSHA's PSM Request for Information (RFI) process to more accurately reflect the original intent of the exemption as expressed in the PSM Preamble to the Final Rule. Revise the current interpretation of chemical concentrations covered by OSHA's PSM standard to more clearly describe what is covered and align with better established practices. As a next step towards developing a proposed rule to modernize the PSM standard, initiate the Small Business Regulatory Enforcement Fairness Act (SBREFA) review, in order to solicit small business views on modernizing the PSM standard. Based on information collected from the OSHA |

RFI and the EO Section 6 Options document, the PSM rulemaking will consider, among other things.

- Clarifying the PSM standard to incorporate lessons learned from enforcement, incident investigation, and advancements in industry practices, root cause analysis, process safety metrics, enhanced employee involvement, third-party audits, and emergency response practices.
- Addressing ammonium nitrate hazards through one or both of the following options: 1) covering reactive chemical hazards under the PSM 2) adding ammonium nitrate specifically to the PSM Appendix A highly hazardous chemicals list
- Adding substances or classes of substances to the PSM Appendix A List of Highly Hazardous Chemicals and providing more expedient methods for future updates.
- Expanding coverage and requirements for reactive chemical hazards, which have resulted in many incidents.
- Covering oil and gas drilling and servicing operations that currently are exempt from PSM coverage.
- Continuing harmonization with EPA's RMP regulation.
- Requiring analysis of safer technology and alternatives.
- Requiring coordination between chemical facilities and emergency responders to ensure that emergency responders know how to use chemical information to safely respond to accidental releases, possibly including exercises and drills.

2. Modernizing EPA's RMP Regulation

Short Term (within 1 year of this report)

- Gather further input through an RFI and begin regulatory process to modernize RMP by considering strengthening or clarifying existing requirements and adding new prevention and emergency response program elements. In addition to the potential addition and deletion of chemical hazards, this will include consideration of other potential improvements, including:
 - Revising mechanical integrity requirements of safety-related equipment.
 - Adding new requirements for automated detection and monitoring systems, or adding performance measures for facilities already using these systems.
 - Establishing an obligation to track and conduct root cause analyses of frequent process events and near misses.
 - Requiring employees to implement a stop work authority for employees who witness an activity that creates a threat of danger and providing clearly defined requirements to establish an ultimate authority on the facility for operational safety and decision making.
 - Strengthening contractor safety requirements.
 - Establishing mechanisms to implement the newest available technologies and methods.
 - Requiring compliance audits be done by an independent auditor.
 - Establishing new performance measurement and management review requirements.
 - Clarifying what is required in order for a process hazard analysis (PHA) to be updated and revalidated, requiring revalidating PHA more frequently than every 5 years, and requiring certain events such as an incident to trigger PHA revalidations prior to the next scheduled 5-year revalidation.
 - Clarifying emergency planning requirements to ensure effective coordination with community responders and ensuring facility personnel practice the plans.
 - Enhancing disclosure of key elements of a facility's risk management plan and program from facilities to improve community understanding of chemicals.
 - Incorporating examination of the use of safer technology alternatives into the PHA.
 - Using the Acute Exposure Guideline Levels (AEGLs) developed by the NAC for Acute Exposure Guideline Levels for Hazardous Substances (NAC/AEGL Committee) to recalculate RMP reporting thresholds and toxic endpoints for offsite consequence analyses.

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| 3. Enhancing Ammonium Nitrate Safety and Security |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> Review comments from the OSHA RFI and determine whether ammonium nitrate hazards should be addressed through one or both of the following options. <ul style="list-style-type: none"> Updating the 1910.109 standard based on the work of consensus standard organizations, such as National Fire Protection Association (NFPA), that are in the process of developing ammonium nitrate safe handling practices Covering ammonium nitrate in a more comprehensive PSM standard Form an OSHA Alliance with the fertilizer industry, emergency response organizations, and other Working Group Agencies to develop solutions to promote best practices for ammonium nitrate safety. Work closely to consider if additional EPA action is needed to complement OSHA ammonium nitrate safety regulations. Complete a final rule to implement the Secure Handling of Ammonium Nitrate provisions of the Consolidated 2008 Appropriations Act. Solicit feedback through a Chemical Facility Anti-Terrorism Standards (CFATS) Advance Notice of Proposed Rulemaking (ANPRM) on potential modification of the CFATS regulations to address ammonium nitrate. For example, consider lowering the current screening threshold quantities for ammonium nitrate under CFATS. Update the <i>Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate</i>. |
| 4. Promoting Safer Technology and Alternatives |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> Issue an alert on safer technology and alternatives and work with industries to publicize examples of best practices. |
| Medium Term (prior to the end of FY2016) |
| <ul style="list-style-type: none"> Develop voluntary guidance to make chemical operators aware of safer technology, processes, and alternative solutions to reduce the overall risk of their facilities. Based on experience with the alert, guidance, and public input, consider potential modification of RMP and/or PSM requirements to include specific safer alternatives analysis and documentation of actions taken to implement feasible alternatives. |
| 5. Building a Stronger CFATS Program |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> Solicit public comment on an ANPRM on potential updates to the list of chemicals of interest (COI) and other aspects of the CFATS regulation. Improve the methodology used to identify and assign risk tiers to high-risk chemical facilities. Coordinate chemical facility security activities and explore ways to increase harmonization among chemical facility security regulatory programs. Identify facilities that should have submitted a CFATS Top-Screen but failed to do so. Work with Congress to seek long-term CFATS authorization to ensure that an authority lapse does not occur and to provide regulated chemical facilities with the certainty they need as they consider making substantial capital investments in CFATS-related security measures. Work with Congress to pursue action to streamline the CFATS enforcement process to allow DHS, in extreme circumstances, to immediately issue orders to assess civil penalties or to close down a facility for violations, without having to first issue an order calling for correction of the violation. Work with Congress to pursue action to remove the Water and Wastewater Treatment Facilities Exemption from CFATS so that security at these facilities can be regulated. |
| 6. Developing Guidance and Outreach Programs to Help Industry Understand Process Safety and Security Requirements and Best Practices |
| Medium Term (prior to the end of FY2016) |
| <ul style="list-style-type: none"> Develop and publish an EPA alert to help improve public safety at oil and gas storage facilities where unauthorized public access has resulted in a number of fatal incidents. Develop an EPA and OSHA process safety terminology guidance. Develop a fact sheet on existing resources detailing how to conduct root cause analyses. Develop guidance for PSM at small businesses and storage facilities. |

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| <ul style="list-style-type: none"> • Consolidate best practices for process safety and metrics from OSHA Voluntary Protection Program (VPP) facilities. • Develop guidance for PSM at explosive facilities. • Develop best practice guidance for CFATS risk-based performance standards. • Develop a comprehensive regulatory fact sheet covering EPA, OSHA, and DHS programs, for State regulators, facilities, stakeholders, and other non-Working Group Federal agencies. • Develop a checklist of Federal Regulations in coordination with industry associations that stakeholders can use to determine regulations applicable to their facilities. • Develop best practice guidance for implementing the framework for improving critical infrastructure cybersecurity at chemical facilities. <ul style="list-style-type: none"> ◦ DHS will coordinate with industry to develop a voluntary guidance document for chemical facilities that increases awareness and use of the cybersecurity framework developed by the National Institute of Standards and Technology (NIST). • Work with standards-setting organizations to expand information sharing and provide other actions to enhance the safety and security of chemical facilities. |
| 7. Work with States to Improve Safe Drinking Water Act (SDWA) Measures to Prevent and Prepare for Chemical Spills |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Engage with State drinking water administrators to encourage them to revisit existing source water assessments, review and update existing plans using information available through the various chemical regulatory programs, and determine whether adequate warning, preparedness, and preventive measures are in place. |
| 8. Increasing OSHA Penalties |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Work with Congress to pursue action to strengthen the OSH Act's monetary and criminal penalties. |
| 9. Pursuing Statutory Amendment to the Safe Explosives Act (SEA) |
| Long Term (Beyond FY2016) |
| <ul style="list-style-type: none"> • ATF will work with Congress to explore whether Federal explosives laws should be amended to require submission of security information on workers who handle explosives but are not covered by existing laws, and to give ATF authority to conduct background checks in the same manner as currently allowed for employees. |
| 10. Improving Process for Notification of Stored Explosives to Fire Authorities |
| Long Term (Beyond FY2016) |
| <ul style="list-style-type: none"> • ATF will work closely with explosives industry associations to develop best practices, procedures, and/or regulations to improve communication with fire authorities. |

Incorporating Stakeholder Feedback and Developing Best Practices

| |
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| 1. Incorporating Stakeholder Feedback |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Conduct public Webinars in addition to routine stakeholder outreach to provide an update on actions identified in this report and an opportunity for feedback. • Maintain the EO docket for stakeholders to use for submitting feedback and comments. |
| 2. Capturing Best Practices |
| Short Term (within 1 year of this report) |
| <ul style="list-style-type: none"> • Use the newly established repository for capturing best practices, https://www.llis.dhs.gov/topics/chemical-facility-safety-and-security, to collect and share best practices for chemical safety and security. • Identify potential best practices through active engagement with stakeholders. • Compile the results and publish a compendium of best practices. |

Table of Contents

| | |
|---|-----------|
| 1. Introduction | 1 |
| 1.1. Methodology | 2 |
| 1.1.1. Coordination and Participation | 2 |
| 1.1.2. Stakeholder Engagement | 2 |
| 2. Chemical Facility Safety and Security | 5 |
| 2.1. Existing Chemical Facility Safety and Security Programs | 5 |
| 2.1.1. Programs to Prepare and Protect the Community | 5 |
| 2.1.2. Programs to Protect Workers | 8 |
| 2.1.3. Programs to Secure Facilities | 10 |
| 2.2. Actions Taken Following Executive Order 13650 Release | 11 |
| 3. Federal Plan of Action | 17 |
| 3.1. Strengthening Community Planning and Preparedness | 17 |
| 3.1.1. Strengthening SERCs, TERCs, LEPCs, and TEPCs | 18 |
| 3.1.2. Improving First Responder and Emergency Management Preparedness and Response Training | 20 |
| 3.1.3. Identifying and Coordinating Resources for SERCs, TERCs, LEPCs, and TEPCs to Sustain Planning and Response Efforts | 21 |
| 3.1.4. Expanding Tools to Assist SERCs, TERCs, LEPCs, and TEPCs in Collecting, Storing, and Using Chemical Facility Information | 22 |
| 3.1.5. Enhancing Awareness and Increasing Information Sharing with Communities around Chemical Facilities | 24 |
| 3.2. Enhancing Federal Operational Coordination | 25 |
| 3.2.1. Coordinating EO Implementation Activities | 26 |
| 3.2.2. Establishing SOPs for Federal Coordination at the National and Regional Levels | 27 |
| 3.2.3. Training Federal Chemical Facility Safety and Security Regulatory Programs Field Personnel | 28 |
| 3.3. Improving Data Management | 28 |
| 3.3.1. Standardizing Data | 29 |
| 3.3.2. Aggregating Data from Across the Federal Agencies and Establishing a Single Web-Based Interface for Data Collection | 31 |
| 3.3.3. Improving Information Tools for Regulated Chemicals | 32 |
| 3.4. Modernizing Policies and Regulations | 32 |

| | | |
|-----------|---|-----------|
| 3.4.1. | Modernizing OSHA’s PSM Standard to Improve Safety and Enforcement..... | 33 |
| 3.4.2. | Modernizing EPA’s RMP Regulation | 34 |
| 3.4.3. | Enhancing Ammonium Nitrate Safety and Security..... | 36 |
| 3.4.4. | Promoting Safer Technology and Alternatives..... | 41 |
| 3.4.5. | Building a Stronger CFATS Program..... | 45 |
| 3.4.6. | Developing Guidance and Outreach Programs to Help Industry Understand Process Safety and Security Requirements and Best Practices | 47 |
| 3.4.7. | Work with States to Improve Safe Drinking Water Act (SDWA) Measures to Prevent and Prepare for Chemical Spills..... | 49 |
| 3.4.8. | Increasing OSHA Penalties..... | 49 |
| 3.4.9. | Pursuing a Statutory Amendment to the Safe Explosives Act (SEA) | 50 |
| 3.4.10. | Improving Process for Notification of Stored Explosives to Fire Authorities..... | 51 |
| 3.5. | Incorporating Stakeholder Feedback and Developing Best Practices..... | 51 |
| 3.5.1. | Incorporating Stakeholder Feedback | 51 |
| 3.5.2. | Capturing Best Practices | 52 |
| 4. | Conclusion | 57 |
| A | Appendix: Acronyms and Abbreviations | 59 |
| B | Appendix: Glossary of Terms | 63 |
| C | Appendix: Resources | 67 |
| D | Appendix: Significant Chemical Incidents | 71 |
| E | Appendix: Federal Standard Operating Procedure (SOP)..... | 75 |
| F | Appendix: Stakeholder Perspectives..... | 81 |
| G | Appendix: Safer Technology and Alternatives | 99 |

Table of Figures

| | |
|--|----|
| FIGURE 1.—Listening Session In-person Attendee Demographics..... | 4 |
| FIGURE 2.—CAMEO Model | 23 |
| FIGURE 3.—Coordination Structure for EO Implementation | 26 |
| FIGURE 4.—CFATS and RMP Facility Data Comparison | 30 |
| FIGURE 5.—Elements of Safer Technology and Alternatives | 41 |

Table of Tables

| | |
|--|----|
| TABLE 1.—Ammonium Nitrate-related Opportunities and Actions..... | 39 |
| TABLE 2.—Best Practices Continuum | 52 |
| TABLE 3.—Potential Topics for Best Practices | 55 |

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1. Introduction

Recent catastrophic chemical facility incidents in the United States prompted President Obama to issue Executive Order (EO) 13650 – *Improving Chemical Facility Safety and Security* – on August 1, 2013, to enhance the safety and security of chemical facilities and to reduce the risks of hazardous chemicals to owners and operators, workers, and communities.

Several hundred thousand facilities in the United States use, manufacture, and store chemicals, encompassing everything from petroleum refineries to pharmaceutical manufacturers to hardware stores. The U.S. chemical industry manufactures over 70,000 unique products, many of which are critical to the health, security, and economy of the Nation. The chemical industry employs nearly one million people and generates \$700 billion in revenue per year.¹

While chemicals and the facilities that manufacture, store, distribute, and use them are essential to our national economy as well as to the life, health, and well-being of people across the globe, the handling and storing of chemicals continue to present a risk that must be addressed to prevent tragedies such as the West, Texas, disaster (see insert box). In addition to the tragedy at the West Texas Fertilizer Company in West, Texas, in the last decade incidents in California, Louisiana, Texas, and Washington demonstrate a significant risk to the safety of American workers and communities. These events represent a small number of the many significant incidents that have occurred over recent years. Chemical incidents occur on an ongoing basis and millions of people are within vulnerable zones surrounding chemical facilities, where they may be impacted by a chemical incident. Further, a disproportionate segment of the population located close to chemical facility fence lines is economically disadvantaged and is often minority residents. While we can never fully eliminate risks at chemical facilities, stakeholders can take actions to further reduce and mitigate these risks.

The goals of this report are to (1) update the President and the Nation on accomplishments to date in improving chemical facility safety and security and (2) provide a plan of future actions for the Nation to address the President’s mandate to minimize chemical facility safety and security risks. This report is not, however, an endpoint. Rather, it envisions a path forward for

West, Texas, Fertilizer Incident

The West, Texas, disaster in which a fire involving ammonium nitrate at a fertilizer facility resulted in an explosion that killed 15 people, injured many others, and caused widespread damage, revealed a variety of issues related to chemical hazard awareness, regulatory coverage, and emergency response. The Working Group has outlined a suite of actions to address these issues, such as:

- Strengthening State and local capabilities
- Expanding tools to assist emergency responders
- Enhancing awareness and increasing information sharing with communities around chemical facilities
- Increasing awareness of chemical facility safety and security regulatory responsibilities
- Pursuing rulemaking options for changes to EPA, OSHA, and DHS standards to improve safety and security, including potential changes specific to ammonium nitrate

¹ U.S. Chemical Industry Statistical Handbook 2013, American Chemistry Council.

the Federal Government to continue to work with stakeholders to improve chemical facility safety and security. As part of this continued activity, the Working Group will organize several listening sessions to provide updates and receive feedback on ongoing activities stemming from the EO. The Working Group also will continue to maintain the EO docket for stakeholders to use for submitting feedback and comments.

1.1. Methodology

1.1.1. Coordination and Participation

The EO called upon executive departments and agencies with responsibility for addressing chemical facility safety and security to come together to form an interagency Chemical Facility Safety and Security Working Group (Working Group). This Working Group, co-chaired by the Department of Labor (DOL), the Environmental Protection Agency (EPA), and the Department of Homeland Security (DHS), also includes representation from the Department of Justice (DOJ), the Department of Agriculture (USDA), and the Department of Transportation (DOT). The Working Group met on a bi-weekly basis with senior leadership at the Assistant Secretary-level or above representing each agency.

To effectively address the EO goals, the Working Group established several sub-groups that brought together subject matter experts to address specific issues. In consultation with stakeholders, these agency sub-groups developed actions in alignment with the President's intentions.

1.1.2. Stakeholder Engagement

EO implementation efforts built on existing engagement with chemical facility safety and security stakeholders. To gather the concerns of stakeholders, establish best practices, and collect lessons learned from a broad spectrum of stakeholders,² the Working Group organized listening sessions around the Nation; held meetings with key State, local, and industry stakeholders; and established public dockets. To date, the EO stakeholder engagement efforts received numerous submissions to the public dockets, and nearly 1,800 people participated in listening sessions and Webinars. Participants representing over 25 States provided input into the EO process.

² Specifically, the EO directed the Working Group to “convene stakeholders, including chemical producers, chemical storage companies, agricultural supply companies, State and local regulators, chemical critical infrastructure owners and operators, first responders, labor organizations representing affected workers, environmental and community groups, and consensus standards organizations.”

1.1.2.1. Website and Public Dockets

To maximize the reach of the Working Group, the Occupational Safety and Health Administration (OSHA) established a Chemical EO Webpage, located at <https://www.osha.gov/chemicalexecutiveorder>, to coordinate EO documents, resources, and announcements. The Chemical EO Webpage houses information on the EO, including publications of final EO-related products and information on accessing the public dockets. Going forward, the Working Group will continue to use the Webpage for updates on the action plan and to collect resources and information associated with the EO. The Working Group dockets³ allowed for online submissions of comments, which provided both general comments on improving chemical facility security and safety and specific feedback on how to modernize policies, regulations, and standards. The Working Group maintains one open docket to continue to collect feedback on EO implementation efforts, available at <http://www.regulations.gov/#!documentDetail;D=DHS-2013-0075-0001>.

1.1.2.2. Listening Sessions and Interactive Webinars

Since the signing of the EO on August 1, 2013, the Working Group has held a dozen listening sessions, supplemented by two interactive online Webinars. The Working Group selected listening session locations to reach as many stakeholders as possible. Listening sessions were held during day and evening hours to maximize participation from workers and community residents. The Working Group used this time with stakeholders to relay information on EO progress, provide updates on specific initiatives, and listen to specific concerns and suggestions from those directly involved with, and potentially impacted by, chemical facility safety and security incidents. Appendix F provides a summary of the feedback that the Working Group received from the listening sessions, docket submissions, and Webinars. FIGURE 1 provides the listening session attendee demographics.

Stakeholder listening sessions were held in:

- Baton Rouge, LA
- Houston, TX
- Los Angeles, CA
- Newark, NJ
- Orlando, FL
- Sacramento, CA
- Springfield, IL
- Texas City, TX
- Washington, DC

In addition to the listening session Webinars, EPA sponsored three community Webinars focused on providing technical assistance to aid them in participating in the public comment process.

³ Three dockets were associated with the Chemical EO effort, including: one docket for the listening sessions, one for Section 6a of the EO, and one for the OSHA RFI that focused on EO Section 6e. All docket information is available via the Chemical EO Website or at <http://www.regulations.gov/#!docketDetail;D=DHS-2013-0075> and <http://www.regulations.gov/#!docketDetail;D=OSHA-2013-0020>;

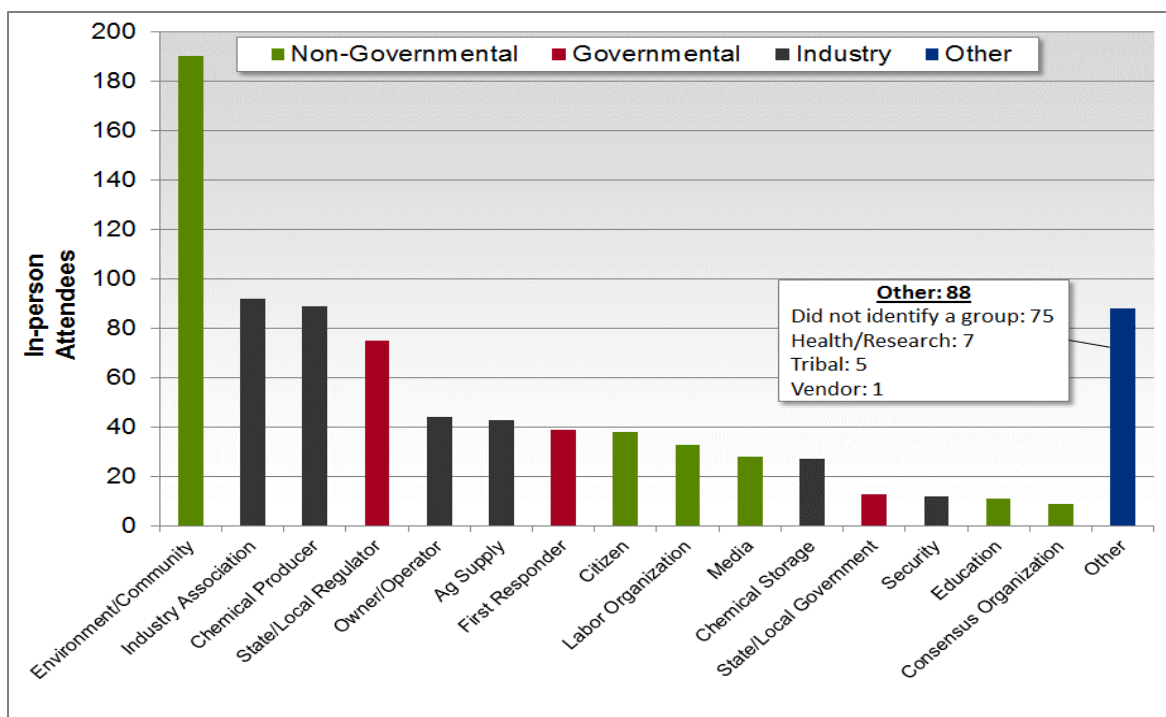


FIGURE 1.—Listening Session In-person Attendee Demographics.

1.1.2.3. Directed Stakeholder Outreach and Inquiry

Working Group representatives attended a number of meetings with stakeholders across the country in addition to the listening sessions. Many meetings were part of previously scheduled conferences organized by a variety of stakeholders, such as industry, State and local emergency response officials, environmental justice communities, and National Infrastructure Protection Plan coordination councils (e.g., Chemical, Oil and Natural Gas, and Emergency Services Sectors). In some cases, the Working Group met with stakeholders in conjunction with a listening session. These additional meetings were helpful in receiving feedback on complex issues that may have only been familiar to specific stakeholders.

2. Chemical Facility Safety and Security

2.1. Existing Chemical Facility Safety and Security Programs

2.1.1. Programs to Prepare and Protect the Community

As a result of devastating oil spills and chemical incidents over the last 45 years, several national oil and chemical incident prevention, preparedness, and response programs (based on legislation and regulation) were established and implemented to protect communities, workers, and the environment.

Highlighted EPA Regulations:

- Risk Management Program (RMP) (40 CFR 68)
- Emergency Planning and Community Right-to-Know Act (EPCRA) regulations (40 CFR 350-372)

The first step in protecting communities came in 1968 with the development and publishing of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300), more commonly called the National Contingency Plan (NCP). The NCP is the Federal Government's plan for responding to both oil spills and releases of hazardous substances. Federal departments and agencies use the NCP to help State and local officials protect public health and the environment during hazardous materials and oil spill emergencies. The intent of the NCP is to develop a national response capability and promote overall coordination among the emergency response organizations and response or contingency plans.

The NCP establishes three organizational levels: National Response Team (NRT), Regional Response Teams (RRTs), and On-Scene Coordinators (OSCs). The NRT's membership represents 15 Federal agencies⁴ that have responsibilities, interest, and expertise in various aspects of emergency response to oil spill and hazardous substances incidents. The NRT provides policy guidance prior to an incident and can provide assistance during an incident if requested by an OSC or RRT. There are 13 RRTs that have both preparedness and response roles, and each RRT maintains a Regional Contingency Plan for responding to incidents under the NCP. The RRTs include Federal and State agency representatives and are available during incidents to provide assistance to OSCs. Often RRT meetings are open to the public and routinely involve private sector partners, nonprofit organizations, and community representatives.

Following the 1984 release of approximately 40 tons of methyl isocyanate into the air in Bhopal, India, that killed over 3,700 people and the 1985 leak of 500 gallons of aldicarboxime from a Union Carbide facility in Institute, West Virginia, Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA) in October 1986. The purpose of EPCRA is twofold: to encourage and support emergency planning efforts at the State and local levels and to provide

⁴ The 15-member agencies of the NRT include the Department of Commerce/NOAA, Department of Defense, Department of Energy, Department of Health and Human Services, Department of the Interior, DOJ, DOL, DOT, EPA, Federal Emergency Management Agency (FEMA), General Services Administration, Nuclear Regulatory Commission, Department of State, USCG, and USDA.

the public and local governments with information concerning potential chemical hazards present in their communities.

EPCRA created State and local infrastructure designed to (1) prepare for and mitigate the effects of a chemical incident and (2) ensure that information on chemical risks in the community is provided to the first responders and the public. These State and local entities are the State Emergency Response Commissions (SERCs), Tribal Emergency Response Commissions (TERCs), Local Emergency Planning Committees (LEPCs), and Tribal Emergency Planning Committees (TEPCs). Representatives on the LEPCs include local officials and planners, facility owners and operators, first responders, health and hospital personnel, environmental groups, and citizen/members of the public. A central requirement of LEPCs and TEPCs is to develop a local emergency response plan.

These plans are required to: identify facilities and transportation routes of extremely hazardous substances and assess the risk based on chemical information from facilities; describe onsite and offsite emergency response procedures; designate a community coordinator and facility emergency coordinator(s) to implement the plan; describe emergency notification procedures; describe how to determine the probable affected area and population by releases (including identification of critical community receptors and assets); describe the local emergency equipment and facilities and the persons responsible for them; describe the evacuation plans; identify the training program for emergency responders (including schedules); and identify the methods and schedules for exercising emergency response plans. There are approximately 3,500 established LEPCs; however, continual reductions in local budgets and overall support of SERCs, TERCs, LEPCs, and TEPCs have led to some LEPCs becoming less active and less robust entities.

