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# ADDRESSING CHEMICAL SECURITY CONCERNS FOR AN RESEARCH INSTITUTION

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# OBJECTIVES

- Latest News
- Regulatory Drivers
- Executive Order 13650
- Physical Security Design Elements
- CDC Requirements 42 CFR Part 73
- NRC Requirements
- Global Threat Reduction Initiative
- Resources



# LATEST HEADLINE

[https://www.washingtonpost.com/world/national-security/a-secret-group-bought-the-ingredients-for-a-dirty-bomb--here-in-the-us/2016/08/03/46901c6e-58ae-11e6-9767-f6c947fd0cb8\\_story.html](https://www.washingtonpost.com/world/national-security/a-secret-group-bought-the-ingredients-for-a-dirty-bomb--here-in-the-us/2016/08/03/46901c6e-58ae-11e6-9767-f6c947fd0cb8_story.html)

National Security

## A secret group bought the ingredients for a dirty bomb — here in the U.S.

By Patrick Malone | CENTER FOR PUBLIC INTEGRITY August 4



The Center for Public Integrity's Patrick Malone explains the sting operation conducted by the Government Accountability Office that assessed the regulation of radioactive materials. (Monica Akhtar/The Washington Post)

[HTTP://WWW.USATODAY.COM/LONGFORM/NEWS/  
2015/05/28/BIOLABS-PATHOGENS-LOCATION-INCIDENTS/  
26587505](http://www.usatoday.com/longform/news/2015/05/28/biolabs-pathogens-location-incidents/26587505)

Inside America's secretive biolabs  
INVESTIGATION REVEALS HUNDREDS OF ACCIDENTS, SAFETY  
VIOLATIONS AND NEAR MISSES PUT PEOPLE AT RISK  
*Alison Young and Nick Penzenstadler, USA TODAY*

**USA TODAY NETWORK biolabs investigation wins national  
journalism prize**

# REGULATORY DRIVERS

1970's



- Occupational Safety and Health Act of 1970
- EPA was established on December 2, 1970
- Nuclear Regulatory Commission – 1-19, 1975
- Drug Enforcement Administration 1973
- Resource Conservation and Recovery Act of 1976
- Toxic Substance Control Act 1976

80-90's



- Superfund Amendments and Reauthorization Act
- Clean Air Act Amendments
- *NIH Guidelines for Research Involving Recombinant DNA Molecules* since 1994

2000's



- Environmental Management Systems
- Federal Brownfield Legislation
- Select Agent Rules
- Homeland Security
- National Nuclear Security Admin established the Global Threat Reduction Initiative (GTRI) in the Office of Defense Nuclear Nonproliferation



# REGULATORY DRIVERS



- Chemical Facility Anti-Terrorism Standards
- Import/Export Controls
- Greenhouse Gas Inventories
- Higher Education Act
- REACH 2007
- TSCA Update Rule 2016



- What's next?
- Safety & Security Culture

# **EXECUTIVE ORDER 13650**

## **ACTIONS TO IMPROVE CHEMICAL FACILITY SAFETY AND SECURITY AUGUST 1, 2013**

- **Directed EPA, DOL, DHS, DOJ, ATF, USDA, & DOT**
  - **Improve operational coordination**
  - **Information sharing**
  - **Modernize policies and procedures**
  - **Enhance safety and security**
- **Establishment of a Chemical Facility Safety and Security Working Group**
- **Initiated a robust stakeholder outreach effort**
- **<https://www.osha.gov/chemicalexecutiveorder/index.html>**

# THEMATIC AREAS

- **Strengthen Community Planning and Preparedness**
- **Enhance Federal Operational Coordination**
- **Improve Data Management**
- **Modernized policies and regulations**
- **Incorporate stakeholder feedback**
- **Develop best practices**



# STRENGTHEN COMMUNITY PLANNING AND PREPAREDNESS

- Planning occurs at the Local level
- Increase first responder preparedness
- EPA upgraded its Computer-Aided Management of Emergency Operations (CAMEO)
- Homeland Security Grant Program
- Enhance information and awareness sharing at the local level

# ENHANCE FEDERAL OPERATIONAL COORDINATION

- Vast ownership across many types of entities
- Stronger collaboration
- Initiated a pilot in NY-NJ area to work across state & local agencies to serve as test-bed
- Engagement of CSB to update existing MOUs
- Goal: Establishment of SOPs for Federal coordination at the National & Regional levels