Among the active SERCs, TERCs, and LEPCs, facility representative participation has also become less active. This has resulted in reduced hazard assessment, planning, and exercising at the local level, leaving local communities less prepared to mitigate risks and respond to chemical incidents.

Under the community right-to-know section of EPCRA, certain facilities that manufacture, process, or store any hazardous chemicals are required to submit a safety data sheet (SDS) or list of hazardous chemicals, grouped into hazard categories, to SERCs, TERCs, LEPCs, TEPCs, and local fire departments. Under the Hazard Communication Standard, OSHA requires SDSs that describe the properties, hazards, and health effects of these chemicals as well as emergency response procedures and appropriate personal protection equipment. Facilities must also report inventories of all onsite chemicals for which SDSs are required that are stored above reporting threshold quantities to SERCs, LEPCs, and local fire departments. LEPCs must use information about chemical inventories at facilities and SDSs in developing their local emergency plans; this information must also be available to the public.

EPCRA reporting provides SERCs, TERCs, LEPCs, TEPCs, and fire departments with hazardous chemical inventory and health and safety information from approximately 390,000 facilities. To assist these entities in collecting, managing, and using this information, EPA and the National Oceanic and Atmospheric Administration (NOAA) worked together to create

Computer-Aided Management of Emergency Operations (CAMEO), a system of software applications used to plan for and respond to chemical emergencies. CAMEO assists front-line chemical emergency planners and responders to access, store, and evaluate information critical for developing emergency plans. There are four integrated programs within CAMEO, including data management, chemical awareness, hazardous modeling, and geospatial analysis. Since its development in the late 1980s, CAMEO has been continuously updated and revised to provide improved data management, modeling, and mapping capabilities

Despite information sharing and preparedness efforts under EPCRA and the chemical industry and professional organizations' work to institute chemical process safety management at facilities and to coordinate emergency preparedness and response through local stewardship programs, major chemical incidents continued to occur. In response, the Clean Air Act Amendments of 1990 incorporated mandates for OSHA and EPA to establish regulatory programs to prevent catastrophic chemical incidents that could affect workers, the public, or the environment. EPA promulgated the Risk Management Program (RMP) regulation and OSHA promulgated the **Process Safety Management (PSM) standard** to protect workers and to reduce chemical risk at the local level.

The RMP regulation requires an owner or operator of a facility that manufactures, uses, stores, or otherwise handles certain listed flammable and toxic substances to develop a risk management program that includes a hazard assessment (including an evaluation of worst-case and alternative accidental release scenarios that identify the zones around a facility potentially affected by a release), chemical incident prevention mechanisms, and emergency response measures. Facilities submit information regarding their risk management program (i.e., the risk management plan) to EPA, which then provides this plan to the SERCs, TERCs, TEPCs, LEPCs, first responders, and the public.⁵ The RMP information builds upon EPCRA chemical information and helps local fire, police, and emergency response personnel prepare for and respond to chemical incidents, while allowing citizens to further understand chemical hazards in their communities.

EPA conducts approximately 450 RMP inspections per year. There are approximately 12,700 RMP facilities. These facilities reported, on average, about 253 incidents per year over the time period 2000–2009 (latest year with most complete data set), compared to an average of 420 per year for the years 1996–1999. These RMP incidents resulted in deaths, injuries, or significant property damage on site or known offsite deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage.

While the drop in incident rate after the implementation of the RMP regulation is promising, chemical incidents continue to occur at facilities both regulated and not regulated by RMP. Thus, steps could be taken to improve implementation of the RMP program, including additional inspections and technical assistance, to further reduce chemical incidents. Consideration could

⁵ Federal, State, and local emergency organizations and qualified researchers can access complete RMPs (offsite consequence analysis [OCA] data included) by registering with EPA. RMPs without OCA data are available to the public through Freedom of Information Act requests; RMPs with OCA data are available to the public in Federal Reading Rooms.

also be given to expanding the RMP program to cover additional hazards and chemicals in helping prevent chemical incidents.

2.1.2. Programs to Protect Workers

The Occupational Safety and Health Act of 1970 (OSH Act) created OSHA to assure safe and healthful working conditions for working men and women by setting and enforcing standards and providing training, outreach, education, and assistance.⁶ The OSH Act covers most private sector employers and their workers. State and local government workers are excluded from Federal coverage under the OSH Act. However, States operating their own State workplace safety and health programs under plans approved by the U.S. DOL cover most private sector workers and are also required to extend their coverage to public sector (State and local government) workers in the State.

Highlighted OSHA Regulations:

- Process Safety Management (PSM) (29 CFR 1910.119)
- Explosives and Blasting Agents (29 CFR 1910.109)
- Emergency Action Plans (29 CFR 1910.38)
- Flammable and Combustible Liquids (29 CFR 1910.106)

Under the authority of the OSH Act, OSHA has issued several standards designed to protect workers and to reduce risk associated with hazardous chemicals. In addition, the General Duty Clause of the OSH Act, Section 5(a)(1), requires employers to provide its employees with a workplace free from recognized hazards that are causing, or are likely to, cause death or serious physical harm.

OSHA's PSM standard, mandated by the Clean Air Act Amendments of 1990 and issued in 1992, sets requirements for the management of highly hazardous substances to prevent and mitigate hazards associated with catastrophic releases of flammable, explosive, reactive, and toxic chemicals that may endanger workers. The PSM standard covers the manufacturing of explosives and processes involving threshold quantities of flammable liquids and flammable gasses, as well as 137 other highly hazardous chemicals.

OSHA's Explosive and Blasting Agents standard (29 CFR 1910.109) sets requirements for manufacturing, keeping, having, storing, selling, transporting, and using explosives, blasting agents, and pyrotechnics. The standard also states that the manufacturing of explosives and pyrotechnics shall also meet the requirements of PSM. The standard specifically covers ammonium nitrate storage in paragraph (i), describing requirements for general storage, bulk storage, contaminants, electrical protection, and fire protection.

OSHA's Flammable and Combustible Liquids standard (29 CFR 1910.106) is primarily based on the National Fire Protection Association's (NFPA's) publication NFPA 30, *Flammable and Combustible Liquids Code*. The standard applies to the handling, storage, and use of

⁶ In addition, Section 18 of the OSH Act allows States to create their own occupational safety and health programs. Upon approval by OSHA, States then assume all authority for occupational safety and health hazards covered by their State plan. Currently, there are 27 States and territories that operate their own State plans.

flammable and combustible liquids with a flash point below 200°F. There are two primary hazards associated with flammable and combustible liquids: explosion and fire. To help prevent these hazards, this standard addresses the primary concerns of design and construction, ventilation, ignition sources, and storage.

OSHA has several standards associated with emergency response: 1910.38 **Emergency Action Plans**, 1910.156 **Fire Brigade**, and 1910.120 **Hazardous Waste Operations and Emergency Response** (HAZWOPER).

Employers with hazardous materials may choose to (1) comply with the emergency response requirements of the HAZWOPER standard when a release of hazardous chemicals is a threat at their facilities or (2) totally evacuate all workers from their facility during a release. Employers who choose total evacuation are exempt from HAZWOPER requirements if they have an emergency action plan that meets 1910.38. OSHA's Fire Brigade standard contains requirements for the organization, training, and personal protective equipment of fire brigades established by employers.

HAZWOPER applies to private sector employers. In States that have delegated OSHA programs, State and local government employees are covered by HAZWOPER and enforced by State OSHA programs. However, coverage of volunteers in OSHA State-delegated programs is based on each State's individual law; some States provide no coverage for volunteers. EPA, under 40 CFR 311 is responsible for enforcing the OSHA HAZWOPER standard for public employees in Federal OSHA States (i.e., States without approved OSHA programs). EPA's regulation also covers volunteers who work for a Governmental agency engaged in emergency response, such as firefighters, in Federal OSHA States.

In addition to the tragedy at the West Texas Fertilizer Company in West, Texas, a number of incidents demonstrate a significant risk to the safety of American workers and communities. On March 23, 2005, explosions at the BP Refinery in Texas City, Texas killed 15 and injured more than 170. On April 2, 2010, an explosion and fire at the Tesoro Refinery in Anacortes, Washington killed seven. On August 6, 2012, the Chevron Refinery in Richmond, California, experienced a catastrophic pipe failure that released flammable process fluid, forming a large vapor cloud that engulfed 19 Chevron employees and ignited. All employees avoided serious injury, but the subsequent fire resulted in a large plume of highly hazardous chemicals that traveled across the Richmond, California area. Nearly 15,000 residents sought medical treatment due to the release. On June 6, 2013, a fire and explosion at Williams Olefins in Geismar, Louisiana killed two and injured many more. These incidents represent a small number of the significant incidents that have occurred over the years and demonstrate a significant risk to the safety of Americans workers and communities.

Using information and feedback from the EO process, OSHA laid out an action plan in this report to help reduce risk and better protect workers from hazards associated with incidents like those described above.

2.1.3. Programs to Secure Facilities

The Chemical Facility Anti-Terrorism Standards (CFATS) program, established in 2007, has helped make the Nation more secure by identifying and regulating high-risk chemical facilities⁷ to ensure they have security measures in place to reduce the risks associated with their possession of chemicals of interest (COI). CFATS also played a role in reducing the number of facilities storing threshold quantities of COI. More than 3,000 facilities have eliminated, reduced, or modified their holdings of certain COI. This significant reduction in the number of chemical facilities representing the highest risk is an important indicator of the success of the CFATS program.

Highlighted DHS and DOJ Regulations:

- CFATS (6 CFR 27)
- Maritime Transportation Security Act (MTSA) (33 CFR 105)
- Federal Explosives Law and Regulations (18 U.S. Code Chapter 40, 27 CFR 555)

The cornerstone of the CFATS program in regulating the security of high-risk chemical facilities is the development, submission, and implementation of Site Security Plans (SSPs) (or Alternative Security Programs in lieu of SSPs), which document the security measures high-risk chemical facilities use to satisfy the applicable risk-based performance standards (RBPS) under CFATS. It is important to note that these plans are not “one-size-fits-all,” but in-depth, highly customized, and dependent on each facility’s unique circumstances.

Since DHS began collecting this information in 2007, there are data from more than 48,000 Top-Screens⁸ submitted by chemical facilities, providing important information about their chemical holdings. Based on the information received in the Top-Screens, DHS identified more than 8,500 facilities that were initially designated as high-risk facilities and potentially regulated by CFATS. These facilities compiled and submitted security vulnerability assessments (SVAs), which DHS uses to identify facilities presenting a sufficiently high security risk to warrant assigning a final tier under CFATS. Today, CFATS covers approximately 4,200 high-risk facilities nationwide and DHS has inspected over 1,000 sites and approved over 750 SSPs.

Chemical inspectors for the CFATS program provide assistance and outreach directly to facilities. At any point in the process, a facility can request a Compliance Assistance Visit (CAV) to provide support in preparing the security-related documentation required under CFATS. To date, CFATS chemical inspectors have participated in more than 5,260 meetings with Federal, State, and local officials and have held more than 4,680 introductory meetings with owners and operators of CFATS-regulated or potentially regulated facilities.

The United States Coast Guard (USCG) carries out and enforces the provisions of the Maritime Transportation Security Act (MTSA). The main features of MTSA require developing a national maritime transportation security plan, conducting security assessments, developing area maritime

⁷ Chemical facilities that present a high level of security risk.

⁸ Facilities that manufacture, use, store, or distribute certain chemicals above a specified quantity are required to complete and submit data through the Top-Screen process to determine if they present a high level of security risk.

security plans, and introducing measures to minimize the consequences of a transportation security incident. MTSA also requires facility and vessel owner/operators to define their security organizational structure, designate a facility security officer, conduct a security assessment, develop a security plan, and ensure that the facility or vessel operates in compliance with the plan. The USCG has designated certain hazardous chemicals as certain dangerous cargoes (CDCs), and facilities that store or vessels that transport CDCs are subject to additional security requirements.

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) is responsible for enforcing Federal explosives laws that govern commerce in explosives in the United States, including licensing, storage, recordkeeping, and conduct of business. ATF conducts inspections of Federal explosives licensees who manufacture, import, sell, or store explosives in the United States to ensure that explosives are managed in accordance with Federal law. In fiscal year 2013, ATF conducted 3,867 explosives inspections, resulting in approximately 318 reports of violations.

2.2. Actions Taken Following Executive Order 13650 Release

This report is not a starting point; nor is it an end point. The Working Group and its respective agencies recognize the need to enhance chemical facility safety and security and, since West, Texas, have been hard at work on numerous fronts. The Working Group has implemented the following actions since the release of the EO:

Strengthening Community Planning and Preparedness

- *Assisted First Responders* – DHS and EPA met with LEPCs and first responders across the country. These meetings enabled first responders to identify and discuss potential methods to increase their preparedness and to share lessons learned. For example, DHS participated in a series of meetings hosted by the State of Missouri Emergency Response Commission, where field personnel briefed local and State entities on chemical regulatory programs and reporting requirements.
- *Upgraded Emergency Planning and Response Tools* – EPA continued to upgrade its CAMEO suite of applications, available on line to emergency planners, first responders, and the general public. Upgrades to date include:
 - Listing additional chemical combinations allowing for more thorough information and analysis to be shared.
 - Integrating the air-dispersion model with NOAA's model to provide an additional level of accuracy.
 - Expanding the facility module to make it easier for submitters to have more accurate and complete submissions.

EPA plans additional upgrades described in Section 3.1.4.

- *Identified Planning and Preparedness Funding Sources* – Federal Emergency Management Association (FEMA) engaged State administrative agencies to improve

awareness of available funding for risk-centric capabilities-based planning and preparedness training costs in the Fiscal Year 2014 Homeland Security Grant Program.

Enhancing Federal Operational Coordination

- *Launched Regional Pilot* – The Working Group coordinated a pilot in New York-New Jersey where a multi-agency Federal, State, and local government team⁹ was created to coordinate chemical facility preparedness planning and response activities. The pilot used the existing RRT structure to (1) explore innovative approaches to collecting, storing, and using facility information, engaging stakeholders, and coordinating inspection planning and (2) identify sustainable, structural changes that can be made to facilitate the implementation of those approaches. The pilot accomplished its goals in less than a year of operation and developed products that will be used across the country. Highlights of the pilot include:
 - **Development of a standard operating procedure (SOP)** – The SOP presents (1) a unified Federal, State, tribal, and local approach for identifying, communicating, and responding to risks at chemical facilities and (2) a plan to improve operational coordination among the Federal, State, tribal, and local agencies and first responders and will assist agencies with implementation.
 - **Assessment of Information Collection and Sharing** – The pilot’s assessment of information collection and sharing will help ensure that the capabilities, limitations, and needs of the first responder community are understood at the Federal level. The pilot identified ways to ensure that State Homeland Security Advisors, SERCs, LEPCs, State regulators, and first responders have ready access to key information in a useful format to identify and respond to risks in chemical facilities.

One key lesson learned from the pilot was the desire for first responders to have access to violations found or enforcement actions provided to facilities. First responders believed that if they had two facilities in their jurisdiction determined to be of equal risk, but one facility had recently been cited by a regulatory agency, they would be more concerned with incidents at that facility until the appropriate corrective actions had been completed. This unique perspective was never raised in the other extensive outreach conducted by the Working Group.

The pilot identified improvements to information to be provided to first responders and technological solutions that can be applied to collecting and sharing of information. In some cases, information issues might be fundamental (e.g., information about the contents of railcars traveling through communities or the contents of pipelines transiting communities) while in other cases, concerns

⁹ Participants include: EPA, DHS (NPPD), USCG, Transportation Security Administration (TSA), FEMA, Pipeline and Hazardous Materials Safety Administration (PHMSA), OSHA, ATF, and multiple government offices from the State of New York, State of New Jersey, and New York City.

might center on how information is made available (e.g., Tier II¹⁰ reports or the chemical inventories may not be “user friendly” to firefighters). The pilot will help ensure that stakeholders (Federal, State, local, and tribal) have all the required information in the format most useful to them.

- **Improved Coordination** – Perhaps the greatest benefit from the pilot was the discussion of safety and security issues among all levels of government, the first responder community, and stakeholders. This interaction among the pilot participants resulted in better (1) working relationships, (2) understanding of agency programs, (3) coordination of work in the field, and (4) sharing of critical information and data. The stakeholders now have a clearer understanding of the information needs of the first responder community, both before and during an emergency response to a chemical facility. Solutions to these needs were identified and will be implemented through the SOP.

The pilot reached out to some of the more active LEPCs in New York and New Jersey and identified best practices to assist efforts to reinvigorate other LEPCs. The best practices focus on sharing Tier II data and critical information with the first responders before an incident, increasing meeting frequency, and updating/enhancing existing LEPC plans. The success of LEPC interaction is related to the availability of resources, both people and funding.

The pilot agencies have been conducting coordinated joint field work to validate the practices and procedures created through this effort. In March 2014, New Jersey led a four-day State inspection of an RMP facility that was observed by EPA inspectors. Going forward, Federal regulatory agencies plan to work closely with State regulators to observe how each party conducts its assessments and identifies potential best practices. There are plans to complete eight coordinated inspections in New York and New Jersey by June 2014.

- **Increased EPCRA Compliance** – Early on, the pilot agencies identified the need for Federal, State, and local partners to work together to increase industry’s compliance with EPCRA requirements. The State of New Jersey Department of Environmental Protection (NJDEP) provided EPA with a listing of over 200 facilities in New Jersey that had previously submitted a New Jersey Worker and Community Right-to-Know survey but did not submit that information for the 2012 reporting year (which was due March 1, 2013). Also, working with LEPCs in New York State, EPA conducted inspections at 68 facilities, and identified violations at four facilities. In New Jersey, EPA conducted inspections at approximately 30 facilities and identified violations at 13. On May 1, 2014, EPA issued a Notice of Violation to those 13 New Jersey facilities.

Since a new annual reporting deadline had been reached during this initiative, NJDEP searched its current database and provided EPA with a listing of 195

¹⁰ As required by EPCRA, Tier II Hazardous Chemical Inventory reports are submitted annually to SERCs, TERCs, LEPC, TEPCs, and fire departments by facilities that handle hazardous chemicals. These reports contain the quantity and location of each hazardous chemical at the facility.

facilities in New Jersey that had previously been filed under EPCRA, but did not file for the current reporting year (calendar year 2013, due date March 1, 2014). EPA wrote an informational or compliance letter, mailed on May 5, 2014, to those facilities. This letter laid out the EPCRA requirements and the State of New Jersey regulations under its Worker and Community Right to Know Act in order to assist these companies in determining if they were still required to file the annual chemical inventory surveys. In addition, EPA laid out the requirements of EPCRA Sections 302 and 303, which EPA does not have authority to enforce, but to which facilities are subject.

- **Additional Underway Actions** – Additional pilot program actions that are currently underway include, but are not limited to:
 - Developing SOPs on a variety of chemical facility preparedness planning and response activities, including:
 - Participation on a RRT
 - Joint drills and exercises
 - Improving coordination between Federal and State agencies on programs, roles, and contacts
 - Inter-agency inspection information, data requests, and database access
 - Revised inspection protocols
 - Incident commander standard for senior fire department personnel
 - Training standard for hazardous materials (HAZMAT) responders
 - Electronic Tier II data management
 - Developing an LEPC guide for high-risk facilities
 - Developing a multi-agency guide for inspecting high-risk facilities
- *Engaged Chemical Safety Board (CSB) to Improve Coordination* - The Working Group engaged the Chemical Safety Board (CSB) to identify possible updates to existing memoranda of understanding between CSB and EPA, CSB and the OSHA, and CSB and ATF and continue the discussion on improving information sharing and collaboration.

Improving Data Management

- *Shared Data to Identify Potentially Noncompliant Facilities* – DHS and EPA adopted new data-sharing procedures to identify facilities that, based on their required filings, could possess threshold levels of CFATS COI but have not yet filed required Top-Screen information with DHS or a required RMP with EPA.
- *Letters Sent to the Potentially Noncompliant Facilities* – DHS sent letters to the potentially CFATS noncompliant facilities identified in this effort, which resulted in submission of over 800 new Top-Screens. EPA also sent over 400 letters to Top-Screen submitters and identified approximately a dozen potentially noncompliant facilities. DHS

also exchanged data with ATF, which it is analyzing to determine if it could be used for a similar campaign to identify additional potentially noncompliant facilities.

- Additionally, DHS reached out to all State Homeland Security Advisors (HSAs), to review the CFATS program and their ability to access information on CFATS facilities within their jurisdictions. During these engagements, DHS requested, where available, lists from the States identifying chemical facilities operating within their jurisdictions. To identify facilities that potentially should have submitted a CFATS Top-Screen but failed to do so, DHS will compare the States' lists of facilities to the list of facilities that have submitted Top-Screens. The first comparison was conducted with data from the State of Texas in fall 2013, which resulted in the submission of 32 new Top-Screens.
- *Updated Online System to Assist Facility Compliance* – The EPA Substance Registry Services (SRS) assists facilities that possess chemical substances to determine their regulatory requirements by providing information about chemical substances tracked or regulated by EPA or other sources. It has been updated to include CFATS and PSM-covered substances, which allows facilities to be informed about potential regulatory coverage under PSM and CFATS in addition to a myriad of EPA regulatory programs.
- *Updated Online System for Facility Data* – Facility Registry Service (FRS) integrates facility data from across nearly 90 different Federal and State systems, allowing users to compare facilities between systems, including chemical data and compliance history. The FRS has been updated to include facilities that complete a DHS Top-Screen submission for CFATS, which allows Federal agencies to identify (1) facilities that are covered by multiple Federal regulatory entities and (2) potentially noncompliant facilities, often referred to as outliers.
- *Tested New Emergency Planning and Response Tools* – EPA Region 8 tested a new system called ER Planner that aggregates chemical facility and infrastructure data from various Federal and State databases and displays it on an interactive Geographic Information System (GIS) application. Accounts are provided to Federal, State, and local authorities, with appropriate permission levels for various data layers based on the user's need to know and ability to protect information. This information can be used for planning purposes as well as during actual responses. The ability to identify facilities, surrounding infrastructure, and potential impacts is critical to responders, communities, and facility owners and operators. ER Planner is still under evaluation.
- *Contacted Agriculture Associations* – DHS contacted 49 State agribusiness associations to identify potentially noncompliant facilities and to raise awareness about chemical facility security regulations. The State agribusiness associations represent crop nutrients, crop protection, and in some cases grain and feed, at the State and local level.

Modernizing Policies and Regulations

- *Gathered Public Input on Policy Revisions* – The Working Group issued a Solicitation of Public Input on Options for Policy, Regulation, and Standards Modernization in January 2014 and collected stakeholder input through a docket and public meetings.

- *Requested Public Input for OSHA Rulemaking* – OSHA published a Request For Information in the *Federal Register* on December 9, 2013, to begin the process of information collection needed to update the agency’s PSM standard and other related chemical standards and to determine whether these standards can, and should, be expanded to address additional regulated substances and types of hazards.
- *Clarified Existing OSHA Requirements for Ammonium Nitrate* – OSHA worked with the Agricultural Retailers Association and The Fertilizer Institute to distribute a letter to the fertilizer industry. The letter provided information on the applicability and requirements of 1910.109, Explosives and Blasting Agents standard, to ammonium nitrate storage.
- *Published Ammonium Nitrate Safety Advisory* – In August 2013 EPA, OSHA, and ATF published the *Chemical Advisory: Safe Storage, Handling and Management of Ammonium Nitrate*.¹¹ The advisory provided facilities, local communities, and first responders with information on the hazards of ammonium nitrate, how to manage these hazards, and appropriate steps for community emergency planning and proper emergency response.
- *Published LPG Advisory* – EPA published *Interim Chemical Accident Prevention Advisory Design of LPG Installations at Natural Gas Processing Plants* in January 2014. This advisory provided natural gas processing plants with awareness of the applicable standards and codes for safe design of these facilities.
- *Expanded EPA Inspector Training and Guidance* – EPA expanded its inspector training curriculum to include advanced process safety training courses in several key areas, including petroleum refineries, ammonia refrigeration systems, mechanical integrity codes and standards, root cause investigation, and human error prevention. EPA also published revised guidance for RMP inspectors to ensure employee representatives participate in all RMP inspections.
- *Conducted CAVs* – In FY 2014, DHS conducted over 100 CAVs to assist CFATS-regulated facilities in understanding and responding to their CFATS regulatory requirements, such as how to complete a Top-Screen, SVA, or SSP. CFATS inspectors conducted over 1,400 CAVs since the program’s inception. Additionally, in FY 2014, DHS participated in 500 outreach events.

Incorporating Stakeholder Feedback and Developing Best Practices

- *Launched an Online Best Practice Repository* – The Working Group developed a new Lessons Learned Information System (LLIS) online best practices repository¹² so stakeholders involved in chemical facility safety and security can submit potential best practices as they are identified.

¹¹ This advisory can be found at http://www.epa.gov/emergencies/docs/chem/AN_advisory.pdf

¹² <https://www.llis.dhs.gov/topics/chemical-facility-safety-and-security>

3. Federal Plan of Action

The Working Group developed a Federal Plan of Action that involves all chemical community stakeholders and recommends further activities to ensure improved chemical facility safety and security. The Working Group based the priority action items on a thorough analysis of the current operating environment, existing regulatory programs, and feedback provided by the chemical safety and security community.

The Plan of Action will continue to focus on the five thematic areas previously identified:

- Strengthening community planning and preparedness
- Enhancing Federal operational coordination and information sharing
- Improving data management
- Modernizing policies and regulations
- Incorporating stakeholder feedback and developing best practices

Still other chemical safety and security issues fall outside the scope of the EO and the Federal Plan of Action. A consistent theme heard throughout the outreach efforts was a concern over incidents involving the transport of hazardous materials and petroleum products and the effects these incidents have on communities. The Working Group will continue to coordinate actions with existing efforts in the Federal Government to address these transportation issues.

For the action items discussed in this report, the timelines reference initial implementation; actions will continue on a regular or recurring basis as appropriate.

3.1. Strengthening Community Planning and Preparedness

Hazardous chemicals are located in many types of facilities, ranging from traditional chemical manufacturers, warehouses, and distributors, to facilities not typically considered part of the chemical industry, such as food processors, hospitals, and universities. Facilities storing and using hazardous chemicals are found in all types of communities. Communities need to know where hazardous chemicals are used and stored, how to assess the risks associated with those chemicals, and how to ensure community preparedness for incidents that may occur. Communities also need to take into consideration local geographic and socioeconomic issues and address the needs of sensitive populations. These steps require a sound preparedness process. Communities prepare by using a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and correcting.



Based on input from stakeholders and agency experts, the Working Group developed a set of actions to improve community planning and preparedness.

3.1.1. Strengthening SERCs, TERCs, LEPCs, and TEPCs

Capabilities

Strengthening SERC, TERC, LEPC, and TEPC capabilities is critical to improving chemical facility safety and security. SERCs and TERCs are multi-stakeholder committees established by the Governor of the State to implement the EPCRA requirements for their State or tribal jurisdiction. LEPCs and TEPCs form the core entities driving community-level efforts to prepare for, respond to, and recover from a chemical incident. These organizations are the communities' first line of defense in promoting awareness of the risks associated with chemical storage and handling and fostering industry engagement in improving safe practices and corporate citizenship. Stakeholders' input highlighted disparities in the capacity of LEPCs and TEPCs to perform their role consistently from community to community. Successful LEPCs and TEPCs must have the capability to (1) analyze all the information they receive from regulated facilities in their community as well as other sources, (2) identify and prioritize the risks, and (3) develop a contingency plan to address those risks.

The Working Group, in collaboration with State, local, tribal, and territorial governments and private sector partners, is working to develop, re-energize, and enhance programs to assist SERCs, TERCs, LEPCs, and TEPCs in engaging fully in local emergency prevention and planning and management of the chemical risks in their communities. In particular, the Working Group has engaged organizations that directly represent, coordinate, engage, and/or educate members of the LEPC and TEPC community, such as the National Association of SARA Title III Program Officials. Additionally, the Working Group has engaged with trade associations representing a variety of industry entities that have expressed interest in working with stakeholders to improve the capacity of local planning organizations such as LEPCs and TEPCs. Using established relationships and communication channels with the associations to provide additional resources enables the relevant Federal agencies to more completely engage the LEPC/TEPC community.

Information Access

The Working Group recognizes the most helpful data elements for SERCs, TERCs, LEPCs, TEPCs, and first responders are facility name; facility location; name of chemicals; and quantity of chemicals. This information enables emergency planners to conduct an analysis to identify gaps and inconsistencies in their existing information that could reveal previously unknown risks in their communities. This information is already available via EPCRA reporting. The Working Group believes that in addition to required sharing of EPCRA, RMP, and PSM information, facilities should also share incident occurrence data with these organizations.

For facilities subject to EPCRA, the Working Group recommends they provide all available information regarding hazard analysis, efforts to reduce risk, and identification of potential

receptors in proximity to them to address LEPCs' need for such information to develop preparedness and response plans. Since some States have their own regulatory programs covering chemical facilities, the Working Group recommends that those States share facility information (for EPCRA Tier II and State-regulated facilities) along with chemical names and quantities with OSHA, EPA, and DHS¹³.

For information maintained by the Federal Government, the Working Group commits to working toward sharing additional data with the various stakeholder communities, including sharing certain data elements of CFATS, RMP, PSM, and MTSA data with first responders, State agencies, TEPCs, and LEPCs. Access to certain sensitive information such as RMP offsite consequence analysis (OCA) and portions of CFATS data will remain restricted to appropriately balance security risks.

In the year following the release of this report, the Working Group Agencies will:

- Work with SERCs and TERCs to develop on-line training on the key requirements for SERCs under EPCRA including supervising and coordinating the activities of LEPCs and collecting, managing, using, and making available chemical information.
- Develop guidance and training for, and hold regional workshops with, LEPCs and TEPCs to reinforce their authorities, roles, and responsibilities and identify barriers to meet their requirements for development and implementation of local emergency response plans, including ways to engage and solicit chemical facility involvement in the emergency planning process.
- Through existing communication channels, as well as Webinars, promote the use of FEMA's *Comprehensive Preparedness Guide 101 (CPG 101), Version 2.0 Developing and Maintaining Emergency Operations Plans* to support communities' all-hazards, all-threats emergency operations plans.
- Coordinate with local jurisdictions to expand the public notification of incidents at local chemical facilities via the Integrated Public Alert and Warning System (IPAWS).¹⁴
- Leverage industry associations to provide their members with information on EPCRA roles and responsibilities and share best practices for facility involvement with LEPCs and TEPCs.
- DHS will add two layers of data to the Infrastructure Protection Gateway.¹⁵ One layer will be available to the LEPCs and TEPCs and will identify regulated and unregulated

¹³ An additional way to strengthen SERCs, TERCs, LEPCs, TEPCs is to use information which exists in non-Federally regulated programs to support planning, preparedness, and prevention activities at the local level.

¹⁴ IPAWS provides public safety officials with an effective way to alert and warn the public about serious emergencies using the Emergency Alert System (EAS), Wireless Emergency Alerts (WEA), the National Oceanic and Atmospheric Administration (NOAA) Weather Radio, and other public alerting systems from a single interface.

¹⁵ Infrastructure Protection Gateway is a DHS system that contains a comprehensive set of critical infrastructure data, analytic tools, and assessment capabilities, that provides Federal, State, Local, Tribal, territorial officials and emergency response personnel access to information which can be used to answer key questions about the Nation's infrastructure.

facilities on a geospatial map and supply the facility name and address. A second layer will be available to SERCs and TERCs and will also provide chemical information. DHS currently shares CFATS data with Federal, State, territorial, and tribal agencies as well as State and local fusion centers.¹⁶

- ATF will distribute explosives licensee and permittee contact information to vetted members of the SERCs who have explosives storage in their jurisdiction for more informed community planning.
- Strengthen technical assistance and guidance to LEPCs and TERCs throughout the Nation to help local and tribal emergency planners understand and use chemical facility information to help better protect communities.
- Share certain data elements of CFATS, RMP, PSM, and MTSA data with first responders, State agencies, TEPCs, and LEPCs.

By the end of FY 2016, the Working Group plans to:

- Develop a compendium of best practices for LEPCs and TEPCs on implementing chemical emergency prevention, preparedness, and response programs, including mechanisms for accessing funding and establishing modern notification systems.
- Update NRT guidance for developing and reviewing Hazardous Materials Emergency Plans (NRT-1 and NRT-1a), resulting in stronger, well thought-out plans based on the latest lessons learned and new technologies over the past 25 years since implementing this program.
- Launch an initiative to connect Federal- and State-level subject matter experts to LEPCs and TEPCs to provide technical assistance on the information contained in, and how to access and use, the various chemical regulatory databases (e.g., SRS, FRS, RMP, CFATS).

3.1.2. Improving First Responder and Emergency Management Preparedness and Response Training

The West, Texas, disaster revealed the challenges and basic problems facing many emergency responders throughout the country who have insufficient access to tactical and planning information and HAZMAT readiness to respond effectively.

Furthermore, many emergency responders are left poorly protected by health and safety regulations that do not cover volunteers in many States. States with delegated OSHA programs must cover State and local government employees. EPA's regulations (40 CFR 311) require the

¹⁶ State and major urban area fusion centers (fusion centers) serve as focal points within the state and local environment for the receipt, analysis, gathering, and sharing of threat-related information between the Federal government and State, Local, Tribal, Territorial and private sector partners. <http://www.dhs.gov/state-and-major-urban-area-fusion-centers>

OSHA's HAZWOPER standard applies to public employees and volunteers, such as firefighters, in Federal OSHA States. However, coverage of volunteers in OSHA State-delegated programs is based on each State's individual law; some States provide no coverage for volunteers.

Consistent and comprehensive training of first responders who execute plans during a chemical incident is another area the Working Group identified as needing improvement. Stakeholders stated there is a lack of a coordinated approach to emergency preparedness and response training. For planning to be effective, responders must be trained to execute the local contingency plan, and the plan must be exercised regularly to identify areas for improvement and/or additional training needs.

In response to these findings, the Federal Government has taken several steps to enable individual communities to enhance the training of their first responders and their overall community preparedness. A key effort was the development of a portal on the EO Webpage to highlight and promote awareness of available training, such as firstrespondertraining.gov and resources listed in Appendix C.

In the year following the release of this report, the Working Group Agencies plan to:

- Compile lists of specific chemical safety and security training sources on the EO Webpage.
- Hold a public meeting to receive input from stakeholders as OSHA considers developing a comprehensive emergency response and preparedness standard to integrate requirements of existing and outdated OSHA standards. This will address the full range of hazards and concerns currently facing emergency responders and update outdated standards to reflect major changes to performance specifications for protective clothing and equipment. Current OSHA standards do not reflect all major developments in safety and health practices that have already been accepted by the emergency response community and incorporated into agency consensus standards.
- Work with Congress to ensure all emergency responders – whether private sector, public employees, or volunteers – receive equal coverage under workplace safety and health standards, taking into account economic feasibility.

3.1.3. Identifying and Coordinating Resources for SERCs, TERCs, LEPCs, and TEPCs to Sustain Planning and Response Efforts

SERCs, TERCs, LEPCs, and TEPCs need adequate resources to accomplish their mission of creating communities that are able to identify local hazards and appropriately respond to emergencies.

In the year following the release of this report, the Working Group Agencies will:

- Compile lists of specific chemical safety and security funding sources for community preparedness on the EO Webpage. Funding sources include:

- Pipeline and Hazardous Materials Safety Administration (PHMSA) Hazardous Materials Grant Program, which includes the Hazardous Material Emergency Preparedness, Hazardous Material Instructor Training, and the Supplemental Public Sector Training grants.
- Homeland Security Grant Program, administered by FEMA, which provides funding to eligible communities for a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration.
- Encourage SERCs and LEPCs to work with their State Administrative Agency¹⁷ to ensure the “Hazardous Chemical Release (accidental)” threat is appropriately captured and prioritized in the Threat and Hazard Identification and Risk Assessment (THIRA) process.¹⁸ The State Administrative Agency uses the THIRA capability targets to inform sub-grantee project approval and sub-grantee fund allocation. THIRA helps communities identify areas to improve capabilities and resource requirements necessary to address risks such as chemical hazards and incidents.

By the end of FY 2015, the Working Group plans to:

- Identify and compile potential resources (e.g., grants, technical assistance, fee systems, mutual aid opportunities, private sector funding) and best/successful practices to access funding and support (to include identifying any available flexibilities) and provide a compendium of this information to SERCs, TERCs, LEPCs, and TEPCs.

3.1.4. Expanding Tools to Assist SERCs, TERCs, LEPCs, and TEPCs in Collecting, Storing, and Using Chemical Facility Information

State and local officials have access to all of the information from EPCRA Tier II and RMP reports collected on chemical facilities¹⁹. SERCs, LEPCs, TERCs, TEPCs, and first responders receive chemical facility information in EPCRA Tier II reports. Federal agencies share additional information with State, local, and tribal counterparts and the public, including RMP

¹⁷ State Administrative Agencies are the only entities eligible to apply to FEMA for Homeland Security Grant Program funds, which include: the State Homeland Security Program and the Urban Areas Security Initiative grant programs. A comprehensive list of agency contacts is provided at: <http://www.fema.gov/media-library/assets/documents/28689>

¹⁸ Nationally in 2013, “Hazardous Chemical Release (accidental)” was the fifth most frequently identified hazard and the second most frequently identified hazard in urban areas. Further, of those listing a chemical hazard, 63% were related to a transportation incident. Involvement in the THIRA process can help communities holistically access their risks from all threats and hazards and align resources and capabilities to address those risks.

¹⁹ Additional information on EPCRA is available at <http://www2.epa.gov/epcra>. Additional information on RMP is available at <http://www2.epa.gov/rmp>.

data. It is important to note that State and local authorities receive about 30 times more data from facilities reporting under EPCRA than EPA has under RMP.²⁰

Additionally, there are other sources of tools and information that these entities have, or will be receiving access to, such as CAMEO (see FIGURE 2), FRS and SRS. As discussed in Section 2.1.1, CAMEO assists front-line chemical emergency planners and responders to access, store, and evaluate information critical for developing emergency plans. FRS, a publically-available Website, currently integrates from across nearly 90 different Federal and State systems' core facility information (e.g., facility name, physical and mailing address, coordinates, North American Industry Classification System/Standard Industrial Classification codes, owner/operator/responsible party affiliations, identifiers/permit numbers). In addition to data from EPA chemical regulatory programs, FRS recently integrated the last 5 years of inspection and establishment data relating to the chemical sector from OSHA's Integrated Management Information System as well as a subset of DHS's Chemical Security Assessment Tool. SRS assists facilities that possess chemical substances to determine their regulatory requirements by providing information about chemical substances tracked or regulated by EPA or other sources.

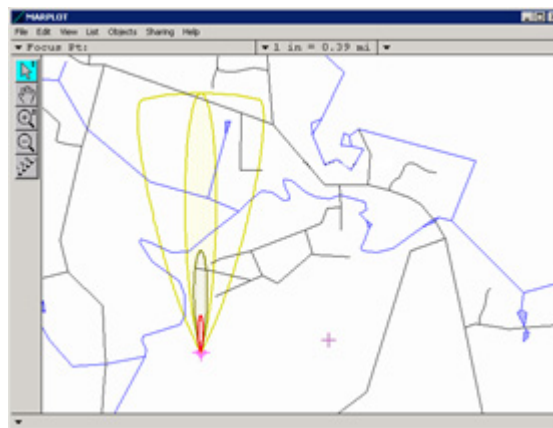


FIGURE 2.—CAMEO Model: data provided by CAMEO, such as the concentration ranges depicted here, can help emergency managers and first responders prepare for and respond to chemical incidents.

By the end of FY 2016, the Working Group plans to:

- Continue enhancements of the CAMEO suite to further enhance its usability, expand analytical capability, and promote information sharing by:
 - Including listing CFATS in the regulatory designation section of the CAMEO chemical datasheets, which already include information from EPCRA, the Clean Air Act, and other regulations.
 - Developing CAMEO chemical datasheets for any of the 322 substances on the CFATS chemicals of interest list not already in CAMEO to ensure emergency planners and first responders have chemical information on all CFATS regulated chemicals.
 - Adding new fields to enable connections with EPA's FRS and SRS to ensure LEPCs integrate all available chemical facility information into their local CAMEO database.

²⁰ 12,705 RMP facilities and about 390,000 EPCRA Section 311/312 facilities

- Establishing a data standard for exchanging electronic EPCRA-required data (e.g., Tier II data) between different data management systems used by SERCs, TERCs, LEPCs, and TEPCs.
- Developing a mobile application for viewing the EPCRA data for CAMEO chemicals, in addition to the desktop, Website, and mobile Website CAMEO versions already available.
- Incorporating CAMEO training materials into outreach initiatives described in Section 3.1.1.
- Develop and provide a complete Web-based version of CAMEO that States can host on their own servers. This allows LEPCs an online method of accessing the State Tier II facility/chemical data and allows facilities to report online.

3.1.5. Enhancing Awareness and Increasing Information Sharing with Communities around Chemical Facilities

Community residents and organizations have consistently noted that basic information regarding facilities is not provided in a clear and consistent manner. Each stakeholder has a key role to improve chemical facility safety and security. Stakeholder involvement is especially critical in communities with socioeconomic challenges or disproportionately high numbers of residents with special or chronic medical conditions. The first step for communities to mitigate or prepare is to identify the risks in their community. Appendix C lists some of the resources available to identify chemical facilities within communities and the chemicals these facilities contain.

Interested community residents around chemical facilities are encouraged to become engaged in learning about what risks exist in their communities and what steps industry, first responders, and local governments are taking to better protect them from accidental releases.

- Community residents can access chemical facility data via Envirofacts (www.epa.gov/enviro/), which includes FRS data. This system incorporates, into a single location, chemical facility data from a number of EPA regulatory programs.
- Federal, State, and local emergency organizations and qualified researchers can access complete RMPs (OCA data included) by registering with EPA. RMPs with OCA data are available to the public in Federal Reading Rooms²¹.
- OSHA shares facility enforcement and inspection information (some of which is related to PSM inspections) with the general public via its public Website (<https://www.osha.gov/pls/imis/establishment.html>). Communities can use this information to identify violations and inspection information on facilities.

²¹ Additional information for accessing RMP data is available at <http://www2.epa.gov/rmp/federal-reading-rooms-risk-management-plans-rmp>.

While awareness of existing sources of information is critical, the Working Group agrees that more must be done to share information while balancing safety and security concerns. Any data-sharing commitment must recognize the potential security risk of releasing chemical-specific information that may increase a chemical facility's exposure to an act of terrorism. Therefore, a facility should assess the security risk of releasing information related to those chemicals but realize the benefits gained by actively engaging their communities with the information needed to conduct adequate planning and preparedness efforts.

In most cases, the Working Group believes that information should be provided by facilities to the public to advance greater knowledge of the facility and more effective participation in emergency preparedness, including:

- Incident history
- Incident/root causes
- Chemical class
- Chemical name,
- Chemical characteristics/properties,
- DOT placarding,²²
- Facility address,
- Incident investigation recommendations, and
- Incident occurrences without implicating any security concerns.

The Working Group will work to share specific RMP data elements (e.g., incident history, chemical information) and PSM and RMP violation information, with the general public. Further, the Working Group is committed to sharing additional information with the public by expanding FRS and SRS as described in Section 3.3²³. Access to certain sensitive information such as RMP offsite consequence analysis and portions of CFATS data will remain restricted to appropriately balance security risks.

Additionally, the Working Group will develop and issue recommendations for how facilities, local emergency planners, and State officials could share information to improve emergency planning, preparedness, and prevention at all levels, including communities.

3.2. Enhancing Federal Operational Coordination

The chemical community is comprised of owners and operators; Federal, State, local, tribal, and territorial governments; regional entities; nonprofit organizations; and communities. Communicating and coordinating across this diverse landscape requires an integrated effort to ensure activities are executed effectively and efficiently. Federal agencies will include the key

²² DOT requires the use of placards when hazardous materials are transported that indicate the hazard posed by the material. In the event of an incident, the placard provides initial warning information to handlers, first responders, and citizens of the specific hazards that may be present (49 CFR Part 172).

²³ Access to certain sensitive information such as RMP offsite consequence analysis and portions of CFATS data will remain restricted to appropriately balance security risks.

tenets of EO 12898 - *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations* in subsequent Working Group activities.

To this end, the Working Group will implement the following activities.

3.2.1. Coordinating EO Implementation Activities

The EO implementation effort has demonstrated the value of close coordination between Federal departments and agencies with regulatory responsibilities. Similarly, the need for coordination at the regional level and local levels is critical to improving chemical facility safety and security. The Working Group continues to coordinate the activities required to meet this objective. To ensure the sustainability of the EO implementation efforts and avoid creating overlapping structures, the Working Group will work with existing coordinating mechanisms, specifically the NRT²⁴, the RRT, and the Government and Sector Coordinating Councils²⁵ (GCC/SCC) as necessary (see FIGURE 3).

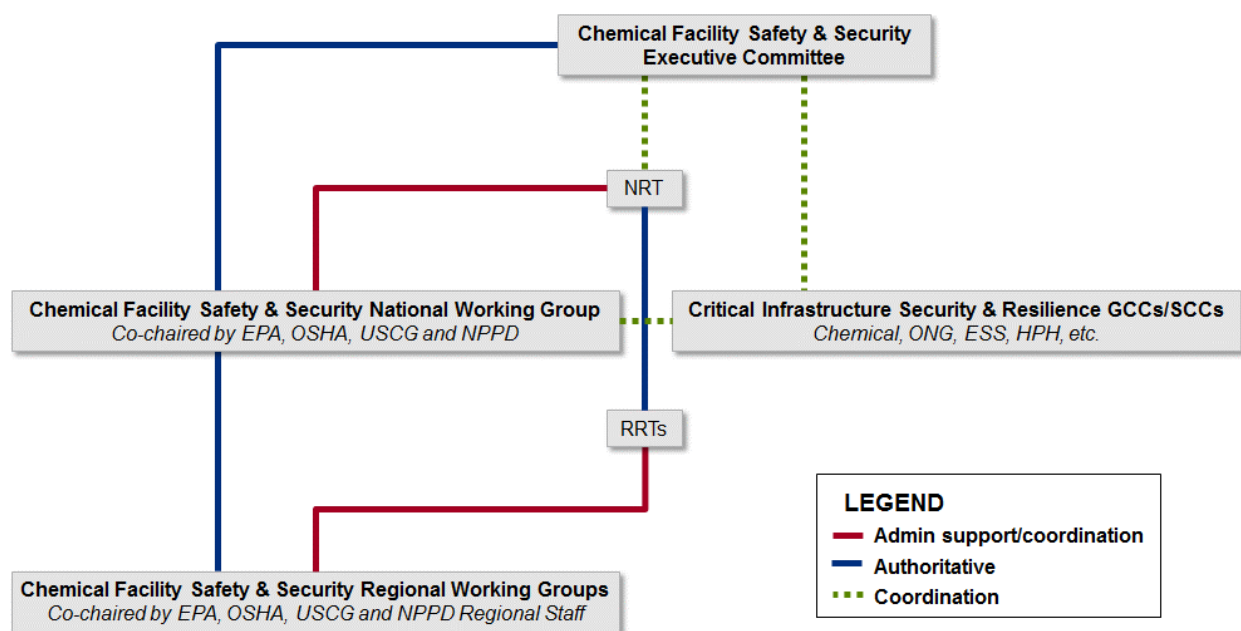


FIGURE 3.—Coordination Structure for EO Implementation

²⁴ The NRT, chaired by EPA and vice-chaired by the USCG, is an inter-agency group with responsibilities and expertise in various aspects of emergency preparedness, planning, and response and focuses on information sharing, planning, and training specific to responding to HAZMAT emergencies.

²⁵ The National Infrastructure Protection Plan's sector partnership model has membership representative of a broad base of owners, operators, associations, and other entities – both large and small – within a sector. The SCCs enable owners and operators to interact on a wide range of sector-specific strategies, policies, activities, and issues. The GCC is formed as the government counterpart for each SCC to enable interagency and cross-jurisdictional coordination. The GCC comprises representatives from across various levels of government (Federal, State, local, or tribal) as appropriate to the operating landscape of each individual sector.

The Chemical Facility Safety and Security Executive Committee, co-chaired by EPA, DOL, and DHS, will continue to serve as the senior level coordinating body. This component will continue to be chaired at the Assistant Secretary level, coordinating with other Federal departments and agencies as needed. This group will be responsible for overall conduct and pursuit of goals in support of the EO mission.

A Chemical Facility Safety and Security National Working Group will be established and co-chaired by senior executives from EPA, DOL, USCG, and the DHS Office of Infrastructure Protection. The Working Group will be supported by the NRT and will coordinate closely with GCCs and SCCs from a variety of sectors, including, but not limited to, chemical, oil and natural gas; emergency services; healthcare and public health; food and agriculture; and water and wastewater sectors. The National Working Group and Regional Working Groups will receive direction from the Executive Committee but will ensure coordination across the various Federal programs led by the NRT and the GCCs/SCCs. The Chemical Facility Safety and Security National Working Group will be responsible for Federal interagency coordination and collaboration on the strategic and operational implementation of the actions identified in this report, maintaining visibility on the progress being made in the Chemical Facility Safety and Security Working Regional Groups, and providing assistance and support as needed. The Chemical Facility Safety and Security National Working Group will also be responsible for establishing and implementing a structure for regular briefings and feedback from all stakeholders regarding the actions identified in this report.

Chemical Facility Safety and Security Regional Working Group personnel will be designated by their respective agencies to coordinate at the State and local level with government and nongovernmental partners. There are already standing bodies that focus on the various aspects of chemical risk management and emergency planning and preparedness that should be employed to a great extent, such as the RRT and the USCG Area Maritime Security Committees. In the regions, RRTs provide the Chemical Facility Safety and Security Regional Working Groups with appropriate resource and coordination support as required to ensure the execution of EO activities. The Chemical Facility Safety and Security Regional Working Groups are responsible for the operational implementation of the actions identified in this report. Prevention, planning, and preparedness efforts will be coordinated with all appropriate parties and will be conducted in as transparent a process as practical.

3.2.2. Establishing SOPs for Federal Coordination at the National and Regional Levels

Coordination among Federal agencies needs to be bolstered at the national and regional levels to ensure continued progress toward implementation of the activities identified in this report. Coordination is already occurring and has improved chemical facility safety and security management across the Federal sector; however, it must be systematic and institutionalized. The EO called for the Working Group to create comprehensive and integrated SOPs for a unified Federal approach for identifying and responding to risks in chemical facilities. The SOP for a unified Federal approach is described in Appendix E. The Federal SOP describes the

membership, scope, roles, and responsibilities of the National and Regional Chemical Facility Safety and Security Working Groups.

The National Working Group will also disseminate the lessons learned from development of the New York-New Jersey pilot SOP and require that each RRT develop SOPs tailored to their respective regions. Templates from the pilot will be distributed within 90 days of this report, and the remaining RRTs will develop their individual SOPs within 1 year of receiving the templates. These SOPs will describe (1) procedures for a unified Federal, State, tribal, and local approach for identifying, communicating, and responding to risks at chemical facilities and (2) operational coordination procedures, such as joint drills and exercise, electronic Tier II data management, and revised inspection protocol for Federal, State, tribal, local agencies, and first responders.

3.2.3. Training Federal Chemical Facility Safety and Security Regulatory Programs Field Personnel

Federal regulatory programs benefit when field personnel understand the full complement of regulatory programs that impact facilities. A coordinated cross-training program can provide field staff with the knowledge and necessary background to observe potential unaddressed regulatory issues at facilities and make referrals to other regulatory agencies. Awareness of key items of concern for partner regulatory programs increases opportunities to identify issues proactively (i.e., by looking for the top issues/violations that concern other programs). Awareness also serves as a mechanism to develop and foster relationships among field personnel from different agencies to facilitate information sharing and functional coordination.

By the end of FY 2016, the Working Group Agencies will:

- Expand the cross-training of field staff that is currently underway for CFATS and MTSA to include other regulatory programs. Cross-training will focus on enhancing awareness of Federal regulatory programs.
- Develop an interagency resource to describe the Federal programs relevant to chemical facility safety and security and include key items each program considers its most frequent or critical violations. This interagency resource will be provided to regulators and planning organizations, including LEPCs, TEPCs, and others, to raise awareness of programmatic requirements. Additionally, the resource will aid in identifying possible referrals between programs.



3.3. Improving Data Management

Federal agencies collect valuable information on chemical facility safety and security; however, the differing formats and management of these data do not fully support interagency compliance analysis. As multiple regulatory programs developed and evolved over decades, each incorporated technologies and data collection requirements independently of one another (often due to differing statutory requirements), leading to duplicative databases and the need for

multiple entries of the same or similar data. Currently, there is no chemical security and safety data clearinghouse that contains all of the data points germane to all Federal agency regulations. In order to find information on a given facility, Federal agencies must translate the data into its customary format. Searching for potential noncompliant facilities is a time-intensive task requiring deep familiarity with complex data sets. This complexity makes it difficult to identify facilities identified by one agency that should be known to another. As the Working Group Agencies have shared data, the challenges have revealed the need for improvements to optimize available information. The EO charged the agencies with developing a coordinated, flexible, data-sharing process.