# IMPROVE DATA MANAGEMENT

- Develop a coordinated, flexible data sharing process
- Optimize available information
- EPA updated its Substance Registry Service (SRA) and the Facility Registry Service (FRA) to include OSHA process safe and DHS (CFATS) data.
- Sharing of data across agencies
- EPA Region 8 – tested a new Emergency Response Planner System
- DHS worked with State Homeland Security Advisors (HSAs) to share data and engaged trade associations to foster outreach
- Working on dedicated cross agency team to standardize data and create a common facility identifier, establishment of a single web-based interface for data collection and improve informational tools of regulated chemicals

# MODERNIZED POLICIES AND REGULATIONS

- Solicitation of public input
- OSHA published a RFI on the process safety standard
- Development of various advisories and guidance
- EPA expanded its inspector training to include PSM and guidance for RMP inspectors
- DHS conducted over 100 compliance assistance visits in 2014
- Future actions:
  - Modernize OSHA's PSM & EPA's RMP regulations
  - Enhance ammonium nitrate safety & security & encourage safer technology.
  - Build a stronger CFATS program.
  - Develop outreach programs
  - Improve the Safe Drinking Water Act
  - Work with Congress to strengthen OSHA penalties Safe Explosives Act

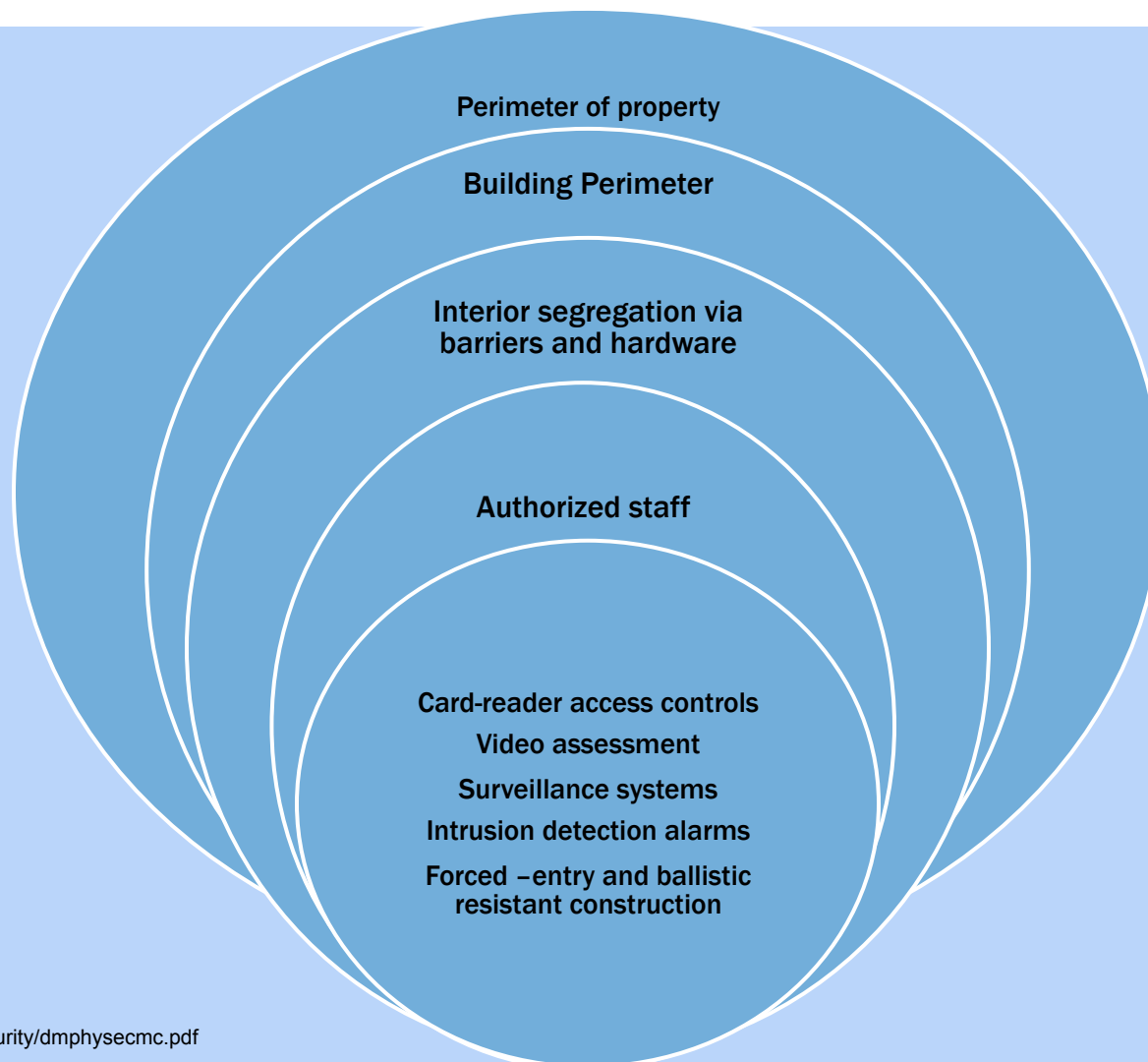
# INCORPORATE STAKEHOLDER FEEDBACK & DEVELOP BEST PRACTICES

- Solicited feedback via listening sessions, webinars, meetings and attendance of stakeholder conferences
  - 1800 participants across the country
  - 25 states participated
- Developed and launched an online repository  
<https://www.fema.gov/lessons-learned-information-sharing-program>
- Continue to solicit stakeholder feedback
  - Conduct regular outreach
  - Capture & share best practices with all stakeholders

# PHYSICAL SECURITY DESIGN ELEMENTS

- Purpose – Discourage and prevent acts of violence, crime, terrorism and mitigation of emergency incidents
- CPTED- Crime Prevention Through Environmental Design creating an environment to reduce crime and enhance the quality of life [www.cpted.net](http://www.cpted.net)
- Concentric levels of Control and Protection – protection of the asset behind layers of security measures that it is least exposed to threats

# CONCENTRIC LEVELS OF CONTROL AND PROTECTION



# PERIMETER OF PROPERTY

- Adjacent risks
- Parking
- Vehicle circulation
- Site access control
- Exterior lighting
- Landscaping & vegetation



# BUILDING PERIMETER & INTERIOR SEGREGATION VIA BARRIERS AND HARDWARE

- Building entrances