3.3.1. Standardizing Data

The Working Group examined the data collection process for each of the Federal regulatory programs related to chemical facility safety and security. Due to the variation in mission and scope of legislation and regulations, there are both commonalities and significant differences in the data collected by each regulatory program. FIGURE 4 describes the challenges highlighted during the recent comparison of CFATS and RMP data to identify possible noncompliant or outlier facilities.²⁶

| CFATS and RMP Facility Data Comparison | |
|--|---|
| <p>Matching facilities from two different datasets is always challenging and even though there are significant similarities, matching the CFATS and RMP datasets was no exception. In many cases, different personnel were responsible for entry into CFATS and RMP. During the CFATS and RMP comparison, the following basic data fields frequently contained inconsistent information between the two datasets, which resulted in difficulty confirming matches:</p> | |
|  Facility Name | <p>Some sites used the facility name, others used a corporate name, and others used an internal company designation name.</p> |
|  Address | <p>Some facilities listed a mailing address, some listed a postal address, some listed a specific process address, and some listed home addresses. Additionally, road names or highway designations may be misspelled or abbreviated differently, street names and zip code change over time, which is an issue due to variations in submission timing.</p> |

²⁶ Outliers are those facilities that knowingly or unknowingly do not comply with facility reporting regulations.




| CFATS and RMP Facility Data Comparison | |
|---|--|
|  Latitude & Longitude | Some facilities provided latitude/longitude information based on a mailing address, some based on a postal address, and some based on a specific process address. |
|  Chemical Quantity | RMP requires facilities to report the amount of a chemical in a process; CFATS requires facilities to report on what can be stored on the entire site – these differences make it difficult to determine if facilities in each program possess enough chemicals to meet the other program's screening thresholds. A quantity reported to RMP based on a single process can be assumed to trigger CFATS facility total threshold, but the reverse is not true. If CFATS shows that a facility has 25,000 pounds of a chemical that does not mean that the facility has that much in a single process. |
|  D-U-N-S Numbers | Each facility can/should have a unique Data Universal Numbering System identifier (D-U-N-S number), but a facility also typically has one or more separate D-U-N-S numbers related to their corporate structure and often reports these nonexclusive numbers instead. |

FIGURE 4.—CFATS and RMP Facility Data Comparison

To make coordination and communication between Federal agencies more effective, despite the disparities in data collection, agencies must establish a common terminology and provide common identifiers for each facility. Taking this step will also assist with compliance and easing reporting for industry by standardizing the terminology facilities must understand. Using a common facility identifier will assist in tracking facility compliance in the short and long terms by allowing a means for comparison of regulated facilities across regimes using the identifier as a common starting point.

The Working Group also anticipates immediate benefits from the creation of standard terminology for the regulation of chemical safety and security matters. The terminology allows agencies to more effectively communicate with one another, both among program managers and information technology systems. This action will assist in sharing information with State and locals and answers one of the common suggestions from stakeholders: improve how the Federal Government communicates and collaborates on facilities.

- In 30 days following the release of this report the Working Group will establish a dedicated cross-agency team of experts to begin work on developing a common facility identifier and data terminology. This will initiate a significant effort that will be completed over the long term.

3.3.2. Aggregating Data from Across the Federal Agencies and Establishing a Single Web-Based Interface for Data Collection

The long-term solution for data collection and sharing is a centralized single data entry portal. The Working Group will work with and leverage other Federal data coordination efforts (such as those developed via Presidential Policy Directive – 21 *Critical Infrastructure Security and Resilience*) and the broader Data.Gov initiative to develop such a portal and data standards. This portal will serve as an integrated resource through which facilities will be able to learn about the regulatory programs of the various agencies. Additionally, this portal will include a common submission process, assisting facilities with reporting obligations on their facilities and chemical holdings. This portal will integrate the terminology discussed in Section 3.3.1 as well as use the solutions to the challenges encountered during the linking of regulatory databases described later in this section. An in-depth requirements gathering process will be conducted to ensure that this new centralized system meets the needs of regulators and the regulated community.

In the short term, a first step of linking data from multiple agencies will assist with identifying noncompliant facilities and/or other potential compliance issues. EPA's FRS offers a short-term solution and will be used as the central repository since it already integrates all pertinent EPA information and some external facility systems.

FRS currently integrates core facility information (such as facility name, physical and mailing address, coordinates, North American Industry Classification System/Standard Industrial Classification codes, owner/operator/responsible party affiliations, identifiers/permit numbers) from across nearly 90 different Federal and State systems, allowing users to compare facilities and their identifiers among systems, thereby allowing other information such as chemical data and compliance history to be more easily compared. In addition to core EPA chemical programs, FRS recently integrated the last 5 years of inspection and establishment data relating to the chemical sector from OSHA's Integrated Management Information System as well as a subset of DHS's Chemical Security Assessment Tool facilities for comparative analysis. FRS will continue to make as much information available as possible while being aware of safety and security concerns.

By the end of FY 2016, a second step will be taken towards establishing a single portal for data collection. The Working Group plans to build a capability for each agency to supply new facility registration information into the FRS central clearinghouse in real time. This will allow the option for each separate program system to provide updates and receive new facility records. The continual exchange of data among programs will allow additional improvements beyond the initial establishment of a central clearinghouse by linking databases, such as providing comprehensive facility profiles.

To summarize:

- Within 90 days of the release of this report the Working Group will complete the exchange of relevant data among all Working Group members, in accordance with existing agency and/or program policies and requirements. This action will improve understanding of the existing datasets and support efforts to identify possible noncompliant facilities.

- By the end of FY 2016, use EPA's FRS as a central repository to link data from multiple agencies to assist with identifying noncompliant facilities and/or other potential compliance issues.
- By the end of FY 2016, build the capability for each Agency's database to automatically share information with the FRS as new facility registration information is entered. This will allow each separate Agency's database to provide updates and receive new facility records in real time.
- By the end of FY 2016, use FRS or other systems as appropriate to increase information sharing from Federal regulatory programs to the public while maintaining the appropriate balance between safety and security.

3.3.3. Improving Information Tools for Regulated Chemicals

Raising stakeholder awareness of existing Federal regulatory requirements is one of the keys to addressing the issue of chemical facilities that may not have provided all required information or may otherwise be noncompliant. SRS is a central system for information about substances that EPA and other agencies track or regulate and it available to the public. Each record identifies standardized nomenclature for the substance and any synonyms used by EPA and other interagency partners. Users can search by single substance, programmatic or statutory lists of substances, or groups of substances. SRS provides links to other sources of information managed by EPA and other Federal and international agencies, thus serving as a centralized tool to find important information about specific chemicals. The SRS maps the substances within EPA programs, and since the issuance of the EO, EPA has added DHS's CFATS and OSHA's PSM-covered chemicals list. For a given substance, SRS indicates whether it is tracked or regulated and by which program. Making SRS a centralized resource for industry to assess which programs it may be subject to increases its overall value to the government and industry. SRS will be a resource, linking industry to program Websites across the Federal Government.

Within 1 year of the release of this report:

- The Working Group plans to expand SRS to include chemicals regulated under MTSA and ATF's List of Explosive Materials based on the needs of industry members, State and Federal regulators, and other stakeholders.
- The Working Group plans to improve data comparisons by adding the SRS substance identifier to relevant systems so the substance names are linked to this identifier, regardless of the synonym used in each agency system.

3.4. Modernizing Policies and Regulations

To meet the directive of the EO to modernize key policies, regulations, and standards, on January 3, 2014, the Working Group published a preliminary list of options for improving chemical facility safety and security for stakeholder comment. The options identified resulted from

reviewing existing programs, recommendations from the safety and security communities, and feedback from the EO listening sessions as well as reviewing investigation reports of major incidents. Drawing on stakeholder comment, the Working Group plan for modernizing policies and regulations is detailed below.

3.4.1. Modernizing OSHA’s PSM Standard to Improve Safety and Enforcement

OSHA’s PSM standard is over 20 years old. The PSM standard has been effective in improving process safety in the United States and protecting workers (and, by extension, communities) from many of the hazards associated with uncontrolled releases of highly hazardous chemicals. However, major incidents have continued to occur. Appendix D describes 27 significant incidents in the past 5 years that have resulted in over 75 fatalities, multiple injuries, and extensive consequences for work places and communities. Modernizing the PSM standard will help OSHA overcome obstacles to effective enforcement, implement advancements in management practices for reducing risk and controlling hazards, and protect workers from previously unrealized chemical hazards.

Using lessons learned from incident investigations, enforcement experience, and comparison with industry practices and regulatory requirements of other States, counties, and countries, OSHA determined that a stronger PSM standard can more effectively prevent incidents and protect workers. OSHA’s enforcement experience over the past two decades suggests that a number of potential regulatory and policy improvements would improve PSM compliance as well as enforcement and oversight of facilities covered by the PSM standard. Modifications to PSM would also address the failure of some chemical facilities and local emergency responders to plan and prepare adequately for accidental releases. To begin the PSM standard modernization process, OSHA issued a Request for Information (RFI),²⁷ the first step of a rulemaking process that will include multiple additional opportunities for public input.

Stakeholder comments at listening sessions, comments received through the RFI, and the EO Section 6 Options document confirmed the need for OSHA to modernize the PSM standard as well as associated enforcement policy. The Working Group concluded that OSHA should act to address improvements in the content and enforcement of the standard and to incorporate lessons learned over the past two decades.

In the year following the release of this report, OSHA intends to:

- Clarify confusing and misunderstood policies.
 - Revise the current interpretation of “retail facilities” based on comments received in OSHA’s PSM RFI process to more accurately reflect the original intent of the exemption as expressed in the PSM Preamble to the Final Rule.

²⁷ The RFI is available for review at <http://www.gpo.gov/fdsys/pkg/FR-2013-12-09/pdf/2013-29197.pdf>.

- Revise the current interpretation of chemical concentrations covered by OSHA's PSM standard to more clearly describe what is covered and align with better established practices.
- As a next step towards developing a proposed rule to modernize the PSM standard, initiate the Small Business Regulatory Enforcement Fairness Act (SBREFA) review in order to solicit small business views on modernizing the PSM standard.
 - Clarifying the PSM standard to incorporate lessons learned from enforcement, incident investigation, and advancements in industry practices, root cause analysis, process safety metrics, enhanced employee involvement, third-party audits, and emergency response practices.
 - Addressing ammonium nitrate hazards through one or both of the following options: 1) covering reactive chemical hazards under the PSM 2) adding ammonium nitrate specifically to the PSM Appendix A highly hazardous chemicals list
 - Adding substances or classes of substances to the PSM Appendix A List of Highly Hazardous Chemicals and providing more expedient methods for future updates.
 - Expanding coverage and requirements for reactive chemical hazards, which have resulted in many incidents.
 - Covering oil and gas drilling and servicing operations that currently are exempt from PSM coverage.
 - Continuing harmonization with EPA's RMP regulation.
 - Requiring analysis of safer technology and alternatives.
 - Requiring coordination between chemical facilities and emergency responders to ensure that emergency responders know how to use chemical information to safely respond to accidental releases, possibly including exercises and drills.

A more complete discussion of these issues is included in the RFI.

3.4.2. Modernizing EPA's RMP Regulation

The RMP regulation has been effective in preventing and mitigating chemical incidents in the United States and protecting human health and the environment from chemical risks and hazards. However, major incidents highlight the importance of reviewing and evaluating current practices and regulatory requirements and applying lessons learned to continuously advance process safety management. Stakeholders at EO listening sessions and public comments received on the EO options documents identified the need for EPA to modernize the RMP regulation. In order to gather the information necessary to proceed with regulatory modernization and retain close coordination with OSHA on its implementation of the PSM standard, EPA will seek public input on process safety and risk management issues relevant to the RMP regulation through publication of an RFI in summer 2014. The RFI will guide EPA in any potential actions that may further reduce the number of chemical incidents that can adversely affect communities within the United States.

Based on information gathered through implementing the RMP program, recommendations and practices developed by process safety professionals, and stakeholders' comments to EPA's pending RFI, EPA would propose any appropriate priority amendments to the RMP regulation to advance increased safety in 2015 with the intent to finalize such amendments in 2016, subject to any timing adjustments that may be necessitated by new information. These amendments would be complimented by advisories and guidance documents.

EPA is considering whether the list of chemicals covered by RMP should be updated with the potential addition and deletion of chemicals and should reflect new information on existing chemicals. For example, EPA is seeking input as to whether reactives and explosives should be added to the RMP list. EPA also is considering strengthening or clarifying existing requirements and adding new prevention and emergency response program elements, including:

- Revising mechanical integrity requirements of safety-related equipment to ensure that critical process safety equipment and systems are in good working condition and are effective.
- Adding new requirements for automated detection and monitoring systems, or adding performance measures for facilities already using these systems, that would supplement the existing process hazard analysis (PHA) and/or emergency response requirements.
- Establishing an obligation to track and conduct root cause analyses of frequent process upsets and near misses that could cause a release.
- Requiring employers to implement a stop work authority for employees who witness an activity that creates a threat of danger and providing clearly defined requirements to establish an ultimate authority on the facility for operational safety and decision making.
- Strengthening contractor safety requirements.
- Establishing mechanisms to implement the newest available technologies and methods being brought to bear in chemical risk management, PHA, and emergency response.
- Requiring that compliance audits be done by an independent auditor to increase the rigor and objectivity of the audit.
- Establishing new performance measurement and management review requirements such as:
 - A measurements and metrics requirement to track the effectiveness of the risk management system and to identify opportunities for improvement;
 - A management review and continuous improvement requirement to focus on ongoing 'due diligence' management reviews that fill the gap between day-to-day work activities and periodic formal audits; and
 - A process safety competency requirement to focus on organizational learning so the process knowledge can be applied to situations in order to effectively manage risk.
- Clarifying what is required in order for a PHA to be updated and revalidated, requiring revalidating PHAs more frequently than every 5 years, and requiring certain events such as an incident to trigger PHA revalidations prior to the next scheduled revalidation.

- Clarifying emergency planning requirements to ensure effective coordination with community responders and ensuring facility personnel have practice responding to accidental releases; identifying mechanisms to ensure facilities perform exercises or drills as an element of the emergency response program; and conducting these exercises in conjunction with local responders to the degree possible.
- Enhancing facilities' disclosure of key elements of their risk management plans and programs, including incident history, cause of incidents, identity of chemical, emergency contact information, identity of the LEPC, links to the local emergency response plan, and/or the facility's most recent EPCRA Tier II report.
- Incorporating examination of the use of safer technology and alternatives into the PHA.
- Using the Acute Exposure Guideline Levels (AEGLs)²⁸ developed by the National Advisory Committee (NAC) for Acute Exposure Guideline Levels for Hazardous Substances (NAC/AEGL Committee) to recalculate RMP reporting thresholds and toxic endpoints for offsite consequence analyses in order to better reflect the potential for adverse effects of an accidental release upon a community.

Other issues raised during listening sessions to be considered in the RMP program include facility and equipment siting factors and 'buffer zones' between the facility fence line and public receptors (e.g., residences, schools), which are controlled areas separating the public and other facilities from the potential impact of an accidental chemical release. Another issue for consideration is whether the current worst-case scenario, which involves a catastrophic failure of the single largest vessel, should also assess the total catastrophic failure of multiple smaller vessels stored in close proximity to one another.

In addition, EPA would work with stewardship programs and industry code and practice organizations to enhance such programs based on the above elements while promoting more rigorous implementation.

In implementing and considering modifications to the RMP program under the Clean Air Act (CAA), EPA will coordinate its efforts with other CAA regulations, guidance, or policies.

3.4.3. Enhancing Ammonium Nitrate Safety and Security

Ammonium nitrate poses a unique challenge because it is a high-volume chemical used in both the fertilizer and explosives industries. Because of the hazardous nature of ammonium nitrate, OSHA, EPA, and DHS all have Federal regulations that govern its management:

- OSHA protects employees from workplace hazards associated with ammonium nitrate with safe storage and handling requirements in its Explosives and Blasting Agents standard, 29 CFR 1910.109.

²⁸ <http://www.epa.gov/oppt/aegl/>

- EPA protects the community by requiring facilities that handle ammonium nitrate to submit a SDS and Hazardous Chemical Inventory Form (Tier I/Tier II) under the EPCRA requirements to State and local officials and fire departments (40 CFR part 370).
- DHS oversees the securing of certain facilities that sell and transfer ammonium nitrate to prevent misappropriation or use in acts of terrorism. The DHS's CFATS program requires facilities which possess a commercial grade of Ammonium Nitrate (with more than 0.2% combustible material) at 5,000 pounds or more or 400 pounds or more in transportation packaging and facilities which possess 2,000 pounds of solid Ammonium Nitrate mixtures at 33% or higher in transportation packaging to submit a "Top-Screen survey application" (6 CFR Part 27). Those facilities determined to be at high risk of terrorist attack or exploitation by DHS are required to develop SSPs addressing 18 risk-based performance standards.

Facilities manufacturing ammonium nitrate or using it to make explosives may be subject to additional Federal regulations:

- OSHA protects employees in facilities that manufacture explosives or have specified highly hazardous chemicals (e.g., those that manufacture ammonium nitrate) under its PSM standard. PSM requires the implementation of a comprehensive management system to prevent or mitigate hazards associated with these highly hazardous chemicals.
- ATF requires separation distances between ammonium nitrate and blasting agents or explosives where these materials are co-located.

Authorities and Actions to Improve Safe and Secure Storage and Handling of Ammonium Nitrate

The Working Group assessed current regulations across the diverse industries that handle ammonium nitrate and developed a list of opportunities to improve the existing system of safeguards (see TABLE 1).

| Issue/Opportunity | Action |
|---|--|
| Actions to Protect the Worker and Communities | |
| <p>OSHA's 1910.109 Explosives and Blasting Agents standard covers the storage of ammonium nitrate. However, the fertilizer industry has stated that, due to the confusing scope of the standard, it has been unclear about whether or not the standard applied to them.</p> | <p>OSHA sent a letter through trade associations to help educate the industry on 1910.109 applicability and requirements.</p> <p>OSHA is developing internal guidance for compliance officers to clarify enforcement of 1910.109.</p> <p>OSHA is forming an Alliance with other government agencies and the fertilizer industry. Through OSHA's Alliance Program it works with groups committed to worker safety and health to prevent workplace fatalities, injuries, and</p> |

| Issue/Opportunity | Action |
|---|---|
| | <p>illnesses.</p> <p>OSHA is considering updating the 1910.109 standard to clarify its scope and application.</p> |
| <p>OSHA's existing 1910.109 Explosives and Blasting Agents standard is based on a 40-year-old consensus standard with outdated requirements that may need to be updated.</p> <p>OSHA's PSM standard covers some reactive chemicals. Ammonium nitrate is a reactive chemical (oxidizer) and met the original criteria that OSHA used to add substances for coverage. However, ammonium nitrate was not included.</p> | <p>After reviewing comments from their RFI, OSHA will determine whether ammonium nitrate hazards should be addressed through one or both of the following options:</p> <ul style="list-style-type: none"> • Updating the 1910.109 standard based on the work of consensus standard organizations, such as NFPA, that are in the process of developing ammonium nitrate safe handling practices • Covering ammonium nitrate in a more comprehensive PSM standard <p>OSHA is developing guidance on implementing PSM programs in facilities that only store highly hazardous chemicals such as ammonium nitrate. This guidance could be implemented as a best practice regardless of whether OSHA decides to cover ammonium nitrate under PSM.</p> <p>EPA will work closely with OSHA and consider if additional action is needed to complement OSHA regulations.</p> |
| <p>OSHA's targeting criteria did not include ammonium nitrate fertilizer facilities for programmed inspections.</p> | <p>Some Regional and Area offices are preparing emphasis programs to focus enforcement and compliance assistance resources on the safe storage of ammonium nitrate.</p> |
| <p>EPA's RMP regulation does not cover ammonium nitrate.</p> | <p>EPA will publish an RFI to consider whether to add ammonium nitrate and other reactive substances to its existing RMP list of regulated substances. Through this RFI, which is expected to be published in FY2014, EPA is hoping to receive public input on the cost and benefits of coverage of these substances under RMP and if and how that will improve the safe and secure storage, handling, and management of ammonium nitrate. Based on this input, and input received in OSHA's rulemaking process, EPA will determine whether additional actions to complement OSHA's standard changes are necessary.</p> |
| Actions to Secure Facilities | |
| <p>Final regulations have not been issued under the Secure Handling of Ammonium Nitrate provisions of the Consolidated</p> | <p>DHS will finalize its rule to implement the Secure Handling of Ammonium Nitrate provisions of the Consolidated Appropriations Act of 2008, which,</p> |

| Issue/Opportunity | Action |
|---|---|
| Appropriations Act of 2008. | among other things, will require purchasers and sellers of ammonium nitrate to register with DHS and be vetted against the Terrorist Screening Database. |
| There is no CFATS Top-Screen requirement for facilities possessing threshold amounts of bulk quantities of solid ammonium nitrate with a nitrogen concentration of 23% or higher. | DHS will issue an Advance Notice of Proposed Rulemaking (ANPRM) to solicit public comment on this issue and to initiate potential modification of the CFATS regulations to address this concern. DHS will also consider lowering the current screening threshold quantities for ammonium nitrate under CFATS. |

TABLE 1.—Ammonium Nitrate-related Opportunities and Actions

Ammonium Nitrate Safety Actions

OSHA generally has jurisdiction and authority to protect employees from all workplace hazards, including ammonium nitrate. OSHA currently covers ammonium nitrate safety under its Explosives and Blasting Agents standard (29 CFR 1910.109). However, the scope of the standard is presented in a manner that has caused confusion regarding coverage of workplaces that solely store ammonium nitrate. Additionally, the standard is based on a 1969 consensus standard that has been updated multiple times over the past 40 years, and 29 CFR 1910.109 does not reflect any of these changes.

OSHA's PSM standard covers some reactive chemicals. Ammonium nitrate, although it is a reactive chemical (oxidizer) and met the original criteria that OSHA used to add substances for coverage, was not covered by the PSM standard. The Explosives and Blasting Agents standard is a specification standard based on a consensus standard, while PSM is a performance-based standard and would require employers to put management systems in place that would include requirements to evaluate hazards and follow industry recognized best practices. On December 9, 2013, OSHA issued an RFI seeking, among other items, comments on potential revisions to its PSM standard and its Explosives and Blasting Agents standard. The RFI specifically invited comments on safe work practices for storing, handling, and managing ammonium nitrate and on regulatory requirements to improve its approach to preventing the hazards associated with ammonium nitrate. OSHA is working to determine whether ammonium nitrate hazards are best handled in the Explosives and Blasting Agents standard, the PSM standard, or a combination of both, and will pursue any appropriate regulatory changes as expeditiously as possible.

In the meantime, some regional and area OSHA offices are preparing Local Emphasis Programs (LEPs) to focus resources on the safe storage of ammonium nitrate. Where OSHA regions identify concentrations of potential problems with ammonium nitrate storage, a LEP will be launched. An LEP always begins with a period of compliance assistance to educate the regulated community about the hazards of ammonium nitrate and best practices to eliminate or control the hazards. This is followed by a focused inspection program with facilities chosen at random from a list of facilities in appropriate industry codes.

As OSHA develops its approach to improve workplace safety associated with ammonium nitrate hazards, EPA will consider if additional action to protect the community is needed to complement OSHA regulations. EPA is considering whether the coverage provided to ammonium nitrate facilities will be sufficient or whether ammonium nitrate should be included in the RMP regulation. RMP is a performance-based regulation – similar to OSHA’s PSM standard – that requires facilities to apply management systems such as requirements to evaluate hazards, follow industry recognized practices, identify worst-case release scenarios and resulting community impact, and develop a risk management plan that summarizes steps taken to effectively address identified risks. EPA will be gathering, through an RFI, public input on the cost and benefits of coverage of ammonium nitrate under the RMP, and if and how that will improve the safe and secure storage, handling, and sale of ammonium nitrate.

EPA, OSHA, and ATF will update the *Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate* published on August 30, 2013. This advisory, jointly prepared by EPA, OSHA, and ATF, outlined regulatory requirements and best practices for the storing and handling of ammonium nitrate. In the update, the Agencies will consider new information resulting from the West, Texas, incident investigation, newly developed procedures and practices, new technical information, and clarifications and corrections.

OSHA will form an OSHA Alliance with the fertilizer industry, emergency response organizations, and other Working Group Agencies to develop solutions to promote best practices for ammonium nitrate safety. Through OSHA’s Alliance Program, the Working Group will work with groups committed to worker safety and health to help prevent workplace fatalities, injuries, and illnesses. OSHA and the groups will work together to develop compliance assistance tools and resources, share information with workers and employers, and educate workers and employers about their rights and responsibilities. In cooperation with industry leaders, Working Group departments and agencies can develop appropriate guidance and more easily distribute this targeted guidance.

Ammonium nitrate is currently covered under EPCRA, which requires facilities to report the SDS and annual inventory information to SERCs, TERCs, TEPCs, LEPCs, and fire departments. This information should be used to develop local emergency plans and also be shared with the community.

Ammonium Nitrate Security Actions

Through the Secure Handling of Ammonium Nitrate provisions of the 2008 Consolidated Appropriations Act, Congress directed DHS to “regulate the sale and transfer of ammonium nitrate by an ammonium nitrate facility...to prevent the misappropriation or use of ammonium nitrate in an act of terrorism.” This statutory authority is limited in scope, focusing on the registration and vetting against the terrorist screening database of purchasers and sellers of ammonium nitrate. This authority also has certain recordkeeping requirements and requirements concerning the reporting of theft or loss of ammonium nitrate. Although DHS is moving forward with rulemaking to implement these provisions of law and anticipates that the Ammonium Nitrate Security Program will measurably improve the security of transactions involving detonable ammonium-nitrate products, the authority conferred by Congress does not provide for

additional regulation in the area of secure storage of ammonium nitrate (e.g., through locking requirements) nor does it authorize inspections of inventories of ammonium nitrate.

Under CFATS, a limited number of facilities possessing threshold quantities of ammonium nitrate (facilities deemed to be at high risk of terrorist attack or exploitation) are required to develop SSPs addressing 18 risk-based performance standards. Through an ANPRM, DHS will examine whether the screening threshold quantity for ammonium nitrate (which triggers facility reporting requirements under CFATS) should be adjusted and also whether the CFATS Top-Screen filing extension currently in place for agricultural production facilities should be revisited.

3.4.4. Promoting Safer Technology and Alternatives

Reducing risk at chemical facilities is a concept valued by the chemical industry, labor representatives, and communities that live around the facilities. However, some stakeholders believe it is being implemented with varying levels of rigor and consistency. One risk reduction approach for chemical incident prevention developed and implemented by industry and advocated for by a number of stakeholders, is the promulgation of requirements for, and implementation of, safer technology and alternatives (see FIGURE 5),²⁹ including inherently safer options. Safer technology and alternatives refer to risk reduction strategies developed through analysis using a hierarchy of controls.

This philosophy is applied initially to all design phases and then continuously throughout a process's life cycle by identifying and assessing hazards and developing a control strategy. Safety practitioners traditionally organize hazard controls into a framework called the hierarchy of controls. The hierarchy establishes that inherently safer options (e.g., elimination/reduction, substitution, attenuation, and simplification) are preferable and occupy the top of the hierarchy. Engineering controls (automatic digital or mechanical system controls) are preferable to administrative controls (controls

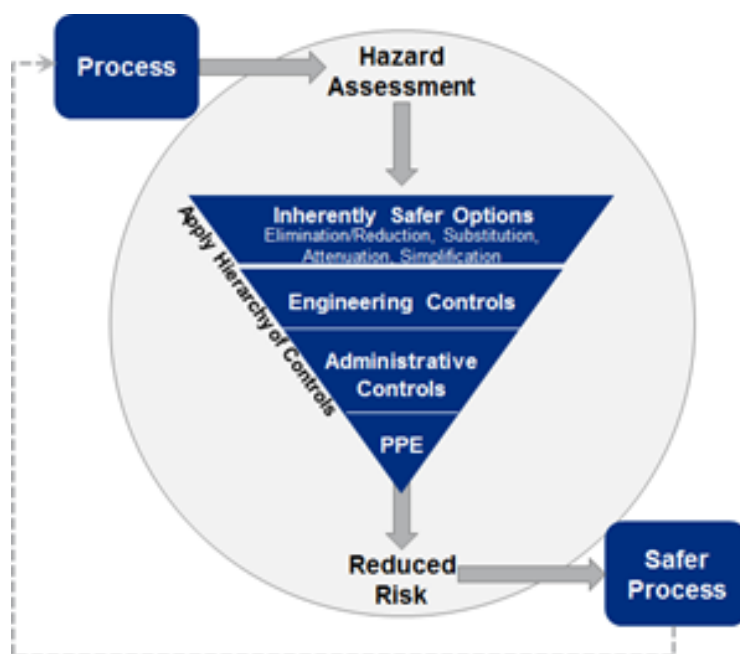


FIGURE 5.—Elements of Safer Technology and Alternatives

²⁹ Center for Chemical Process Safety of the American Institute of Chemical Engineers, Inc. *Inherently Safer Processes: A Lifecycle Approach*. New York: Wiley and Sons, 2009. See Appendix G for more details regarding safer technology and alternatives.

requiring human action). These higher levels of control are all preferable to personal protective equipment – the last line of defense.

It must be noted that the choice in the risk reduction measure is facility-specific and must be made by those with full knowledge of the facility's process after fully considering all risks, including shifting risk without controlling it effectively (e.g., reducing hazardous chemical storage at a facility may require increased shipping of that chemical – thus shifting risks to transportation). The most viable choice to minimize risk may be the best combination of the process safety hierarchy and not necessarily the top of the hierarchy.

There is little doubt that current regulations – such as PSM, RMP, and CFATS – have encouraged many chemical plant operators to introduce safer technology and alternatives to help reduce the overall risk of their facilities.

Several States and localities, including New Jersey, Contra Costa County, and Richmond, California, also implemented legislation addressing safer alternatives as part of the broader PHA process.

- In New Jersey, by January 2010, 45 of the 85 facilities registered in its Toxic Catastrophe Prevention Act program that had submitted the required safer alternative reviews in 2008 had implemented or scheduled implementation of 143 safer alternative measures. The largest category of actions was in simplification. Simplification means designing out hazards instead of adding additional equipment to deal with hazardous conditions (e.g., valve access/operability, simplified equipment design, and improved operating procedures). The greatest number of measures was equipment design and automation controls.
- In Contra Costa County, California, as of February 2013, four of the seven facilities covered by the Industrial Safety Ordinance had implemented 67 measures involving inherent safety systems during 2012 (latest data audited). Thirteen of those measures involved inherent strategies such as reduction of chemical inventories, reduced use of chemicals, and elimination of HAZMAT storage, equipment, or offsite transportation.
- In Richmond, California, as of the last annual report in July 2011, the two facilities have implemented 62 measures involving inherent safety systems, three of those involving an inherent strategy of using a less concentrated hazardous chemical. Thirteen of those measures involved inherent strategies such as reduction of chemical inventories, reduced use of chemicals, and elimination of HAZMAT storage, equipment, or offsite transportation.

EPA inspections and enforcement actions involving the CAA chemical incident requirements found opportunities to employ safer alternatives to address risks. Listed below are several examples of facilities implementing inherently safer technology or practices as part of their enforcement settlements with EPA.

- A food processor in San Francisco had a release of anhydrous ammonia from its refrigeration system in 2009, resulting in evacuation of the facility and several neighboring businesses and hospitalization of 17 people. As part of a consent decree, the

facility converted its anhydrous ammonia refrigeration system to a safer technology that uses glycol and less ammonia, along with implementing other safety measures and system upgrades.

- Following community complaints, EPA inspected a fertilizer facility in Kansas in 2011 for compliance with RMP, which resulted in an enforcement action. The facility chose to remove a total of 99,000 pounds of anhydrous ammonia from the facility, thus reducing the risk to the surrounding population.
- Two anhydrous ammonia releases occurred at a dairy in Puerto Rico, one in 2005 and another in 2007, the latter causing nine people to spend a night in a hospital. EPA found CAA violations at two of the company's dairies, both adjacent to residential areas. Besides implementing required changes, the company also agreed to reduce its anhydrous ammonia inventory and improve release detection equipment at its facilities.
- An EPA inspection at a Connecticut metal finishing facility that used chlorine gas for treatment of cyanide waste found numerous violations of chemical incident prevention regulations. A release from one of the 2,000-pound chlorine cylinders at the facility would impact offsite public receptors, including industrial developments, surrounding residences, schools, recreation areas, and the Pequabuck River. The facility agreed to implement a project to eliminate the use of chlorine by substituting liquid sodium hypochlorite.

Although chemical facilities' owners and operators have incentives to reduce risks, they may lack sufficient information, underestimate the risks, or overestimate the costs to apply safer technologies and practices.

Investigation of several significant chemical incidents by the U.S. CSB indicates that the use of safer alternatives could have reduced the potential of those incidents to occur.

Based on stakeholder requests for more robust preventative measures, EPA and OSHA have developed a plan to encourage chemical facilities to integrate safer technology and alternatives into a facility's process safety programs. The plan consists of three steps, which are not mutually exclusive.

1. **Issue an Alert** – Many chemical facility operators may not be aware of the safer technology and alternatives solutions available to reduce the overall risk from their facilities. EPA and OSHA will issue a joint alert illustrating the concepts, principles, and examples of safer technology and alternatives in order to make industry more aware of the need to consider this approach for inclusion in a PHA.³⁰ Sources of information on analysis and alternatives will be provided for further investigation and review. The alert would be widely shared with trade associations and other industry groups to ensure the broadest dissemination possible.

The alert would:

³⁰ A process hazards analysis is a systematic review of a chemical process that identifies hazards, assigns risk, and determines safeguards.

- Provide nonregulatory insight and suggestions on the matter of applying inherent safety in chemical processing
- Provide best practices for facility implementation
- Reference existing scientific and engineering literature on the subject

Components of the alert could focus on:

- Simplification
- Adjustments to operating conditions
- Reduction of hazardous chemical inventory
- Use of passive safety and/or security measures
- Implementation of administrative controls
- Institution of layers of protection
- Replacement of aging equipment and upgraded materials of construction
- Improved operator, employee awareness, and responder training

The issuance of an alert could be done in conjunction with a clearinghouse of demonstrated practices of safer alternatives established by industry trade associations.

2. **Develop Voluntary Guidance** – Many chemical operators may be unaware of safer technology and alternative solutions available in their industry to reduce the overall risk in chemical processing. To further raise awareness regarding existing inherent safety practices, EPA and OSHA will develop voluntary guidance for operators on how to reduce risks by employing safer technology, processes, and alternatives.

The guidance would:

- Serve as an advisory to the regulated community as to how EPA and OSHA view safer technology and alternatives
- Be based on feedback from the alert
- Offer a more thorough examination of alternative measures and safety techniques
- Include examples of safer technology and alternatives or practices
- Not impose any particular requirements on a facility that are not part of existing industry safety standards and best practices
- Not compel compliance with guidance or require consideration of findings into a PHA

3. **Consider Regulatory Options** – Based on the evaluation of feedback from the alert, guidance, and the RFIs, EPA and OSHA could modify RMP and/or PSM requirements to include specific safer technology and alternatives analysis and documentation of actions taken to implement feasible alternatives. This may include adding a mandatory risk-reduction analysis step to the PHA element already required in the standards. EPA or

OSHA would not, however, determine specific technology, design, or process selection by chemical facility owners or operators. The rulemaking process allows for robust public input as more specific plans and proposals are developed. In advancing these steps, the Working Group will consider the scope of application.

EPA and OSHA are also considering other avenues available to reinforce and further spread the use of safer technology and alternatives in managing chemical risk throughout industry. Such options include a partnership with industry in order to encourage such approaches through existing stewardship programs, work with industry on a safer technology and alternatives/inherent safety clearinghouse, and recognition programs.

3.4.5. Building a Stronger CFATS Program

The CFATS program is an important part of our Nation's counterterrorism efforts as DHS works with our industry stakeholders to keep dangerous chemicals out of the hands of those who wish to do us harm. Since the CFATS program was created, DHS has engaged with industry to identify and regulate high-risk chemical facilities to ensure they have security measures in place to reduce the risks associated with the possession of chemicals of interest. CFATS has also played a significant role in reducing the number of high-risk chemical facilities that are susceptible to attack or exploitation, with more than 3,000 facilities having eliminated, reduced, or modified their holdings of chemicals of interest. The significant reduction in the number of chemical facilities that represent the highest risk is an important success of the CFATS program and is attributable both to the design of the program as enacted by Congress and to the work of CFATS personnel and industry at thousands of chemical facilities.

The progress made in the CFATS program over the last 2 years has significantly enhanced the security of the Nation's chemical infrastructure; however, there is still work to be done. DHS continues to engage with stakeholders and focus on three core areas: reducing the backlog of site security plan approvals, improving the risk assessment process, and ensuring that all potentially high-risk facilities are identified and are meeting their regulatory obligations as required by CFATS. DHS's continued focus on these areas will help ensure that its stakeholders have the stability they need to comply with their regulatory obligations.

As noted in the EO Section 6(a) document released by the Working Group soliciting input on options for policy, regulation, and standards modernization, DHS is considering a variety of activities to enhance the existing CFATS program. One of the primary ways in which DHS intends to do this is to consider improvements that could be made to the regulations themselves. To initiate this effort, DHS plans to release an ANPRM seeking public input on ways to improve the CFATS program.

The EO directed DHS to identify chemicals that should be considered for addition to the CFATS COI list. At threshold quantities, holdings of COI trigger Top-Screen reporting requirements under CFATS. DHS has – over the past several months – analyzed a number of chemical families and specific chemicals for potential inclusion on the list; however, to add new chemicals (or to otherwise make changes) to the COI list and to adjust the relevant screening threshold

quantities, rulemaking is required. DHS looks forward to receiving stakeholder input on the Appendix A highly hazardous chemicals list as an element of its ANPRM.

In addition to improvements that will be made to CFATS through the rulemaking process, DHS is in the process of improving the tiering methodology used to identify and provide risk tiers to high-risk chemical facilities, including planning how to incorporate economic consequences into the model. DHS also continues to work with Federal partners such as the USCG and the Nuclear Regulatory Commission, to coordinate chemical facility security activities and explore ways to increase harmonization among chemical facility security regulatory programs. Additionally, DHS is evaluating the various efforts taken to help identify facilities that should have submitted a CFATS Top-Screen but failed to do so, in order to determine the efficiency of those programs and to identify the most cost-effective way to continue to pursue potentially noncompliant facilities. Collectively, these actions will help further strengthen the CFATS program.

Congressional Action

While DHS will continue to move forward to enhance the CFATS program under existing authorities, there is much that Congress can do to place the program on stronger footing.

- **Authorizing CFATS for the Long-term** – Although CFATS is a critical anti-terrorism program, it has been authorized through the appropriations process on a year-to-year basis. This has contributed to instability and lack of certainty, not only for DHS but for stakeholders as well. During the October 2013 government funding hiatus, there was a complete lapse in CFATS authority, calling into question DHS's ability during this period to take action as needed to safeguard the United States' highest-risk chemical infrastructures. Permanent authorization of the CFATS program would ensure that this type of lapse cannot occur again. It would also provide DHS with the stability needed to plan and execute improvements and more effectively recruit and retain talented staff. Also importantly, permanent authorization would provide regulated chemical facilities with certainty they deserve as they consider making substantial capital investments in CFATS-related security measures.
- **Streamlining the CFATS Enforcement Process** – The current language authorizing the CFATS program requires a multi-step enforcement process before DHS can fine or shut down a facility for noncompliance. It is important that, in extreme circumstances, DHS has the ability to immediately issue orders to assess civil penalties or to close down a facility for violations, without having to first issue an order calling for correction of the violation. Congress should provide this streamlined enforcement authority so that, in circumstances in which a facility's noncompliance presents an immediate threat, DHS can act quickly to safeguard the facility and protect the public from potential acts of terrorism.
- **Removing the Water and Wastewater Treatment Facilities Exemption from CFATS** – Many water and wastewater treatment facilities may present attractive terrorist targets due to their large stores of potentially high-risk chemicals and their proximities to population centers. In order to properly address the risks presented by the chemicals located at many of these facilities, the exemption from CFATS for water and wastewater

treatment facilities could be removed and security at these facilities could be regulated. These activities will be completed in collaboration with the EPA.

3.4.6. Developing Guidance and Outreach Programs to Help Industry Understand Process Safety and Security Requirements and Best Practices

Guidance and outreach programs to help industry understand process safety and security requirements and best practices are an integral part of the comprehensive approach to chemical facility safety and security.

The Working Group is developing the following guidance to assist industry compliance; additionally, these guidance products will improve the understanding of process safety and security requirements and best practices.

- **Public Safety at Oil and Gas Facilities** – EPA will publish guidance to help improve public safety at remote oil and gas storage facilities where unauthorized public access has resulted in a number of fatal incidents.
- **Process Safety Terminology Guidance** – Several agencies, including OSHA, EPA, and PHMSA, have similar safety system requirements but differences in terminology have created confusion among the regulated community. EPA and OSHA will collaborate and develop guidance for terminology in EPA and OSHA process safety regulations. This will identify where better harmonization is needed and assist the regulated community in ensuring their programs/actions meet requirements across all regulatory programs.
- **Fact Sheet on Root Cause Analysis Resources** – OSHA will issue a fact sheet on existing resources that explain how to conduct root cause analyses so the regulated community can better understand the causes of incidents and can increase its capability to effectively prevent future occurrences. OSHA’s PSM standard requires facilities to investigate incidents. However, the PSM standard does not specify the use of root cause analysis or the investigation of near-miss incidents. Without proper root cause analysis, lessons learned will fall short of their potential for preventing future occurrences. OSHA will consult with CSB for their input on the fact sheet based on their expertise in root cause investigation.
- **Guidance for PSM at Small Businesses and Storage Facilities** – PSM can appear daunting to small businesses and storage facilities; however, the complexity of compliance is directly related to the complexity of the covered process. OSHA will develop guidance for small businesses and storage facilities.
- **Best Practices for Process Safety and Metrics from OSHA Voluntary Protection Program (VPP) Facilities** – OSHA will initiate a project to collect information on best practices and metrics at PSM-covered VPP facilities.
- **Guidance for PSM at Explosive Facilities** – During enforcement activities, OSHA discovered that differences in explosive manufacturing hazards require a unique approach to implementing PSM. Guidance can help ensure effective implementation of a PSM program.

- **Best Practice Guidance for CFATS Risk-Based Performance Standards** – DHS will publish a Best Practice Guide regarding the CFATS Risk-based Performance Standards to share with industry. This effort seeks to increase stakeholder understanding and compliance with the CFATS regulation.
- **Regulatory Fact Sheet** – EPA, OSHA, and DHS will develop a comprehensive fact sheet for State regulators, facilities, stakeholders, and other non-Working Group Federal agencies that will describe the relevant Federal programs to increase their awareness of the various Federal regulatory programs. The fact sheet will increase Federal Agency collaboration with States’ points of contact, expanding their involvement in regional coordination and creating new pathways to inform facility owners and operators of requirements. Using direct points of contact in State government (such as SERCs) is an effective means to push information to owner-operators, thus expanding current static efforts, such as regulatory Websites.
- **Checklist of Federal Regulations** – EPA, OSHA, and DHS will collaborate with industry associations to develop a comprehensive checklist of Federal regulations that stakeholders can use to determine regulations applicable to their facilities. The Agencies will subsequently seek to partner with industry associations to collaborate on modifying the checklist into a product for a mobile device. Associations can share the checklist with their members, which will assist with raising awareness of chemical safety and security regulations and make it easier for facilities to navigate the regulatory processes.
- **Best Practice Guidance for Implementing the Framework for Improving Critical Infrastructure Cybersecurity³¹ at Chemical Facilities** – Facility business, safety, and security systems increasingly rely on technology in order to run efficiently. With this increased reliance on cyber-dependent systems comes an increased need to protect these systems from unauthorized access, exploitation, or harm. DHS will coordinate with industry to develop a voluntary guidance document for chemical facilities that increases awareness and use of the cybersecurity framework developed by the National Institute of Standards and Technology (NIST) to help critical infrastructure sectors and organizations reduce and manage their cyber risk. The document will provide standards, guidelines, and practices to help reduce cyber risks to chemical facilities and encourage them to manage cybersecurity as part of a complete hazards approach to enterprise risk management.
- **Work with Standards-setting Organizations to Expand Information Sharing and Provide Other Actions to Enhance the Safety and Security of Chemical Facilities** – The Working Group will work with various standards-setting organizations to identify opportunities to enhance safety and security, including information sharing, via voluntary mechanisms.

³¹ Information on the cybersecurity framework can be found at: <http://www.nist.gov/cyberframework/index.cfm>

3.4.7. Work with States to Improve Safe Drinking Water Act (SDWA) Measures to Prevent and Prepare for Chemical Spills

In 2014, 4-methylcyclohexanemethanol was released from a Freedom Industries chemical storage facility into the Elk River (West Virginia), contaminating the water supply for the principal West Virginia American Water intake, treatment plant, and distribution system. In order to reduce the occurrence and impact of any future spills, EPA will engage with State Drinking Water Administrators and drinking water utilities to encourage States, in coordination with drinking water utilities, EPA Regional Offices, and members of the community to revisit and update their source water assessments and determine whether adequate preparedness and preventive measures are in place for systems susceptible to contamination from chemical spills or other priority concerns.

Section 1453 of the SDWA directed EPA to work with States to assess the susceptibility to contamination of source waters for each of their public drinking water systems by 2003. However, SDWA does not specify implementation requirements to protect water supplies or require that States regularly update the assessments. All States completed assessments by SDWA's 2003 deadline, and many States and water systems have used the information to reduce risk. Many States have updated the assessments and work collaboratively with other Federal, State, and local partners to protect sources of drinking water, based on the information from the assessments. Some water systems have taken the initiative to write and carry out source water protection plans, and many States work collaboratively with water systems to support voluntary development of local plans.

EPA will engage with State Drinking Water Administrators and drinking water utilities to encourage States to review and update existing source water assessments if necessary, including potential inclusion of information available through various chemical regulatory programs to determine whether adequate preventive measures are in place. There are funds available for the specific activities described above via the Drinking Water State Revolving Fund. EPA is aware of State efforts that incorporate EPCRA facilities and public water system information that could potentially serve as a model for identifying priorities for action. For example, in the aftermath of the spill in the Elk River in West Virginia in 2014, the State of Oklahoma developed a GIS layer that identifies EPCRA Tier II facility locations (as reported in compliance with the EPCRA requirements) and nearby public drinking water intakes and provides that information to LEPCs and public water systems for planning purposes.

3.4.8. Increasing OSHA Penalties

OSHA's PSM standard and EPA's RMP regulation were created at about the same time pursuant to the CAA amendments to address the same underlying general hazards. Yet the OSH Act's penalty provisions are much weaker than those under the CAA's RMP program. This imbalance in penalties should be corrected by strengthening the OSH Act's civil monetary penalties and indexing them for inflation.

In addition to increased civil monetary penalties, the criminal penalty provisions of the OSH Act should be strengthened to provide a credible deterrent in order to achieve greater compliance

with workplace safety and health standards. Federal environmental laws carry tough criminal penalties: the CAA, the Clean Water Act, and the Resource Conservation and Recovery Act provide for criminal prosecution (up to 15 years in jail) for knowing violations of the law and for “knowing endangerment” that places a person in imminent danger of death or serious bodily harm, regardless of whether an injury occurs. Under the OSH Act, willful violations causing employee death [29 USC 666(e)] are Class B misdemeanors for a first conviction with a punishment of up to 6 months in jail. The OSH Act’s deterrence effect would be greatly enhanced with criminal provisions and penalties similar to those under the EPA.

OSHA will work with Congress to strengthen the OSH Act’s monetary and criminal penalties.

3.4.9. Pursuing a Statutory Amendment to the Safe Explosives Act (SEA)

The Federal explosives law administered by ATF requires that an applicant for a Federal explosives license or permit submit names of and appropriate identifying information regarding all employees who will be authorized by the applicant to possess explosive materials in the course of their work (employee possessors). ATF is required to conduct background checks on these individuals to ensure that they are not prohibited from possessing explosives (e.g., convicted felons, persons dishonorably discharged from the armed forces, fugitives from justice). Under some circumstances, individuals who are not bona fide employees of the licensee/permittee handle explosives on behalf of the licensee/permittee, under the supervision of a responsible person or employee possessor. Examples of such individuals are temporary labor service workers, volunteers, and employees of other companies. Because none of these types of workers are employees of the licensee or permittee company for whom the work is being performed, the law does not authorize ATF to perform background checks, and these persons are not able to act in the capacity of an employee possessor. This lack of a requirement for background checks on persons handling explosives creates the potential for prohibited persons to come into possession of explosives, and to become familiar with the storage, use, and other business practices of explosives companies.

Explosives industry members and associations have long recognized this safety and security gap, and have advocated for expanded coverage of the vetting requirements to also cover persons who are not employed by the licensee/permittee, but who possess explosives in the performance of duties on behalf of the licensee or permittee, similar to those of an employee. To follow-up on this recommendation, ATF will work with Congress to explore whether Federal explosives laws should be amended to require submission of information on such workers, and to give ATF authority to conduct background checks in the same manner as currently allowed for employees.

3.4.10. Improving Process for Notification of Stored Explosives to Fire Authorities

The Federal explosives regulation at 27 CFR 555.201(f) requires that any person storing explosives notify the local fire authorities of such storage. Notification is to be made orally by the end of the day on which storage begins, and in writing within 48 hours. This requirement is to ensure that local fire authorities are aware of the potential dangers from fighting fires near these stored explosives.

During listening sessions and in meetings with explosives industry members pursuant to the Executive Order, industry members and association representatives noted that personnel turnover in local emergency response operations may sometimes render the original notification of stored explosives of less value, because incoming personnel may never be aware of such documentation. Further, many locations rely upon volunteer or part-time personnel for their fire response activities. The industry representatives contended that the safety and security of explosives facilities, responders, and the surrounding communities would be improved with more frequent communication between explosives facilities and fire response authorities.

ATF and explosives industry representatives identified two potential improvements to the explosives storage notification process. First, better guidance will be developed to specify what additions or other significant changes to the storage facility should prompt a new notification to the local fire authorities. This will ensure that fire authorities are aware of such changes when they occur. Second, more frequent communications between explosives facilities and fire authorities will be encouraged. This will result in fire responders having more current information on explosives storage locations, and will promote explosives site visits and training opportunities for fire responders. ATF will work closely with explosives industry associations to develop best practices, procedures, and/or regulations to accomplish both of these objectives.

3.5. Incorporating Stakeholder Feedback and Developing Best Practices

3.5.1. Incorporating Stakeholder Feedback

The Working Group put significant effort into reaching out to stakeholders and received extensive and valuable feedback. Section 1.1.2 details the ways the Working Group solicited feedback, including: listening sessions, Webinars, meetings with stakeholder groups, attending stakeholder conferences, and collecting information directly through the dockets and email address (eo.chemical@hq.dhs.gov). The Working Group acknowledges that all of the partner agencies had significant prior contact with stakeholders and will continue to reach out to them on this important topic.

Appendix F summarizes many of the themes heard in stakeholder outreach. The themes covered the range of issues in the EO and much more. Importantly, the Working Group also heard many excellent examples of topics that could form the basis of best practices. The Working Group

sees the broader adoption of these practices as a major step forward in making the Nation's chemical and chemical-using infrastructure safer and more secure.


3.5.2. Capturing Best Practices

A best practice is a method or technique that consistently shows superior results to those achieved with other means for addressing a problem or issue. Best practices are the accumulation of lessons learned and are subject to continuous improvement as new information and experience are gained. Because each problem situation is unique, best practices are most effective when they are tailored to the specific circumstances of the problem or issue being addressed.

Best practices are:

- **Voluntary** - complementary to existing requirements
- **Documented** - the purpose, objectives, processes, and performance metrics are clear and understandable
- **Measurable** - goals are clear, and progress toward those goals can be measured
- **Repeatable** - the practice is structured clearly enough so that it can be replicated
- **Subject to evaluation** - by the implementing party and others

Best practices can be described along a continuum based on documented evidence of success, repeatability, and rigor of evaluation (see TABLE 2):



| | Innovative Practice | Promising Practice | Proven Practice |
|---------------------|--------------------------------------|--|--------------------------------------|
| Success | Early evidence of success | Demonstrates success | Success in a number of organizations |
| Repeatability | Shows potential for being repeatable | Limited repeatability | Broad repeatability |
| Rigor of Evaluation | Limited or no evaluation data | Some internal and external evaluation data | Independent research conducted |

TABLE 2.—Best Practices Continuum

The EO Working Group is seeking best practices to share with stakeholders involved in improving the safety and security of chemical facilities. Desired best practices include innovative, promising and proven practices in the areas of technology, training, safer alternatives, process safety, and administration.

- **Technology** may include software packages that (1) contain data processes to track chemical quantities contained within chemical facilities, (2) enhance information sharing by distributing information across stakeholder communities, and (3) increase coordination efforts in the event of an incident.
- **Training** may include in-person courses or software programs that promote the proper storage and safe handling of hazardous chemicals, effective techniques for reporting an error, and safely responding to incidents to mitigate both short-term and long-term risk.
- **Safer Alternatives** may include practicable risk reduction measures that specifically mitigate threats to the public, worker, health, environment, and facility during the production, transport, and use of chemicals.
- **Process Safety** may include best practices identifying tools, techniques, and programs to manage chemical safety processes to help prevent catastrophic accidents, particularly explosions, fires, and toxic releases.
- **Administrative** may include non-operational recommendations for implementing policies, guidelines, and standard operating procedures within facilities or across stakeholder communities.
- **Others** may include best practices that do not fall under the previous categories listed.

The Working Group developed an online repository so stakeholders involved in chemical facility safety and security can submit best practices as they are identified. This resource will allow stakeholders to research best practices submitted by their counterparts that may be applicable to their own processes. The newly launched repository can be found at <https://www.llis.dhs.gov/topics/chemical-facility-safety-and-security>.