- Lobby
- Loading docks
- Emergency egress
- Mailrooms
- Building access control
- Critical assets
- Building air intakes

# AUTHORIZED STAFF

- Background checks
- Drug testing
- Medical clearance
- FBI fingerprint submittal
- Initial and ongoing suitability assessment

# SECURITY SYSTEMS

- Locks
- Cameras
- Alarms
- Backup power
- Monitoring
- Interoperability

# **CDC REQUIREMENTS**

## **42 CFR PART 73**

- **Implements the Public Health and Security and Bioterrorism Preparedness and Response Act of 2002**
- **Sets forth the requirements for possession, use and transfer of select agents and toxins**
- **Certificate of Registration**
  - **Designated Responsible Official**
  - **Standard Operating procedures**
  - **Inspection**
  - **Security Risk Assessment of individuals by Attorney General**

# SECURITY PROGRAM

## 42 CFR 73.11

- Procedures for physical security, inventory control & information systems control
- Controlled access to select agents
  - Protection from intentional and accidental exposure
  - Routine cleaning, maintenance and repairs
- Procedure for removal of unauthorized and suspicious persons
- Procedures for loss of keys, passwords or combinations
- Procedures for reporting unauthorized or suspicious persons or activities
- Access approval from HHS Secretary
- Integrity of Information System
- Policies of shipping, receiving and storage of select agents
- Intra-entity transfer procedures (chain of custody forms)
- A minimum of 3 security barriers
- Notification process for reporting all of the above

# SECURITY PROGRAM

## 42 CRF 73.11 CONTINUE

- Self and peer reporting system
- Suitability monitoring system of individuals
- Training
- Visitor procedures and documentation
- Intrusion detection system
- Determination of security response time and cannot exceed 15 minutes
- Annual review of plan
- Drills and exercises

# BMBL 5<sup>TH</sup> EDITION

## LABORATORY FACILITY SECURITY

Biosafety Level	Security
Biosafety Level 1	Should have doors for access control
Biosafety Level 2	Laboratory doors should be self-closing and have locks in accordance with institutional policies.
Biosafety Level 3	Laboratory doors should be self-closing and have locks in accordance with institutional policies. Must be separated from areas that are open to unrestricted traffic flow within building. Access is restricted and through two self-closing doors.
Biosafety Level 4	Either a separate building or clearly demarcated and isolated zone in a building. Must have locks, access control and sequential passage into and out of.