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> [Topics](#) > Improving Chemical Facility Safety and Security - Executive Order 13650

Threats / Hazards

- [Active Shooter](#)
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- [Hurricanes](#)
- [Terrorist Attacks and Civil Disturbances](#)
- [Tornadoes](#)
- [Transportation Incidents](#)
- [Wildland Fires](#)
- [Winter Hazards](#)

Core Capabilities Initiative

- [Mass Care Services](#)
- [Cybersecurity](#)

Exercises

- [Homeland Security Exercise & Evaluation Program \(HSEEP\)](#)
- [NLE 2012](#)

EXECUTIVE ORDER 13650

On August 1, 2013, the President issued Executive Order 13650 - Improving Chemical Facility Safety and Security (EO) ([EO 13650](#)). The EO directs the Department of Homeland Security (DHS), the Environmental Protection Agency (EPA), the Department of Labor (DoL), the Department of Justice (DoJ), the Department of Agriculture (USDA), and the Department of Transportation (DoT) to establish a Chemical Facility Safety and Security Working Group to improve chemical facility safety and security in coordination with State regulators; State, local, and tribal emergency responders; chemical facility owners and operators; and local and tribal communities.

Criteria and Submission Process

Environmental-Community-Labor

Industry

Federal-State-Local-Tribal

First Responders

Section 7 of the EO requires the identification of best practices by the Working Group for the purpose of coordinating improvements to the safety and security of chemical facilities. The EO specifically states that, “*The Working Group shall convene stakeholders, including chemical producers, chemical storage companies, agricultural supply companies, State and local regulators, chemical critical infrastructure owners and operators, first responders, labor organizations representing affected workers, environmental and community groups, and consensus standards organizations, in order to identify and share successes to date and best practices to reduce safety risks and security risks in the production and storage of potentially harmful chemicals, including through the use of safer alternatives, adoption of best practices, and potential public-private partnerships.*”

Principles for Best Practices

Best practices are:

- Voluntary
- Complement existing regulations and standards;
- Promote and enhance effective facility or community safety and security;
- Documented;
- Measurable;
- Repeatable; and
- Reviewed with some rigor.

User-submitted best practices may include methods, techniques, processes, technologies, systems, policies, tactics, or approaches that result in successful, productive, safer, and more secure operations. Information will come from a variety of sources and may include anything from findings supported by scientific studies to successes with individual operations.

of FY 2016 and will use the framework described in this section to prioritize best practices for federal engagement.

| Stakeholder | Potential Topics for Best Practices |
|---|--|
| First Responder | <ul style="list-style-type: none"> • Information availability and awareness • Training opportunities • Information on equipment • Coordinating with local communities • Managing information in remote areas |
| Industry | <ul style="list-style-type: none"> • Coordinating preparedness and response activities with local communities • Coordinating and planning with first responders • Improving facility safety and security operations • Improving safety and security throughout the supply chain • Providing safer technology and alternatives |
| Environmental-Community-Labor | <ul style="list-style-type: none"> • Improving facility safety and security • Coordinating preparedness and response activities with local communities • Sharing risk information |
| Federal-State-Local-Tribal (SERC/TERC/LEPC/TERC) | <ul style="list-style-type: none"> • Obtaining and interpreting risk information • Planning for large scale emergencies • Balancing the importance of community safety |

TABLE 3.—Potential Topics for Best Practices

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4. Conclusion

Chemical facility safety and security require a shared commitment and will take the effort of all the stakeholders, working together, to prevent, prepare, and respond to chemical facility incidents. Nearly a million Americans go to work every day in chemical facilities and people globally depend on the products those workers make. Millions live in communities surrounding chemical facilities, including communities where people face disproportionate economic and health concerns. The chemical industry faces risks in its operations, risks it must effectively manage to ensure its workers and communities are safe and its facilities are secure.

Despite government and industry efforts over the years, recent incidents show there is more work to be done. The Working Group is building upon previous efforts and putting in place actions that will help minimize the occurrence of incidents, reduce their severity, and enhance the ability to respond. These actions focus on:

- Strengthening Community Planning and Preparedness
- Enhancing Federal Operational Coordination
- Improving Data Management
- Modernizing Policies and Regulations
- Incorporating Stakeholder Feedback and Developing Best Practices

Many of these actions have already been put in place or will be instituted in the next year, while the success of other improvements relies on longer-term planning, coordination, and action.

Preparedness is an ongoing, evolving process. As the chemical facility safety and security community deepens collaboration, leveraging these recent efforts, this report marks only the end of the beginning. We hope to see the momentum established since the release of the EO carried forward through improved coordination structures, enhanced information sharing mechanisms and technologies, updated and streamlined regulations, and more effective enforcement of the Nation's laws.

The national conversation and actions started by the EO will continue. The Working Group strongly encourages the community to continue to contribute to this dialog by submitting successful practices to the Chemical Facility Safety and Security online best practices forum at <https://www.llis.dhs.gov/topics/chemical-facility-safety-and-security> or provide direct feedback to the Federal departments and agencies via the EO docket or the eo.chemical@hq.dhs.gov email address.



In collaboration with the many partners referenced throughout this report, we will continue to work together to increase the safety and security of chemical facilities, of the workers who are the lifeblood of the industry, and of the surrounding communities. The most important lesson learned from this effort is that every stakeholder group in the chemical facility community plays a role in ensuring safe and secure operations. Safety and security are a shared commitment. We are striving to improve safety and security of chemical facilities with our partners on behalf of the American public.

A Appendix: Acronyms and Abbreviations

| | |
|-----------------|--|
| AEGL | Acute Exposure Guideline Level |
| ANPRM | Advance Notice of Proposed Rulemaking |
| ATF | Bureau of Alcohol, Tobacco, Firearms and Explosives |
| CAA | Clean Air Act |
| CAMEO | Computer-Aided Management of Emergency Operations |
| CAV | Compliance Assistance Visit |
| CDC | Certain Dangerous Cargo |
| CFATS | Chemical Facility Anti-Terrorism Standards |
| COI | Chemicals of Interest |
| CSB | Chemical Safety Board |
| DHS | Department of Homeland Security |
| DOJ | Department of Justice |
| DOL | Department of Labor |
| DOT | Department of Transportation |
| EAS | Emergency Alert System |
| EO | Executive Order 13650 – <i>Improving Chemical Facility Safety and Security</i> |
| EPA | Environmental Protection Agency |
| EPCRA | Emergency Planning and Community Right-to-Know Act |
| FEMA | Federal Emergency Management Agency |
| FRP | Facility Response Plan |
| FRS | Facility Registry Service |
| GCC | Government Coordinating Council |
| GIS | Geographic Information System |
| HAZMAT | Hazardous Materials |
| HAZWOPER | Hazardous Waste Operations and Emergency Response |
| HSA | Homeland Security Advisor |
| IPAWS | Integrated Public Alert and Warning System |
| IST | Inherently Safer Technology |
| LLIS | Lessons Learned Information System |
| LEP | Local Emphasis Program |
| LEPC | Local Emergency Planning Committee |

| | |
|---------------|--|
| MTSA | Maritime Transportation Security Act |
| NAC | National Advisory Committee |
| NCP | National Contingency Plan |
| NFPA | National Fire Protection Association |
| NIST | National Institute of Standards and Technology |
| NJDEP | New Jersey Department of Environmental Protection |
| NOAA | National Oceanic and Atmospheric Administration |
| NPPD | National Protection and Programs Directorate |
| NRT | National Response Team |
| OSC | On-Scene Coordinator |
| OSHA | Occupational Safety and Health Administration |
| PHMSA | Pipeline and Hazardous Materials Safety Administration |
| PHA | Process Hazard Analysis |
| PSM | Process Safety Management |
| RBPS | Risk-Based Performance Standards |
| RFI | Request for Information |
| RMP | Risk Management Program |
| RRT | Regional Response Team |
| SBREFA | Small Business Regulatory Enforcement Fairness Act |
| SCC | Sector Coordinating Council |
| SDS | Safety Data Sheet |
| SDWA | Safe Drinking Water Act |
| SEA | Safe Explosives Act |
| SEP | Supplemental Environmental Project |
| SERC | State Emergency Response Commission |
| SLTT | State, Local, Tribal, and Territorial governments |
| SOP | Standard Operating Procedure |
| SRS | Substance Registry Services |
| SSP | Site Security Plan |
| SVA | Security Vulnerability Assessment |
| TEPC | Tribal Emergency Planning Committee |
| TERC | Tribal Emergency Response Commission |

| | |
|--------------|--|
| THIRA | Threat and Hazard Identification and Risk Assessment |
| TSA | Transportation Security Administration |
| USCG | United States Coast Guard |
| USDA | United States Department of Agriculture |
| VPP | Voluntary Protection Program |
| WEA | Wireless Emergency Alert |

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B Appendix: Glossary of Terms

| Term | Definition |
|---|--|
| Acute Exposure Guideline Levels (AEGL) | Developed for acutely toxic chemicals, AEGLs are short-term air exposure levels, above which the general population could experience adverse health effects, if exposed. They are used by the emergency response community when dealing with chemical spills or other catastrophic exposures. AEGLs are designed to protect the general population, including susceptible subpopulations, such as infants, children, the elderly, persons with asthma, and those with other illnesses, which are groups not generally considered in the development of workplace exposure levels. http://www.epa.gov/oppt/aeql/ |
| Computer-Aided Management of Emergency Operations (CAMEO) | CAMEO is a system of software applications used to plan for and respond to chemical emergencies. http://www2.epa.gov/cameo |
| Chemical Facility Anti-Terrorism Standards (CFATS) | The DHS regulatory program for facilities that manufacture, use, store, or distribute certain chemicals above a specified quantity. CFATS identifies high-risk chemical facilities and regulates their security with risk-based performance standards (RBPS). https://www.dhs.gov/chemical-facility-anti-terrorism-standards |
| Chemical of Interest (COI) | Any chemical on the list of chemicals found in CFATS Appendix A that presents security concerns, including the risk of release, theft/diversion, or sabotage/contamination. http://www.dhs.gov/xlibrary/assets/chemsec_appendixa-chemicalofinterestlist.pdf |
| Executive Order (EO) 13650 | Improving Chemical Facility Safety and Security. Signed August 1, 2013, the EO outlines measures to be taken by executive departments and agencies with regulatory authority to further improve chemical facility safety and security in coordination with owners and operators. http://www.whitehouse.gov/the-press-office/2013/08/01/executive-order-improving-chemical-facility-safety-and-securityQ |
| Emergency Planning and Community Right-to-Know Act (EPCRA) | Federal Statute that requires hazardous chemical emergency planning for extremely hazardous substances (EHSs) by State and local governments, Indian tribes, and industry and requires industry to report on the storage, use, and releases of hazardous chemicals to State and local governments. http://www2.epa.gov/epcra-tier-i-and-tier-ii-reporting |

| Term | Definition |
|--|---|
| Facility Response Plan (FRP) | <p>A Facility Response Plan (FRP) demonstrates a facility's preparedness to respond to a worst case oil discharge. Under the Clean Water Act, as amended by the Oil Pollution Act, certain facilities that store and use oil are required to prepare and submit these plans.</p> <p>http://www.epa.gov/OEM/content/frps/index.htm</p> |
| Highly Hazardous Chemicals | <p>Chemicals that present the potential for a catastrophic event at or above the threshold quantity and are covered by PSM requirements.</p> <p>https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9761&p_table=standards</p> |
| Inherently Safer Technology (IST) ³² | <p>IST is a design concept with the goal of permanently eliminating or reducing hazards to avoid or reduce the consequences of incidents. IST considers options such as: eliminating a hazard, reducing a hazard, substituting a less hazardous material, using less hazardous process conditions, and designing a process to reduce the potential for, or consequences of, human error, equipment failure, or intentional harm.</p> <p>https://www.aiche.org/sites/default/files/docs/embedded-pdf/ist_final_definition_report.pdf</p> |
| Local Emergency Planning Committee (LEPC) | <p>Organizations established under EPCRA that require stakeholders to coordinate and develop an emergency response plan, review the plan at least annually, and provide information about chemicals in the community to citizens.</p> <p>http://www2.epa.gov/epcra/local-emergency-planning-committees</p> |
| Process Safety Management (PSM) Standard | <p>PSM is an OSHA standard that addresses the management of hazards associated with processes using highly hazardous chemicals. The requirements are addressed in specific standards for general and construction industries.</p> <p>https://www.osha.gov/SLTC/processsafetymanagement/</p> |
| Risk Management Plan (RMP) Program | <p>Under the authority of section 112(r) of the Clean Air Act, the Chemical Accident Prevention Provisions require facilities that produce, handle, process, distribute, or store certain chemicals to develop a risk management program, prepare a RMP, and submit the RMP to EPA.</p> <p>http://www.epa.gov/emergencies/content/rmp/</p> |

³² The definition of Inherently Safer Technology is included to provide additional context for readers of this report. It should not be considered the established administration definition or position.

| Term | Definition |
|---|---|
| Regional Response Team (RRT) | <p>Thirteen teams established under the National Oil and Hazardous Substances Pollution Contingency Plan. Each team is co-chaired by the USCG and EPA and carries out a variety of preparedness and risk assessment functions related to oil, chemical, and hazardous materials incidents. The team includes representatives from Federal, State, local, and tribal agencies and typically includes informal participants from the private sector.</p> <p>http://www2.epa.gov/emergency-response/national-oil-and-hazardous-substances-pollution-contingency-plan-ncp-overview</p> |
| Safety Data Sheets (SDSs) | <p>SDSs (formerly known as material safety data sheets or MSDSs) are used to communicate the hazards of chemical products. SDSs are intended to provide workers and emergency personnel with procedures for handling or working with a substance in a safe manner.</p> <p>https://www.osha.gov/Publications/HazComm_QuickCard_SafetyData.html</p> |
| State Emergency Response Commission (SERC) | <p>Multi-stakeholder Commissions appointed by the governor that are responsible for implementing EPCRA provisions within the State. Key responsibilities include: (1) designation of emergency planning districts, (2) appointment and supervision of LEPCs, (3) review of local emergency response plans, (4) establishment of procedures for processing public information requests, and (5) designation of an information coordinator.</p> <p>http://www2.epa.gov/epcra/state-emergency-response-commissions</p> |
| State and Major Urban Area Fusion Centers | <p>Centers serving as focal points within the State and local environment for the receipt, analysis, gathering, and sharing of threat-related information between the Federal government, SLTT, and private sector partners</p> <p>http://www.dhs.gov/state-and-major-urban-area-fusion-centers</p> |
| Substance Registry Service (SRS) | <p>EPA's central system for information about substances that are tracked or regulated by EPA or other sources.</p> <p>www.epa.gov/srs</p> |
| Tribal Emergency Response Commission (TERC) | <p>Tribes can establish TERCs, which are responsible for coordinating certain emergency response activities and can appoint TEPCs.</p> <p>http://www.epa.gov/tribal/laws/epcra.htm</p> |
| Threat and Hazard Identification and Risk Assessment (THIRA) | <p>FEMA's four step common risk assessment process that helps stakeholders understand risks and estimate capability requirements.</p> <p>http://www.fema.gov/threat-and-hazard-identification-and-risk-assessment</p> |

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C Appendix: Resources

| Resource | Description | Primary Audience |
|--|---|--|
| Acute Exposure Guideline Levels (AEGLs) | AEGLs describe the risk to humans from single or rare incidents of exposure to hazardous airborne chemicals. http://www.epa.gov/oppt/aegl/ | Industry First Responders LEPCs/TEPCs SERCs/TERCs |
| Chemical Sector Training and Resources | DHS Website that provides interactive web-based chemical security awareness training and access to security seminars and exercises for chemical industry stakeholders https://www.dhs.gov/chemical-sector-training-and-resources | Industry |
| Chemical Facility Anti-Terrorism Standards (CFATS) | The DHS regulatory program for facilities that manufacture, use, store, or distribute certain chemicals above a specified quantity. http://www.dhs.gov/chemical-facility-anti-terrorism-standards | Industry LEPCs/TEPCs SERCs/TERCs Public First Responders |
| Chemical Facility Anti-Terrorism Standards (CFATS) Knowledge Center | An online repository of Frequently Asked Questions, articles, and documents relating to CFATS and Ammonium Nitrate Programs. http://csat-help.dhs.gov/apex/f?p=100:1:0 | Industry LEPCs/TEPCs SERCs/TERCs Public First Responders |
| Computer-Aided Management of Emergency Operations (CAMEO) | EPA system of software applications used to plan for and respond to chemical emergencies. http://www2.epa.gov/cameo | First Responders LEPCs/TEPCs SERCs/TERCs |
| Envirofacts | EPA system that provides search access to multiple environmental databases that may include data on such things as toxic chemical releases, water discharge permit compliance, hazardous waste handling processes, Superfund status, and air emission estimates. http://www.epa.gov/enviro/ | Community Industry First Responders LEPCs SERCs/TERCs Workers |
| EO Docket | Website where stakeholders can provide comments and suggestions on issues pertaining to the EO. http://www.regulations.gov/#!documentDetail;D=DHS-2013-0075-0001 | Community Industry First Responders LEPCs SERCs/TERCs Workers |

| Resource | Description | Primary Audience |
|---|---|--|
| EO Website | Website, hosted by OSHA, providing a repository of EO-related documents, resources, and announcements. https://www.osha.gov/chemicalexecutiveorder/ | Community Industry First Responders LEPCs/TEPCs SERCs/TERCs Workers |
| Facility Registry Service (FRS) | EPA system that provides data about facilities, sites, or places of environmental interest to support EPA's mission of protecting human health and the environment. http://www.epa.gov/frs | Community Industry First Responders LEPCs/TEPCs SERCs/TERCs Workers |
| Federal Emergency Management Institute | Training resources focused on all hazards preparedness education. http://training.fema.gov/EMI/ | First Responders Industry LEPCs/TEPCs SERCs/TERCs |
| FirstResponderTraining.gov | FEMA Website offering more than 150 courses to help build critical skills first responders need to function effectively in mass consequence events. https://www.firstrespondertraining.gov/ | First Responders |
| Grants.gov | Provides a unified site for interaction between grant applicants and the U.S. Federal agencies that manage grant funds, including information on all available Federal grants specific to chemical safety and security that communities can use for community chemical safety and security planning. http://www.grants.gov | Community Industry First Responders LEPCs/TEPCs SERCs/TERCs |
| Homeland Security Information Network (HSIN) | Federal, State, local, tribal, territorial, international, and private sector homeland security partners use HSIN to manage homeland security operations, analyze data, send alerts and notices, and in general, share the information they need to do their jobs. https://hsin.dhs.gov | Industry First Responders LEPCs/TEPCs SERCs/TERCs |

| Resource | Description | Primary Audience |
|---|---|--|
| Integrated Public Alert and Warning System (IPAWS) | <p>FEMA system that provides public safety officials with an effective way to alert and warn the public about serious emergencies using the Emergency Alert System (EAS), Wireless Emergency Alerts (WEA), the National Oceanic and Atmospheric Administration (NOAA) Weather Radio, and other public alerting systems from a single interface.</p> <p>http://www.fema.gov/integrated-public-alert-warning-system</p> | <p>Community Industry First Responders LEPCs/TEPCs SERCs/TERCs Workers</p> |
| Lessons Learned Information System (LLIS) | <p>Lessons Learned Information Sharing (LLIS.gov) is a DHS/Federal Emergency Management Agency information and collaboration resource that helps first responders, emergency managers, and homeland security officials prepare for, protect against, respond to, recover from, and mitigate terrorist attacks, natural disasters, and other emergencies. The EO is leveraging LLIS for the Best Practice repository.</p> <p>https://www.llis.dhs.gov/topics/chemical-facility-safety-and-security</p> | <p>Community Industry First Responders LEPCs/TEPCs SERCs/TERCs Workers</p> |
| National Hazardous Materials Fusion Center | <p>Provides resources and training materials focused on hazardous materials incidents</p> <p>http://www.hazmatfc.com/Pages/Home.aspx?navItemNumber=571</p> | <p>Industry First Responders LEPCs/TEPCs SERCs/TERCs</p> |
| Substance Registry System (SRS) | <p>EPA system that provides information about substances that are tracked or regulated by EPA or other sources. It is the authoritative resource for basic information about chemicals, biological organisms, and other substances of interest to EPA and its State and tribal partners.</p> <p>http://www.epa.gov/srs</p> | <p>Community Industry First Responders LEPCs SERCs/TERCs Workers</p> |

| Resource | Description | Primary Audience |
|---------------------------------------|---|--|
| Toxics Release Inventory (TRI) | EPA system that tracks the management of certain toxic chemicals that may pose a threat to human health and the environment. http://www2.epa.gov/toxics-release-inventory-tri-program | Community Industry First Responders LEPCs/TEPCs SERCs/TERCs Workers |

D Appendix: Significant Chemical Incidents

TABLE D1 describes 27 significant incidents occurring since 2009 that demonstrate chemical safety hazards. This list of incidents is not exhaustive and was collected from multiple sources. These incidents resulted in over 75 fatalities and numerous injuries and extensive impacts in facilities and surrounding communities.

| Date | Location | Consequence | Description |
|------------|---------------------|---|--|
| 5/4/2009 | West Carrollton, OH | 2 injuries Multiple offsite consequences | Flammable vapors were suddenly released into the atmosphere and ignited, resulting in an explosion and fire that seriously injured two workers and damaged 20 residences. |
| 5/13/2009 | Louisville, KY | 2 fatalities | Over 5,000 pounds of ammonia released during maintenance of an unmarked pipe and valve, killing two maintenance workers who did not know the pipe contained anhydrous ammonia. |
| 6/9/2009 | Garner, NC | 4 fatalities 20+ injuries | An explosion at a food facility killed four workers and injured dozens more. |
| 7/15/2009 | Swansea, SC | 1 offsite fatality 2 injuries | A cargo transfer hose ruptured shortly after transfer of anhydrous ammonia began from a cargo tank truck to a storage tank. A white cloud of anhydrous ammonia moved from the parking lot of the facility across a U.S. highway -- a motorist traveling north on the highway drove into the ammonia cloud and died of ammonia poisoning. |
| 9/11/09 | Londonderry, OH | 1 fatality 4 injuries | Five employees were working on the site of a nonproductive natural gas well that was being plugged and abandoned. Water was poured into the well, circulated, rose to the top, and flowed into a trench and pit. The pit liner started to slide into the pit. One employee ran over to pull it back up when a pocket of hydrogen sulfide released from the top of the pipe, asphyxiating and killing the employee. The four other employees ran to his aid and became incapacitated, but not killed, by the gas. |
| 10/9/2009 | Aurora, NC | 18 injuries | A loading arm disengaged at a railcar unloading station releasing over 7,000 pounds of anhydrous ammonia and injuring 18 workers. |
| 10/23/2009 | Bayamón, | Significant offsite damage | A massive fire and explosion sent huge flames and smoke plumes into the air. The |

| Date | Location | Consequence | Description |
|------------|------------------|---|--|
| | PR | State of emergency declared | resulting pressure wave damaged surrounding buildings and impacted moving vehicles. |
| 11/16/2009 | Rosemount, MN | 2 fatalities | Two workers died when a high pressure pipe carrying anhydrous ammonia dislodged during delivery operations. |
| 12/7/2009 | Belvidere, IL | 1 offsite fatality | A large explosion at a crystal manufacturing plant launched debris 300 yards, fatally injuring a member of the public. |
| 1/23/2010 | Belle, WV | 1 fatality Unmitigated environmental release | A release of highly toxic phosgene killed an employee. This followed two other incidents at the same plant in the same week, including an ongoing release of chloromethane, which went undetected for several days. |
| 2/7/2010 | Middletown, CT | 6 fatalities | Six workers were killed when natural gas released during pipe cleaning operations ignited and exploded. |
| 3/26/2010 | West Liberty, IA | 16 injuries | A leak originating on the roof of a meat processing facility released over 500 pounds of anhydrous ammonia. The facility's air circulation system then carried the toxic fumes inside, injuring 16 employees. |
| 4/2/2010 | Anacortes, WA | 7 fatalities | Seven employees were killed after a release and explosion during a maintenance operation. |
| 4/20/2010 | Gulf of Mexico | 11 fatalities Large environmental impact | A sudden explosion and fire on an oil rig killed 11 workers and caused a massive oil spill into the Gulf of Mexico. |
| 7/22/2010 | Monaca, PA | 2 fatalities | An explosion and fire killed two workers at a zinc recycling facility. |
| 7/23/10 | Cheswick, PA | 2 fatalities | Two employees were welding on an oil storage tank that contained approximately 85 barrels of crude oil. The tank exploded, and it was propelled over 200 feet through the air. Both employees were killed and the explosion caused the gas well to ignite. |
| 8/23/2010 | Theodore, AL | 130+ offsite injuries | An uncontrolled release of ammonia at a refrigerated warehouse and distribution center resulted in more than 130 members of |

| Date | Location | Consequence | Description |
|-----------|--------------------|--------------------------------|--|
| | | | the public seeking medical attention. |
| 12/9/2010 | New Cumberland, WV | 3 fatalities | An explosion at a titanium plant, killed three workers. |
| 1/31/2011 | Gallatin, TN | 5 fatalities | Three combustible dust incidents over 6-months killed five workers. |
| 3/9/2011 | Lovington, NM | 1 fatality 3 injuries | A crew of four employees was working on an oil rig when a blowout occurred and ignited. Three were burned, one of whom died of his injuries. |
| 3/21/2011 | Louisville, KY | 2 fatalities | Two workers were killed and two others injured as a result of a fire and explosion at a facility that produces calcium carbide products. |
| 4/8/2011 | Waikale, HI | 5 fatalities 1 injury | An explosion in a fireworks storage facility killed five workers and injured one other. |
| 8/29/2011 | Glenrock, WY | 3 fatalities | Three employees were installing piping on an existing oil well site when a fire and explosion occurred, killing all three workers. |
| 8/6/2012 | Richmond, CA | 15,000 injuries | Flammable vapor ignited and caught fire, resulting in approximately 15,000 people from the surrounding area seeking medical treatment. |
| 9/24/2012 | Memphis, TN | 2 fatalities | Two workers transferring furfurlyamine and methanol from a storage tank to a reactor when an explosion occurred. Both were killed. |
| 4/17/2013 | West, TX | 15 fatalities 100+ injuries | A massive explosion at a fertilizer storage and distribution killed 15 people, including a volunteer, firefighters, and a private citizen, and injured hundreds of others. |
| 6/13/2013 | Geismar, LA | 2 fatalities | A catastrophic failure of a heat exchanger connected to a distillation column resulted in a fire and explosion that killed two workers. |

TABLE D1.—Significant Chemical Incidents

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E Appendix: Federal Standard Operating Procedure (SOP)

E1.1. Purpose

The President issued Executive Order 13650 - *Improving Chemical Facility Safety and Security* (EO) on August 1, 2013 to improve chemical facility safety and security in coordination with owners and operators. The EO directs EPA, the DOL (OSHA), the DOJ, the USDA, DOT, and DHS to identify ways to improve operational coordination with State and local partners; enhance Federal agency coordination and information sharing; modernize policies, regulations, and standards in order to enhance safety and security in chemical facilities; and work with stakeholders to identify best practices to reduce safety and security risks in the production and storage of potentially harmful chemicals. The EO also established a Chemical Facility Safety and Security Working Group, which includes each of these agencies. This Working Group will continue to function in the future in order to foster operational coordination and further other purposes related to chemical safety and security.

This SOP outlines the procedures essential for a unified Federal approach for identifying and responding to risks in chemical facilities. SOPs will be developed by the EO Working Group within the regions to support the actions identified in this Federal SOP.

E1.2. Scope

This Federal SOP is applicable to the conduct of pre-inspection, inspection, post-inspection, and post-incident operations; however, nothing in this SOP should be construed as a grant of authority to act outside the scope of duties delineated by existing authorizing language.

E1.3. Authorities

The following are applicable authorities driving this SOP:

1. Clean Air Act
2. Occupational Safety and Health (OSH) Act of 1970
3. National Contingency Plan, 40 CFR Part 300
4. Executive Order (EO) 13650: Improving Chemical Facility Safety and Security
5. National Response Framework, May 2013
6. Title II of the Homeland Security Act of 2002 (Public Law 107-296), as amended, March 2006
7. Homeland Security Appropriations Act of 2007, Public Law 109-295, Section 550
8. Chemical Facility Anti-Terrorism Standards, 6 CFR Part 27.
9. Maritime Transportation Security Act, Public Law 107-295

E1.4. Definitions

1. **Chemical Facility Safety and Security Executive Working Group:** Responsible for the overall execution of activities, as directed by the National EO Working Group, related to EO 13650, Improving Chemical Facility Safety and Security, at the regional level. There will be a national level and regional level body.
2. **Federal Partners:** Federal agencies with responsibility for some facet of chemical safety and/or security as defined by EO 13650. These include, but are not necessarily limited to, EPA, DOJ, DOT, DOL/OSHA, USDA, and DHS.
3. **National EO Working Group:** Responsible for the day-to-day execution of activities related to EO 13650, Improving Chemical Facility Safety and Security.
4. **National Response Team (NRT):** As an organization, the NRT does not physically respond to an incident scene; rather, it provides Federal resources, technical assistance, and policy guidance for pollution incidents in support of the Federal On-Scene Coordinator.
5. **Outreach:** Presentations, meetings, and other communication – formal and informal – conducted in order to both increase awareness of the program and to facilitate information sharing among Federal, State, and local entities.
6. **Regional Response Team (RRT):** Responsible for developing regional planning and policy and coordination bodies to provide advice and assistance to the Federal On-scene Coordinator.
7. **Sector Coordinating Council (SCC)/Government Coordinating Council (GCC):** The National Infrastructure Protection Plan’s sector partnership model has membership that is representative of a broad base of owners, operators, associations, and other entities, both large and small, within a sector. The SCCs enable owners and operators to interact on a wide range of sector-specific strategies, policies, activities, and issues. The GCC is formed as the government counterpart for each SCC to enable interagency and cross-jurisdictional coordination. The GCC comprises representatives from across various levels of government (Federal, State, local, or tribal), as appropriate to the operating landscape of each individual sector.
8. **State Entities:** Varied State organizations with responsibility for some aspect of chemical safety and/or security. Particular titles and functions of these agencies vary greatly by State and, as such, are not as well positioned for systematic information-sharing procedures as Federal entities are.

E1.5. Roles and Responsibilities

The following provides a summary of the key roles and responsibilities of those entities involved in the EO implementation.

1. Executive Committee (EPA, DOL/OSHA, DHS)

The EO 13650 Working Group leadership, at the Assistant Secretary level, have responsibility for overall conduct of efforts in furtherance of the goals and activities in support of the execution of the EO and will continue to chair a Federal-level interagency coordinating committee. The Executive Committee will:

- 1.1. Provide management and leadership to ensure that EO Regions function effectively; ensure they work as an efficient and effective team, pooling talents and experience from the RRTs and other standing regional organizations.
- 1.2. Leverage the NRT, RRTs, and GCC/SCCs to support the EO Working Groups by providing cross-sector coordination with State, local, and tribal governments and the chemical sector. Will coordinate, on behalf of the Working Groups, strategies, activities, policies, and communications across governmental organizations with the SERCs, LEPCs, tribal, and territorial organizations, the Oil and Natural Gas Sector Coordinating Council, and the Chemical Sector Coordinating Council.
- 1.3. Designate a Chemical Facility Safety and Security National Working Group at the Senior Executive Service (SES) Level, which will be chaired by EPA, DOL/OSHA, and DHS (USCG and National Protection and Programs Directorate [NPPD]) and will include SES representation from other relevant agencies such as DOJ/ATF, DHS (FEMA and TSA), and DOT.

2. National Working Group (USCG, NPPD, EPA, and DOL/OSHA Headquarters; SES Level)

Meetings will take place monthly to oversee the execution of actions related to improving chemical facility safety and security.

- 2.1. Designate Chemical Facility Safety and Security Regional Working Groups at the Federal civil service general schedule grade of 15 or SES level, including in those groups representatives of all Federal agencies that play a role in regulating chemical safety and/or security.
- 2.2. Execute the guidance from the National Working Group and oversee the regional management of EO activities.
- 2.3. Provide quarterly updates to the National Working Group, the NRT and the GCCs/SCCs.
- 2.4. Ensure the Regional SOPs are developed and maintained as necessary.
- 2.5. Leverage the support of the NRT and the GCCs/SCCs as required to ensure the effective execution of EO related activities.

3. Regional Working Group (USCG, NPPD, EPA, and OSHA)

- 3.1. Oversee field-level management and execution of duties related to the EO and ensure regional consistency in operations and reporting. Establish and manage a

regional coordinating committee that includes representatives from all relevant Federal agencies.

- 3.2. Manage and track cross-regional EO-related activities.
- 3.3. Assign, manage, and track EO-related tasks performed by regional personnel,
- 3.4. Coordinate and execute related tactical-level assignments.
- 3.5. Update the SES level National Working Group, and the RRT
- 3.6. Coordinate with SERCs, TERCs, State homeland security advisors, State fire marshals, and other State agencies as required.
- 3.7. Implement regional SOPs to define roles and responsibilities, operations, and coordinating structures.
- 3.8. Coordinate and execute inspections and outreach planning and prioritization.
- 3.9. Cross-train Federal inspectors on basics of other agencies' programs and institute protocols to be executed regarding interagency referrals of information.

E1.6. Standard Operating Procedures

In order to better ensure appropriate regulatory coordination, awareness and coverage, the Regional Working Group will leverage and include current standing bodies within their area of responsibility. This will include, but is not limited to, the RRT, the Area Maritime Security Committee (AMSC), and the FEMA region (see FIGURE E1).

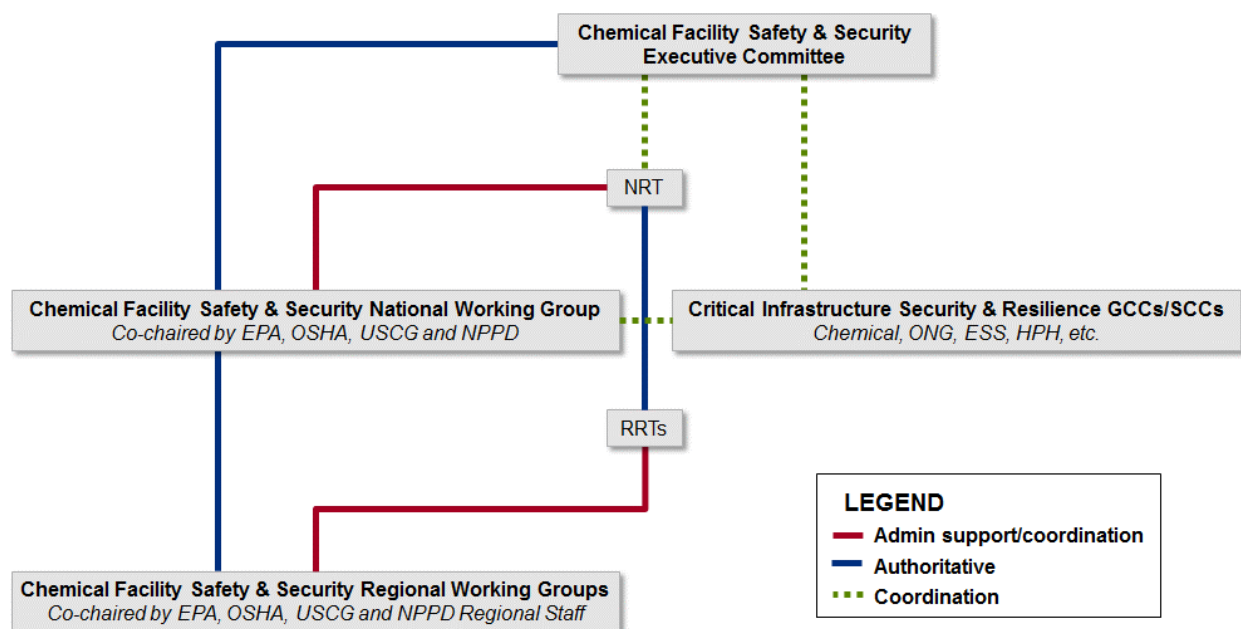


FIGURE E1. — EO Working Group Structure

1. Pre-Inspection

1.1. Data Comparison

- 1.1.1. Data Comparison – Headquarters: The Chemical Facility Safety and Security Executive Committee shall solicit lists of regulated facilities from all relevant Federal partners and compare them in order to identify inconsistencies or gaps that could indicate facilities potentially noncompliant with regulatory requirements. This will be conducted on a schedule necessary to fulfill EO objectives, generally annually but tailored for efficiency and effectiveness.
 - 1.1.1.1. Inconsistencies unable to be resolved at the HQ level will be referred to the Regional Working Group Chairs for field validation.
- 1.1.2. Data Comparison - Regional: On an appropriate basis, Regional Working Group Chairs and regional coordinating committee members will compare facility lists received from State entities against current data in order to identify inconsistencies or gaps that could indicate facilities potentially noncompliant with regulatory requirements.
 - 1.1.2.1. Regional personnel will report back to HQ disposition of inconsistencies for consolidated tracking.

1.2. Outreach

- 1.2.1. HQ personnel will meet regularly, but not less than quarterly, with corresponding personnel representing Federal partners in order to maintain awareness and facilitate interagency coordination of effort and EO implementation message.
 - 1.2.1.1. As appropriate, periodic meetings will take place with representatives of industry trade associations and appropriate stakeholders to include: Sector Coordinating Councils, appropriate labor unions, and appropriate environmental and community groups.
- 1.2.2. Regional personnel will have regular contact at the Regional, State, and local level with various chemical security stakeholders in order to increase awareness, develop relationships conducive to cooperation, and assist in coordination of effort.
 - 1.2.2.1. Field meetings with appropriate representatives of Federal partners are generally anticipated to occur on at least a quarterly basis, but may be modified to accommodate mission needs.
 - 1.2.2.2. Field meetings with appropriate State entities will occur on at least a semi-annual basis, but may be modified to accommodate mission needs. Such entities may include – but are not limited to – Homeland Security Advisors, SERCs, State police organizations, State environmental protection agencies, State fire marshals, and other applicable entities (as they vary by State).
 - 1.2.2.3. Field meetings with local-level stakeholders will occur on an ongoing basis as circumstances permit. In some cases – such as active local emergency planning committees (LEPCs) – contact is anticipated to correspond with the planned meetings of the stakeholder.

1.3. Inspection Coordination

- 1.3.1. Chemical Facility Safety and Security Regional Working Groups will maintain an inspection schedule that is updated at least monthly and will coordinate inspection schedules in order to avoid and resolve conflicts with respect to visits to facilities, as appropriate.
- 1.3.2. Chemical Facility Safety and Security Regional Working Groups will meet quarterly to discuss planned inspections, outreach, and stakeholder engagements in order to integrate efforts as necessary.

2. Inspections

Inspectors will be expected to maintain contact with counterparts in other agencies to optimize their respective inspection operations and share information on issues of possible interest to the other partners resulting from their inspection findings.

3. Post-Inspection

Inspectors will maintain contact with counterparts in other agencies to share information on compliance activities executed by the respective organizations that may be of interest to the other partners.

- 3.1. Inspectors will make facility referrals to other Federal agencies as required.

4. Post-Incident/Response Procedures/Investigation Activities

Federal response to chemical facility incidents is, and will be, governed by the National Contingency Plan. Direct tactical operations will be managed via the National Incident Management System and the Incident Command System (NIMS-ICS). DHS components and agencies will cooperate with the DOJ, the CSB, and appropriate State and local agencies on all investigative matters, in accordance with Memorandums of Understanding and other existing protocols.

When Emergency Support Function 10 (ESF #10), Oil and Hazardous Material Response, is activated under the National Response Framework (NRF), the ESF regional lead is responsible for developing a plan for providing the support requested under the appropriate ESF #10 mission assignment, including organizing support from ESF #10 support agencies as needed. In some cases, one or more RRT members may participate or stand watch at FEMA's Regional Response Coordination Center (RRCC) or Joint Field Office (JFO) for a particular incident; these RRT members can provide a forum and are critical for internal ESF #10 coordination within the RRT.

E1.7. Questions and Concerns

The POC for this SOP is the EO Working Group, EO.Chemical@hq.dhs.gov.

F Appendix: Stakeholder Perspectives

F1 Input in Response to Section 6(a): Options for Improved Chemical Facility Safety and Security

F1.1. Introduction

As a result of stakeholder feedback and public comments received in connection with the EO, the Working Group developed a preliminary list of options known as the *Executive Order 13650, Section 6(a) - Options for Policy, Regulation, and Standards Modernization* (http://www.osha.gov/chemicalexecutiveorder/Section_6ai_Options_List.html). These options identified potential adjustments and improvements to existing risk management practices, as well as suggestions for new areas of focus. The preliminary list of 6(a) options was published, and a public docket was opened for the public to comment on them. Based on these comments, the Working Group determined appropriate plans for improving chemical safety and security at chemical facilities. Comments received from the 6(a) options document public docket are summarized in this appendix but can be viewed in their entirety at: <http://www.regulations.gov/#!docketDetail;D=OSHA-2013-0026>. In accordance with the topics listed in the 6(a) options document, the stakeholder summaries have been broken out into the following nine key topic areas:

F1.2. Improving the Safe and Secure Storage, Handling, and Sale of Ammonium Nitrate

The Working Group examined ways to improve safe and secure storage, handling, and sale of ammonium nitrate. Specifically, the group examined coverage to look for gaps in both safety and security and sought comment on how regulations, policies, and guidance could be used to improve safety and security. The options the Working Group considered were:

- Identifying rulemakings, policy changes, and guidance that would enhance the safety and security of storage, handling, and sale of ammonium nitrate.
- Considering whether OSHA's existing requirements for ammonium nitrate should be clarified.
- Considering whether DHS should lower the screening threshold quantities for ammonium nitrate under CFATS, the Federal Government's primary regulatory authority for security of chemicals in stationary facilities. It requires high-risk chemical facilities to develop and implement security plans that currently meet 18-risk based performance standards. Lowering threshold quantities would require additional facilities with lower quantities of ammonium nitrate, to be subject to CFATS compliance.
- Thoroughly reviewing and considering by DHS the current filing extension granted to agricultural production facilities.
- Updating the *Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate* August 2013 and developing guidance products that would assist the

private sector and State and local governments to improve on-the-ground safety and security.

- Exploring how agencies should evaluate the implementation of safer alternatives and best practices for ammonium nitrate, and finding the best methods for this evaluation.
- Considering whether agencies should examine the use of third-party audits and the subsequent development of targeted guidance for industries that need help in understanding safe practices for handling ammonium nitrate.

The Working Group received many comments regarding the proposed ammonium nitrate options. Some commenters supported the Working Group's proposal to strengthen existing ammonium nitrate requirements. For example, an agricultural trade association encouraged DHS to expand the regulation of fertilizer grade ammonium nitrate and to finalize its ammonium nitrate safety program (ANSP) (OSHA-2013-0026-0079). Also, the same trade association, a private company, and an additional trade association supported OSHA updating the Explosive and Blasting Agents standard to be more aligned with current industry best practices (-0079, -0049, -0089 & -0092). However, the additional trade association did not support DHS's ANSP regulation (-0092).

Even though one private stakeholder supported updating ammonium nitrate storage requirements of the Explosive and Blasting Agents standard, it is unclear whether the standard applies to ammonium nitrate used in the fertilizer industry (-0049). A few commenters, including a U.S. Senator, told the Working Group that ammonium nitrate is inappropriate for EPA's RMP regulation (-0067, -0074 & -0092); however, an environmental and labor-interest group believed ammonium nitrate is appropriate for inclusion in the RMP regulation (-0089).

Commenters were divided about the inclusion of inherently safer technologies and its application to ammonium nitrate. Many industry stakeholders agreed that inherently safer technology should not be part of future regulations (-0067, -0068,, -0064, -0075, -0076, -0078, -0079, -0082, -0083 & -0086). However, labor and environmental interest stakeholders believed that inherently safer technologies should be included in any modernized Working Group standards (-0051, -0053, -0054, -0055, -0071, -0072, -0084, -0085, -0087, -0088 & -0089). Some commenters went even further, suggesting that the President should develop economic incentives for implementing inherently safer technologies (-0051, -0088 & -0089) or even develop pilot programs to follow two applications of inherently safer technologies (-0088 & -0089). Other commenters interpreted EPA's existing authority under Section 112(r)(1) of the Clean Air Act to already allow the enforcement of inherently safer technologies at RMP facilities (-0053, -0054, -0071 & -0088). It should be noted – as a part of a mass mailing campaign – that an additional 24,948 comments agreed with this notion, specifically stating:

"[EO 13650] presents the opportunity to enforce the 1990 Clean Air Act's Sections 112 (r)(1) and 112 (r)(7)(a). The EPA should create new guidance and regulation under these sections to require chemical plants to use the safest feasible chemical process to eliminate the potential for catastrophic chemical releases."

F1.3. Improving and Modernizing Process Safety

The Working Group examined methods to improve and modernize process safety. It solicited public comments on two types of options. One set of options consists of policy, regulations, and guidance alternatives. The second explores the possibility of collaboration with private sector organizations on external standards that could be developed. The Working Group sought information on the following alternatives in the first option:

- Determining whether EPA and OSHA should modernize, clarify, and harmonize OSHA's PSM standard and EPA's RMP regulation by engaging in rulemaking, policy change, or guidance. The two agencies would collaborate on initiation of such programs, with a goal toward maintaining parallel requirements and ensuring harmony between the two regulations.
- Considering what inconsistencies OSHA and EPA should harmonize to achieve consistency between PSM and RMP enforcement policies and guidance. Although PSM and RMP have 12 similar management system requirements, OSHA applies to worker protection, while EPA serves to protect the community and the environment.
- Considering how OSHA should clarify the PSM standard's exemption for retail operations and facilities.
- Considering if OSHA should adopt EPA's RMP policy for determining coverage of concentrations of PSM-listed chemicals. Doing so would replace OSHA's current policy of determining threshold quantities of covered chemicals with the concept of maximum concentrations commercially available.
- Determining how EPA, OSHA, and PHMSA could better account for human factors in areas such as: process safety, management of change, facility operating procedures, incident investigation, training, PHA, and, other elements.
- Considering whether EPA, OSHA, and PHMSA could initiate rulemaking, policy changes, or guidance by using existing leading and lagging indicators to better evaluate performance over time. To do so, the three agencies would have to decide what indicators are most meaningful.
- Considering whether guidance issued after a significant incident or release should focus on how to conduct root cause analysis, which helps employers and workers identify systemic causes as opposed to immediate causes. EPA, OSHA, and PHMSA plan to determine what level of root cause analysis is appropriate and feasible.
- Considering whether OSHA should develop PSM guidance specifically designed for small businesses, particularly those that handle highly hazardous chemicals that are not the employer's primary product.
- Considering how EPA, OSHA, PHMSA, and USCG could harmonize and standardize terminology to clarify requirements and definitions across multiple jurisdictions.
- Considering expanding inspector training to include best practices to enable inspectors to make recommendations that improve process safety beyond regulatory requirements.
- Inquiring about how EPA could update or upgrade its current suites of software tools.

- Evaluating whether EPA, OSHA, and PHMSA should implement a “safety case” regulatory model to lower risks as much as is reasonably practicable in complex industrial processes.
- Considering implementing inherently safer technologies and best practices into current risk and process safety programs.
- Deliberating about whether EPA and OSHA should use the RMP accident database to identify trends, and use the information to develop guidance or regulatory changes, compliance priorities, and technical assistance, and how best to accomplish that goal.
- Exploring the opportunities that exist for increasing worker involvement and labor-management cooperation in hazard investigations, the recommendations of corrective actions, risk management, and the prevention of retaliation against workers who report unsafe conditions.

The second group of options detailed collaboration with private sector organizations on external standards:

- Identifying opportunities to leverage and/or expand current industry programs and consensus standards to improve process safety and security for ammonium nitrate, especially for small businesses. EPA, OSHA, and NPPD seek to collaborate with industry on these goals, while encouraging best practices and improving regulatory efficiency. Along with this, the Working Group is exploring ways to identify potential areas where industry-led programs could be developed to improve ammonium nitrate safety and security.
- Considering which consensus standard groups EPA and OSHA should participate in to improve chemical process safety.

The Working Group received many comments regarding the proposed process safety improvement and modernization options. Many commenters expressed that any changes to the safety regulations would require the agencies to prove significant risk and follow the appropriate rulemaking process (-0064, -0075, -0081, -0086, -0092). The Working Group expresses both our agreement with these sentiments and our intention to follow all rulemaking procedures.

Some commenters proposed specific process safety improvements or modernizations. The Working Group received comments on: emergency planning improvements, enhanced employee participation, human factors, and process safety metrics. For emergency planning many commenters were in favor of improvements to existing regulations (-0051, -0089, -0069, -0088) – one stakeholder specifically proposed additional requirements for emergency planning and coordination requirements to OSHA’s PSM standard. However, other commenters believe that emergency planning improvements are not necessary (-0049, -0078) – stating that emergency planning and coordination with local authorities are already covered by EPA.

Improvements to employee participation and human factors requirements received mixed responses. Two commenters were in favor of improvements to employee participation requirements (-0051, -0089), while two other commenters believe existing requirements are

adequate (-0064, -0075). Similarly, the same two commenters in favor of improvements to employee participation voiced interest in improving human factors requirements. However, three commenters, including two industry associations, were against any additional human factors requirements (-0081, -0086, -0085).

Comments addressing modernization of process safety regulations to include process safety metrics (also known as “leading and lagging indicators”) were mostly of the same opinion. All but one commenter (-0092) believe process safety metrics should not be part of any future rulemaking efforts (-0075, -0081, -0085, -0086).

Some commenters, instead of detailing specific modernization options individually, chose to respond to process safety improvement and modernization in general – all but one (-0088) stating that they were against any modernization (-0049, -0064, -0069, -0076, -0086).

The Working Group requested comments on how OSHA should clarify the retail exemption and if OSHA should adopt EPA’s RMP policy for determining coverage of concentrations for regulated chemicals listed in PSM. Two trade associations responded to the retail exemption stating that it should not be changed (-0079, -0086). Further, one of those associations and an additional trade association agreed that OSHA should not adopt EPA’s RMP policy for determining chemical concentration covered by the regulation (-0086, -0078). However, a different trade association believes that both the retail exemption should be clarified and EPA’s RMP chemical concentration enforcement policy is appropriate for OSHA’s PSM standard (-0075).

All but one commenter (-0092) believes that guidance for root cause analysis would not be beneficial (-0064, -0081, -0085, -0086).

Overwhelmingly, nearly all comments received regarding the adoption of the safety case regulatory model were negative (-0064, -0069, -0075, -0081, -0085, -0086). One commenter stated:

“[Our organization] wholly opposes changing PSM or RMP to a safety case regulatory regime. The safety case framework would be a drastic overhaul of the current system. Against this, no real data establishes its value in the context of process safety for the chemical industry. [Our organization] believes that shifting responsibility to approve safety decisions from employers to inspectors, who inevitably will be less familiar with the jobsites, would detract from worker safety”

Only one commenter recommended further research into this regulatory model (-0090).

Similarly, nearly all comments received regarding enhanced inspector training were negative (-0075, -0081, -0085, -0086, -0092). Only one trade association supported the option (-0064).

Multiple commenters stated that the Working Group needs to improve its outreach and education (-0051, -0068, -0089) and continue participation in industry/consensus standard groups (-0064, -0075, -0078, -0081, -0089).

F1.4. Updating/Expanding Coverage of Hazardous Chemicals or Categories of Chemicals Under Process Safety and Security Regulations

The Working Group looked into current regulations and whether they should be expanded and updated to make provisions for additional hazardous chemicals or categories of chemicals currently not covered. In order to determine the best approach for covering additional hazardous chemicals or categories of chemicals under process safety and security regulations the Working Group considered the following options:

- Weighing whether OSHA and EPA should initiate rulemaking to cover additional hazardous chemicals under the PSM standard and RMP regulation. To accomplish this, the Working Group needs to study how to identify such substances.
- Exploring whether there is a simpler method by which the PSM and RMP standards' list of covered chemicals can be expanded or updated, outside of conducting the rulemaking to amend the lists.
- Determining what additional chemicals NPPD should consider adding to its CFATS COI list to better cover potentially high-risk chemical operations and facilities that may not be identified by regulators currently.
- Deciding whether DHS should attempt to harmonize its security requirements at chemical facilities that are exempt from CFATS with requirements that are applicable currently to existing CFATS-regulated operations.

The Working Group received five comments specifically addressing the proposed coverage of additional hazardous chemicals or categories of chemicals under the process safety and security regulations options. All of the commenters to this section expressed that before any additional chemicals can be added to any of the regulated lists of chemicals, the agencies must prove significant risk and follow the appropriate rulemaking process (-0075, -0078, -0083, -0086, -0092). The Working Group expresses agreement with these sentiments and its intention to follow all rulemaking procedures. One stakeholder also explicitly stated that there was no need for any additions to the regulated lists of covered chemicals (-0086).

Two industry associations agree that DHS should attempt to harmonize security requirements at chemical facilities exempt from CFATS with the requirements applicable to CFATS-regulated facilities (-0086, -0092), while a third trade association opposed this option (-0075).

F1.5. Defining/Regulating Chemical Reactivity Hazards

The Working Group singled out efforts to define and regulate reactive chemical hazards and considered the following options:

- Determining whether OSHA and EPA should initiate rulemaking, policy changes, or guidance to cover chemical reactivity hazards under the PSM standard and RMP

regulation, and what definitions, terms, and conditions should be used to best define the types of hazards that may lead to reactive incidents.