# NRC REQUIREMENTS

- NRC has strengthened its security program for risk-significant radiation sources to reduce the potential threat from a radiological dispersal device or radiological exposure device since 9/11
- NRC works closely with its domestic and international partners to make risk-significant radiation sources more secure and less vulnerable to terrorists
- The National Academies evaluated the uses of risk-significant sources that could be replaced with an equivalent process or that would pose a lower risk if an accident or attack occurs



# GLOBAL TREAT REDUCTION INITIATIVE

- In 2004 NNSA established the Global Threat Reduction Initiative (GTRI) in the Office of Defense Nuclear Nonproliferation to, as quickly as possible, identify, secure, remove and/or facilitate the disposition of high risk vulnerable nuclear and radiological materials around the world that pose a threat to the United States and the international community.

# GTRI: REDUCING NUCLEAR THREATS

## MAY 29, 2014

- Global Threat Reduction Initiative (GTRI) in the Office of Defense Nuclear
- GTRI's mission is to reduce and protect vulnerable nuclear and radiological material located at civilian sites worldwide.
  - Convert: Convert research reactors and isotope production facilities from the use of highly enriched uranium (HEU) to low enriched uranium (LEU) or verify their shutdown;
  - Remove: Remove or confirm the disposition of excess nuclear and radiological materials; and
  - Protect: Protect high priority nuclear and radiological materials from theft.

## **78 CFR PART 37—PHYSICAL PROTECTION OF CATEGORY 1 AND CATEGORY 2 QUANTITIES OF RADIOACTIVE MATERIAL**

- This part has been established to provide the requirements for the physical protection program for any licensee that possesses an aggregated category 1 or category 2 quantity of radioactive material listed in Appendix A to this part. These requirements provide reasonable assurance of the security of category 1 or category 2 quantities of radioactive material by protecting these materials from theft or diversion. Specific requirements for access to material, use of material, transfer of material, and transport of material are included. No provision of this part authorizes possession of licensed material.

# APPENDIX A TO PART 37—CATEGORY 1 AND CATEGORY 2 RADIOACTIVE MATERIALS

Radioactive material	Category 1 (TBq)	Category 1 (Ci)	Category 2 (TBq)	Category 2 (Ci)
Americium-241	60	1,620	0.6	16.2
Americium-241/Be	60	1,620	0.6	16.2
Californium-252	20	540	0.2	5.40
Cobalt-60	30	810	0.3	8.10
Curium-244	50	1,350	0.5	13.5
Cesium-137	100	2,700	1	27.0
Gadolinium-153	1,000	27,000	10	270
Iridium-192	80	2,160	0.8	21.6
Plutonium-238	60	1,620	0.6	16.2
Plutonium-239/Be	60	1,620	0.6	16.2
Promethium-147	40,000	1,080,000	400	10,800
Radium-226	40	1,080	0.4	10.8
Selenium-75	200	5,400	2	54.0
Strontium-90	1,000	27,000	10	270
Thulium-170	20,000	540,000	200	5,400
Ytterbium-169	300	8,100	3	81.0

# REQUIREMENTS

- **Background Investigations and Access Control Program**
- **Physical Protection Requirements During Use**
- **Physical Protection in Transit**
- **Records**
- **Enforcement**

# REFERENCES

- Physical Security Design Manual Jan 2015 for VA Mission Critical Facilities  
<http://wbdg.org/ccb/VA/VAPHYS/dmphysecmc.pdf>
- International CPTED Association (ICA) [www.cpted.net/](http://www.cpted.net/)
- Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th Edition  
<http://www.cdc.gov/biosafety/publications/bmb15/>
- Title 42: Public Health Part 73 Select Agents and Toxins  
[http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title42/42cfr73\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title42/42cfr73_main_02.tpl)
- GTRI: Reducing Nuclear Threats May 29, 2014  
<https://nnsa.energy.gov/mediaroom/factsheets/reducingthreats>
- PART 37—PHYSICAL PROTECTION OF CATEGORY 1 AND CATEGORY 2 QUANTITIES OF RADIOACTIVE MATERIAL  
<http://www.nrc.gov/reading-rm/doc-collections/cfr/part037/>