- Exploring whether and how EPA, OSHA, and NPPD should develop a consistent and universally applied definition of high risk chemical reactivity and/or reactive hazards, for future use in rulemaking, policy changes, or guidance across regulatory agencies.
- Considering how EPA and OSHA can continue to engage in industry initiatives on chemical reactivity such as the Center for Chemical Process Safety (CCPS) Reactivity Management Roundtable (RMR). Both agencies are seeking other outside initiatives that might help them better regulate and/or develop guidance or best practices.

The Working Group received four comments specifically addressing the proposed chemical reactivity hazards options. Only one commenter, a labor representative, supported adding reactive chemical hazard coverage to EPA and OSHA regulations (-0072). Two trade associations stated that they did not support efforts to incorporate chemical reactive hazards into new or existing regulations (-0075, -0086); one of these trade associations stated that more guidance is needed on reactive hazards instead of new regulations or additional coverage. Should the Working Group choose to develop a definition of high-risk chemical reactivity hazards for future rulemaking, one trade association encourages it to work with industry to develop a definition and recommends researching the DOT 4.1 hazard class (-0078).

F1.6. Handling Explosive Chemical Hazards

The Working Group examined explosive chemical hazards and how to safely store, use, dismantle, and dispose of these chemicals. Specifically, the Working Group solicited public comment on the following options:

- Identifying opportunities for involving stakeholders in developing guidance, best practices, and/or regulatory action that might be needed on explosives hazards.
- Considering whether OSHA should revise its Explosives and Blasting Agents standard so that it addresses dismantling and disposing of explosives, which the current rule does not cover.
- Exploring whether ATF should collaborate with industry associations in creating guidance on more robust locking mechanisms for explosives storage.
- Weighing whether ATF should collaborate further with the Institute of Makers of Explosives to identify permissible deviations or standards for physical factors in bulk storage of explosives. Physical factors, including expansion, contraction, and equipment calibration, can potentially impact a license or permit holder's ability to accurately measure and account for bulk storage of explosives.

The Working Group received two comments specifically addressing the proposed explosive chemical hazards options. Binary exploding targets should be covered by DHS's ANSP. Further, this commenter encourages ATF to continue efforts to identify permissible deviations or standards for physical factors in bulk storage of explosives and supports the development of a rule on magazine key control (-0092).

Only one commenter addressed expanding OSHA’s Explosives and Blasting Agents standard to cover dismantling and disposing and stated support for expanding the standard (-0089).

F1.7. Considering Oil and Gas Well Drilling, Servicing, and Production Options

The Working Group considered the following options for oil and gas well drilling, servicing and production:

- Considering whether OSHA should expand coverage of its PSM standard to address the regulation of oil and gas well drilling and servicing facilities. When OSHA originally drafted its PSM rulemaking it exempted oil and gas from coverage, in anticipation of regulating the industry through a separate standard. However, OSHA never promulgated a final oil and gas well drilling and servicing standard.
- Determining the economic impact of PSM enforcement by OSHA on oil and gas production facilities.
- Determining whether OSHA should continue to evaluate options and approaches that came out of the interagency stakeholder meeting on the Use of Performance-based Regulatory Models in the U.S. Oil and Gas Industry, Offshore and Onshore, held by OSHA, EPA, BSEE, USCG, and PHMSA, in September 2012.

The Working Group received many comments regarding the proposed oil and gas well drilling, servicing, and production options.

When asked if OSHA and EPA should expand PSM and RMP to cover oil and gas drilling and servicing, the Working Group received an illuminating response. All commenters who responded to these options were in favor of OSHA expanding PSM coverage (-0051, -0072, -0088, -0089) but were against EPA expanding RMP coverage (-0064, -0081).

In terms of the economic impact of OSHA resuming enforcement in the oil and gas production industry, one trade association representing this industry believes there could be substantial costs and adverse cost/pricing consequences to downstream and end users of the economy, with negative effects (-0081).

F1.8. Considering the Coverage of Bulk Storage of Flammable Liquids Under Process Safety and Security Regulations

The Working Group considered the coverage of bulk storage of flammable liquids under process safety and security regulations, and sought input on the following options:

- Considering increasing the regulation of large gasoline-storage terminals and whether EPA should clarify its current RMP gasoline exemption and newly review the flammability cutoff addressed by the NFPA 4 consensus standard.

- Considering whether and how OSHA should clarify its PSM standard by addressing the standard's current exemption for atmospheric storage tanks.
- Weighing whether OSHA should update its flammable liquids and spray finishing standards, which are based on outdated requirements from the 1960s, to reflect more recently applicable consensus standards.

The Working Group received many comments regarding the proposed coverage of bulk storage of flammable liquids under process safety and security regulations options.

Commenters were divided on whether OSHA should clarify the atmospheric storage tank exemption. Environmental justice and labor representatives were among those in favor of the clarification (-0072, -0089, -0051, -0088), while three trade associations opposed the clarification (-0069, -0078, -0081). Three commenters expressed concern over how OSHA would clarify the PSM standard's exemption for atmospheric storage tanks, stating that OSHA must prove significant risk and that any changes to the language of the standard must undergo proper rulemaking procedures (-0075, -0083, -0086). The Working Group, and specifically OSHA, recognizes this fact and plans to follow appropriate rulemaking procedures with any updates to the PSM standard. Two commenters wanted to change the exemption further to expand coverage to all atmospheric tanks containing gasoline and other hydrocarbons with similarly low flash points (-0051, -0089).

An environmental and labor interest group and a trade association supported updating OSHA's flammable liquids and spray finishing standards to reflect the latest consensus standards (-0078, -0089). Only one additional trade association was against modernizing OSHA's spray finishing using flammable and combustible materials standard (-0083).

Only one organization submitted a comment specifically addressing EPA's proposal to clarify the RMP gasoline exemption and revising the NFPA 4 flammability cutoff to increase regulatory coverage of large gasoline-storage terminals, and it was against the proposal (-0069).

F1.9. Examining the Safety Aspects of Process and Hazardous Chemical Security

The Working Group examined the safety aspect of process and hazardous chemicals. The options suggested are:

- Considering how NPPD can introduce modifications to its CFATS risk-tiering methodology so it will be both economical and mission critical.
- Determining whether and how DHS can clarify its CFATS reporting requirements as they relate to COI-listed fuels. Stakeholders expressed confusion, for example on how the current CFATS regulations address COI substances in certain fuel mixtures.
- Determining whether EPA should publish an alert on the prevention of accidental releases that result from unauthorized access at unmanned oil and gas facilities. EPA received a CSB recommendation to publish such an alert after several incidents at oil and gas storage facilities resulted in public fatalities.

- Considering whether other strategies might be developed jointly with NPPD to prevent such incidents.
- Exploring what vetting systems ATF could use to require workers in possession of explosives and responsible persons with Federal explosives licenses and permits, to be vetted more frequently than they are currently under the National Instant Criminal Background Check (NICS) system.

The Working Group received many comments regarding the proposed process and hazardous chemical security options.

Incorporating economic and mission criticality into the CFATS risk-tiering methodology drew mixed responses. Two trade associations were in support of the proposed changes to CFATS risk-tiering methodology (-0070, -0092), while another trade association and a labor representative were against the changes (-0083, -0068). An additional trade association expressed that such a change to CFATS risk-tiering would pose significant financial and logistical impacts to businesses and would require an appropriate rollout (-0075). One commenter strongly encouraged DHS to be transparent in developing any new risk-tiering methodology (-0086).

Only one stakeholder commented on addressing what vetting systems, other than NICS, ATF should use for more frequent vetting of employee possessors of explosives and responsible persons on Federal explosives licenses and permits, but it stated that it supports an alternate vetting and extension of permitting authority (-0092).

F1.10. Identifying Facilities Covered Under Existing Process Safety and Security Regulations

Finally, the Working Group explored issues that arise in identifying facilities covered under existing process safety and security regulations. The Working Group recognizes that it may not be aware of every facility within its respective jurisdictions due to reporting limitations and limited outreach. It considered the following options to potentially resolve these issues:

- Determining whether facilities and operations covered by OSHA's PSM standard, but not EPA's RMP reporting system, should be required to register under the RMP reporting system as well.
- Determining how DHS might identify operations that have not submitted required CFATS Top-Screens, while recognizing that 100% compliance is difficult to achieve because the program relies partially on self-reporting by facilities.

The Working Group received many comments regarding the proposed options for identifying facilities covered under existing process safety and security regulations.

Adding a requirement for PSM facilities to report to the existing EPA RMP reporting system drew mixed opinions. Two trade associations were against a reporting requirement (-0064, -

0075). An environmental- and labor-interest group and a trade association were amongst those in support of a reporting requirement (-0089, -0092, -0051,-0088). However, two commenters expressed that if reporting requirements were added to the PSM standard, it should not be done through EPA's existing RMP reporting system (-0081, -0092).

In order to improve identifying entities that have not submitted required CFATS Top-Screens, one commenter recommended significant outreach to industry as well as intergovernmental cooperation, and another commenter suggested data sharing with State/local governments, as well as EPA and OSHA (-0086, -0092). This commenter further requested DHS eliminate the Top-Screen extension for all agricultural chemicals.

F2 Input From Stakeholder Meetings

F2.1. Introduction

Chemical incidents have deep and sustained impact on multiple stakeholders, from industrial workers to the greater community; to first responders; to owners and operators; to local, State, and Federal Government. All are required to respond quickly and efficiently to any emergency. Section 7 of the EO directs the Working Group to convene stakeholders to solicit their input and identify and share best practices to reduce risk at chemical facilities. As the introduction to this report states, the Working Group traveled widely to hear stakeholder successes, frustrations, and suggestions for improving chemical facility safety and security. The Working Group is very grateful to these stakeholders for spending their time to attend the meetings and providing thoughtful and constructive feedback. The Working Group gained valuable insight from people who have worked at facilities, lived near them, and contributed to their community's emergency preparedness. Many of those who commented had experienced chemical releases. The Working Group believes these valuable inputs make the resulting report, recommendations, and actions much more credible and informed.

F2.2. Commitment to Seek Out Stakeholder Input

The Working Group used a number of different approaches and media to give stakeholders as many opportunities as possible to comment, including 12 in-person sessions and 2 Webinars. Each of the listening sessions began with a summary of Working Group activities and actions under consideration. After the update and description of the Working Group products, commenters were given 5 minutes to provide their input. There were no limitations provided on the content of this input. Panel members were then afforded an opportunity to ask the commenter questions.

As the sessions progressed, the Working Group made several adjustments to the process to accommodate stakeholder requests. For example, in response to comments that community members were more likely to attend if sessions were held in the evening. The Working Group adjusted the schedule by extending sessions through 8:00 p.m. Additionally, the Working Group sponsored an additional three Webinars to help community members understand the regulatory underpinnings of the EO and provide some technical insight into the types of information that

would be useful when providing comments. These Webinars, while directed to community representatives, were open to all stakeholders.

The Working Group members also attended stakeholder conferences and meetings as another avenue of gathering specific comments and perspectives on EO topics. The conferences represented a vast array of stakeholders, including the chemical industry, associations, community groups, SERCs/LEPCs, and first responders. Some of these groups also traveled to Washington, DC to meet with Working Group chairs in person.

F2.3. Frequent Topics and Themes Heard in Stakeholder Input

The following summarizes the general themes the Working Group heard consistently in the stakeholder meetings. The summaries also reflect the experience of the Working Group agency staff, who have been discussing these issues with stakeholders for many years.

F2.3.1 Local Responder and LEPC (and TEPC)

Accessibility of Information: There were multiple comments about the challenges of managing all of the information provided under the various laws/regulations, the difficulty in understanding how each chemical is regulated, and how to properly respond to an emergency involving specific chemicals. There was discussion of the value and need to expand the various online systems for submitting information such as Tier2Submit, managing the information once it is received such as CAMEO, and having emergency information available to first responders.

Resources: LEPCs, local responders, and industry frequently reported capacity and coordination issues that impact planning and information management. EPCRA gives local responders and LEPCs authority to collect information from local industry, assess dangers, plan for emergencies, and train and carry out emergency exercises. However, there is very little funding available to perform these activities. Stakeholders also talked about LEPCs that were not fully functioning. Various LEPCs throughout the Nation have identified methods to help address funding issues, including using portions of hazardous materials permits fees, local industry and non-profit donations, facility report filing fees and other potential sources of funding. Commenters proposed solutions that have helped increase communication, allowed more regular visits to facilities, and increased the capacity of responders.

Role of Facility Representatives on LEPCs: LEPCs, first responders, and facility representatives reported inconsistent participation in LEPCs and communication with first responders. There were many reasons for the variability in participation. In some cases, the LEPC was not fully functioning. LEPC representatives emphasized the importance of (1) facility representatives as participants in planning and (2) detailed information about the facility, such as locations of storage and equipment holding chemicals, prevention activities, response plans, and facility personnel response training. There was also discussion of reviewing the community actions for releases, such as when to shelter in place or evacuate. Solutions called for increased communication, regular visits to facilities, and increased capacity of responders.

Training/Regular Exercises: Almost universally, the LEPCs, first responders, and many other stakeholders stated that first responder training and regular exercises are critical to successfully managing a chemical facility emergency. While some commenters believe that the information and resources required to adequately train first responders are very limited, others talked about leveraging existing grants and training resources available and cited best practices, including use of Web-based resources, creation of dedicated training organizations, and industry associations developing industry-specific training.

Planning/Communicating with Community: First responders and LEPCs face a dual concern of planning/communicating with (1) facilities to properly prepare for emergencies and (2) communities to inform residents of the potential danger, what to do in case of an emergency, and when to declare an area safe after an emergency. LEPCs need to identify the location of key receptors (e.g., schools, parks, and water intakes) which could be affected by chemical incidents from nearby facilities, and plan for appropriate emergency response. LEPCs and first responders also commented that it is difficult to define the correct subset of information to adequately inform residents of safety concerns, while maintaining appropriate security for the facilities.

F2.3.2 Local Community Resident, Environmental, and Other Public Interest Organization

Inherently Safer Technology (IST): Most community/environmental/public interest commenters believe strongly that the Working Group should require facilities to implement IST. The commenters stated that implementing ISTs, especially chemical substitution for a less toxic chemical, would help reduce risks to public health in the case of an accidental release or security event due to crime or terrorism.

Accessibility of Information: Community commenters had many compelling stories of incidents in their neighborhoods and what frequently seemed like uncoordinated responses and communications from local authorities to the community. Frustrations ranged from being unaware of potential area dangers prior to an emergency to post-response errors in communication about when it is “safe” to move back home and use local resources, such as drinking water. Community representatives and organizations expressed difficulty in finding the right information in a timely manner. Commenters wanted information about facilities in the area readily available through Web and/or local public institutions (e.g., libraries). Commenters requested as much information as possible, such as risk information, incident history, and repairs.

Technical Assistance: Community, environmental, and public interest groups expressed frustration with understanding the information they are able to obtain. They do not necessarily understand the risks, buffer zones, most appropriate response procedures for residents (shelter in place or evacuate) or consequences of acute and long-term exposure. Commenters suggested that independent technical assistance might help them gain perspective on area risks and help with planning for emergencies.

Engagement/Communication with Community: Community commenters described two formal preparedness engagement opportunities: LEPCs/TEPCs and Community Advisory Panels, both with mixed success. For LEPCs/TEPCs, community commenters complained of having trouble knowing about the meetings. When commenters are engaged in the meetings, they complained of a lack of openness in conversations, particularly in LEPCs/TEPCs with a strong industry presence. For Community Advisory Panels (or Community Advisory Groups), community stakeholders stated that it works well when plant managers preside over the meetings, leading to trust based on direct answers and follow-up. Where panels do not appear to work, according to stakeholders, is when facilities are represented by public relations representatives and when overt confidentiality issues prevent a more open and honest discussion. In addition to comments and submissions about community involvement with LEPCs/TEPCs and Advisory Panels, many citizens wrote to the Working Group to ask for an engagement opportunity in West Virginia to discuss issues surrounding the Elk River spill.

Public Alerts and Assistance: Commenters expressed frustration about guidance from facilities regarding when to shelter in place and when to evacuate. There was concern about low income communities with more porous housing stock and whether assumptions are adequately made about air flows when using a shelter-in-place approach to emergency management. Suggestions were made to provide more community assistance, especially to lower income communities, such as ventilators for local residents, sealing homes, and providing facility-funded transportation for evacuation.

Proximity of Facilities: Community commenters in many of the listening sessions, such as Houston, TX, Baton Rouge, LA, and Mossville, LA, reported high concentrations of residential homes in close proximity to facilities, and provided examples of many negative consequences for communities in close proximity to facilities. In some locations, evacuation is difficult with limited ingress and egress out of the community. The commenters believed that adequate buffers are not present in these communities. In some communities, buffer agreements between facility owners and the local municipality were overridden by the State. In others, original buffer arrangements were overridden over time due to commercial development pressure. Commenters expressed a need for programs to purchase residences in close proximity to facilities. Residents noted that in some circumstance (e.g., Mossville), the buyout offer was not adequate to purchase comparable property in the area.

Managing Natural Disasters: Commenters expressed concern about adequate planning for natural disasters, particularly after hurricanes. Numerous examples were given of facilities' releases due to hurricanes and floods or of unreported chemicals in flood waters. Commenters were particularly concerned about the Gulf Coast, where it is believed there is an urgent need for a strategy to manage chemical plant failure. This strategy would include examination of adequate redundant power, backup power to permit safe shutdown of facilities (especially in Baton Rouge), and strategies to reduce vulnerabilities to flooding, including increasing the height of containment walls. Commenters also expressed interest in wetlands buffers to mitigate the severity of tidal surge.

F2.3.3 Labor/Worker

Modernization and Clarification of Process Safety Regulations: Most labor organizations and individual workers support modernizing and clarifying process safety regulations.

IST: Most labor or worker organizations and individuals strongly supported IST at facilities. Commenters frequently pointed out that workers are the first impacted in an accidental release and the implementation of ISTs is an approach to help ensure worker safety. Comments about IST were in support of a range of safer technologies in addition to chemical substitution. It is believed that any efforts to upgrade a facility in a way that protects workers is a positive development and ISTs are a good way to achieve this end. The labor and worker commenters did acknowledge that implementing IST may take time and may not be appropriate in every instance. One commenter specifically encouraged the Working Group to review its IST analysis on hydrofluoric acid substitution.

Involving Workers in Hazard Analysis: Commenters believed that workers should be a critical part of a hazard analysis done by facility management because of their knowledge of facility operations. Commenters also believed that the OSHA PSM standards are not stringent enough to ensure the safety of workers. Commenters requested a modification to the standard that holds employers to certain minimum standards concerning the modernization of safety equipment and facilities.

Worker Participation in Reporting and Analysis: Commenters from labor organizations and individual workers stated that workers are not always included in root cause analysis of incidents. Workers are often in the best position to ascertain the incident root causes and assist facility management in developing solutions. Commenters also discussed the lack of reporting for near misses at facilities. If a facility decides not to report a near miss, workers stated they are not in a position to report it themselves without repercussions from facility and company management.

Maintenance: Commenters reported that facilities sometimes keep parts in systems beyond their recommended lifecycle. Commenters were concerned that workers recommending shutdown to maintain critical equipment would be subject to retaliation from management. Commenters also expressed concern regarding the use of contractors who may not have the same safety training as regular employees for maintenance.

F2.3.4 State

There were fewer State commenters than other stakeholders at the listening sessions. The Working Group co-chairs met with States with deep experience in managing emergencies, such as Louisiana, and some States with experience implementing innovative treatment technology standards, such as New Jersey and California (Contra Costa County).

IST: There was discussion, particularly with the New Jersey officials, regarding the difference in the capacity of large versus small companies in implementing new safety technologies. The

discussion included the possible need to take this capability variability into account when contemplating implementing standards and requirements.

Public Accessibility of Information: State representatives expressed the need for communities to receive information to make critical decisions and also help to influence facilities to make safety changes. However, States were realistic about the need to protect confidential business information and how much information could be revealed to the general public.

Capacity and Engagement of LEPCs: There was concern, particularly in Louisiana, about the capability of the LEPCs to organize and respond to emergencies. Some LEPCs work very well to organize facilities, first responders, and the public, but others are not well funded or organized.

Better Agency Coordination: Similar to the Federal Government, States struggle with coordinating multiple State agencies and with the Federal Government. Multiple agencies must be involved in issues that impact safety, security, the environment, and emergency response and preparedness. However, in practice this coordination has been difficult for the State to manage.

F2.3.5 Industry

IST: Most industry comments were against additional regulations and/or requirements for IST. Many industry comments on IST focused on reasons why the government does not need to mandate chemical plant design and operation. Industry frequently clarified that the concept of inherently safer does not necessarily mean replacing a toxic or explosive chemical. In many cases, higher safety and security measures can be taken with the current chemical, including lower pressure tanks, storing lower quantities at the facility, and more frequent inspections. It was noted that current laws and industry standards already require best management practices and most companies use the safest viable chemical for a process to reduce liability issues. New Jersey's IST program was frequently criticized for its onerous requirements, although industry acknowledged that some safer practices were introduced as a result of the required analysis. The understanding from industry was that the New Jersey IST program was forcing companies to document the best practices that were already in place at facilities in the State. Most industry associations emphasized the effectiveness of their internal membership standards citing program codes that must be followed as a requirement of membership.

Potentially Noncompliant Facilities: Industry indicated that facilities that are not complying with regulations tend to be smaller and are unable or uninterested in engaging with the industry associations, which typically have a series of standards that must be met to maintain membership in the organization (e.g., American Chemistry Council Responsible Care® program; SOCMA's ChemStewards®; NACD's Responsible Distribution®). The industry groups indicated that they frequently share information with facilities that are not members. They suggested leveraging the relationships, knowledge, and data of State regulators (such as fire marshals and State chemists) to help identify facilities that are not compliant with Federal regulations.

Industry Association Programs: Industry encouraged the Working Group to review existing regulations, clarify roles and responsibilities between agencies, and strengthen enforcement

before promulgating new regulations. Industry also suggested that agencies develop guidance to assist facilities to navigate and comply with the myriad of regulations. Further, industry encouraged the Working Group to develop innovative ways to leverage existing industry association programs to increase chemical facility safety and security.

Training: Numerous industry commenters emphasized the importance of preparedness and training to save lives. Examples were given of industry working with first responders to develop and deliver training, such as the Ammonia Safety and Training Institute. Another example is the Illinois Fertilizer and Chemical Association providing training on anhydrous ammonia and ammonium nitrate. However, industry acknowledged that the training does not cover the entire country and encouraged the Working Group to dedicate more resources to education, outreach, and training. Also, commenters encouraged the development of additional Federal-private partnerships in training with industry associations.

Security and Information Sharing: Industry commenters understood the need to provide the public with information about dangers in their community. They also acknowledged that communications with LEPCs/TEPCs and first responders were critical to proper preparedness in the community. Some noted a distinction in the need to know between emergency responders and other LEPCs/TEPCs members due to security concerns. However, commenters warned that too much openness would compromise security by providing terrorists with a “blueprint” for an attack. Commenters were also concerned about compromising competitiveness with others in the same industry by revealing too much about their processes. However, they supported supplying additional information directly to first responders, who are in the best position to use the information.

Guidance: Several industry commenters noted the challenges of complying with the requirements of the multiple agencies and programs with regulatory authority over chemical safety and security and asked for additional compliance assistance resources, such as best practice guides.

Leverage Existing Regulatory Programs: To address gaps in regulatory coverage, industry generally supported strengthening and enforcing existing programs, rather than creating new programs or making major changes in the scope of existing programs.

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G Appendix: Safer Technology and Alternatives

FIGURE 5 in Section 3.4.4 is adapted from Figure 2.3 - Inherent Safety Considerations in Process Risk Management (adapted from Amyotte, et al., 2006) in the CCPS of the American Institute of Chemical Engineers, Inc. *Inherently Safer Processes: A Lifecycle Approach*. New York: Wiley and Sons, 2009.

Figure 2.3 from CCPS, below, shows that the steps for managing chemical and process hazards and risks should ideally be done in a hierarchical manner and iteratively. First order inherent safety measures that would eliminate the hazard altogether, are preferred. Alternatively, second order inherent safety measures could be adopted that treat the hazard by making it less intense or less likely to occur. After that, sublevel hazards are minimized and the likelihood of the event occurring is reduced by adding layers of protection. Thus the inherently safer design concepts are being applied to the hazard, and layers of protection are being applied to reduce the overall risk.

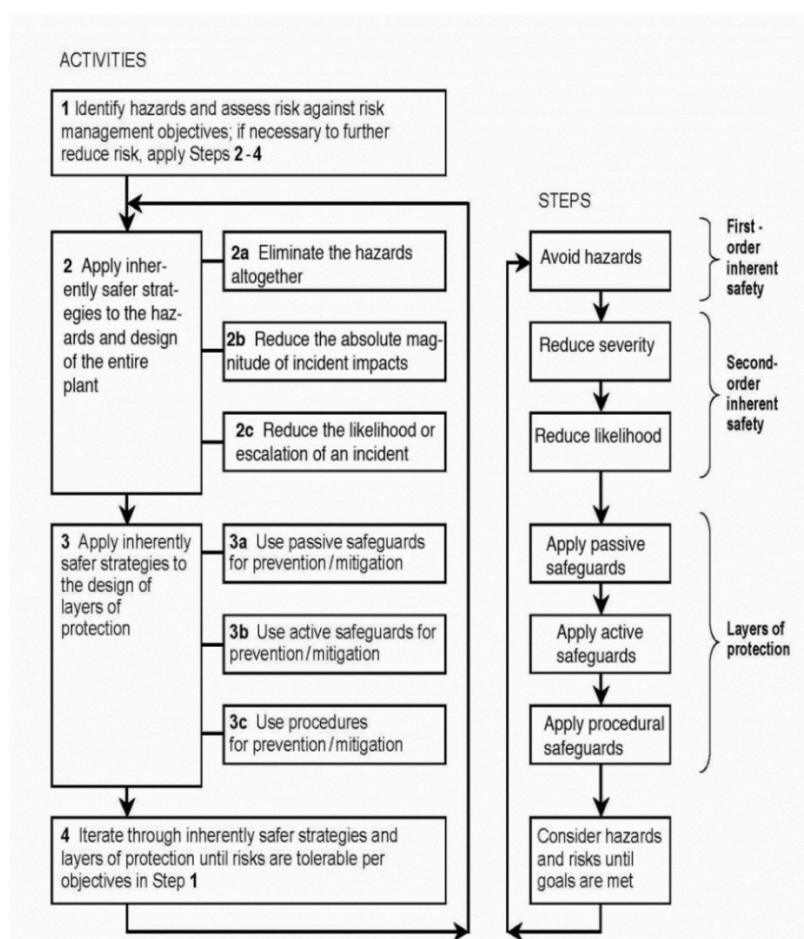


FIGURE 2.3 from *Inherently Safer Processes: A Lifecycle Approach*.—Inherent Safety Considerations in Process Risk Management

CCPS, *Inherently Safer Processes: A Lifecycle Approach*, 2nd ed, Copyright © (2009) AIChE and reproduced by permission.