



# **Completing the Top Screen: Compliance Advice for Universities on the New Chemical Security Rules**

Thursday, November 29, 2007

# Chemical Facility Anti-Terrorism Standards

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# History of Rulemaking

- Homeland Security Appropriations Act of 2007
  - § 550 required DHS to promulgate risk-based performance standards for security of chemical facilities
  - Advance Notice of Rulemaking issued 12/21/06
- Interim Final Rule published 04/09/07
  - Includes draft Appendix A Chemicals of Interest
  - Colleges & universities submitted ~6,000 comments



# Key College & University Recommendations to DHS

- Exempt colleges and universities
- Exclude laboratories
- Replace “any amount” with numeric standard threshold quantity (STQ)
- STQs in line with EPA release quantities
- Exclude small containers
- Flexibility in applying STQs to discreet locations (e.g., buildings)
- Applicable to pure chemicals only

# Higher Education Working Group

- Six higher education associations (incl. NACUBO & CSHEMA) request meeting with DHS
  - First meeting in June 2007; subsequent meetings in July and August 2007
- Discussed: elimination of “any amount”; list to be “tightened”; clarification for mixtures; extensions available for colleges and universities
- Optimism that comments were being considered



# Congressional Subcommittee Hearings

- Testimony by Dr. A. Tahmassian, Associate VP Research Compliance, Boston U.
  - On behalf of NACUBO, CSHEMA, ACE, AAU, COGR, NASULGC
- Higher education is committed to safe conduct in research and teaching
- Community has serious concerns about numbers and quantities of chemicals in Appendix A
- DHS has been responsive to our concerns, recognizing unique nature of colleges and universities



# Final Rule

- Final version of Appendix A published in Federal Register on November 20, 2007
  - All provisions of 6 CFR Part 27 are now operative and in effect
- Discussions continue with DHS and higher education through work groups focusing on:
  - Top Screen
  - Security Vulnerability Assessment
  - Alternative Site Security Plan



# Overview of the Chemical Facility Anti-Terrorism Standard

**Robin Izzo**

Associate Director, Environmental Health and Safety  
Princeton University



# Overview of CFATS Requirements

- Survey your campus
- Complete Top Screen (if needed)
- DHS determines “not regulated” or “may be regulated”
- DHS request “may be regulated” campuses to conduct Security Vulnerability Assessment
- DHS assigns Tier 1 to 4 based on level of risk
- Campus develops a Site Security Plan



# Survey Your Campus

- Appendix A: list of Chemicals of Interest
- Do you have materials at or above the Screening Threshold Quantities (STQ)
  - Yes: Complete Top Screen
  - No: No further action needed
    - DHS is not interested in receiving notices that a Top Screen was not warranted.
- Document your efforts

# Snapshot vs. Real-Time Inventory

- Top Screen is a snapshot
- No timeline for additional surveys
- Update or submit Top Screen if inventory changes significantly and STQ exceeded





# Complete the Top Screen

- Web-based application
- Chemical Security Assessment Tool (CSAT)
  - Register to gain access
    - Need to register for each “Facility”
    - Identify Preparer, Submitter and Authorizer Complete Top Screen
    - DHS estimates 30 hours per Facility, including time to learn how to use the CSAT
  - Create pdf form. Sign and submit to DHS



# Deadline for Top Screen

- Compliance clock started November 20
- Deadline is January 19, 2008
- Colleges and Universities may apply for a 60-day extension
  - Deadline will be March 19, 2008
  - Template on CSHEMA website
  - Must be signed by “the president, dean, provost or other senior official”



# DHS Reviews Top Screen

- Computer-based system evaluates Top Screen upon submittal
- Immediately informs that Facility
  - Is “Not Regulated”
    - Confirmation letter to follow
  - “May Be Regulated”
    - DHS sends follow-up letter – Not regulated or Security Vulnerability Assessment needed



# Security Vulnerability Assessment

- DHS directs the institution to conduct Security Vulnerability Assessment
- Part of the CSAT materials
- DHS evaluates and assigns a risk level
  - Tier 1 (high) to Tier 4 (low)
  - This information is confidential



# Site Security Plan

- For institutions assigned Tier 1 to 4
  - Develop security plan for the Chemicals of Interest referenced by DHS during the vulnerability assessment
  - Current security measure may be sufficient
  - DHS expects campuses to use “Alternative Security Plan” rather than those in the rule
  - CSHEMA, NACUBO and COGR are working on templates for these plans

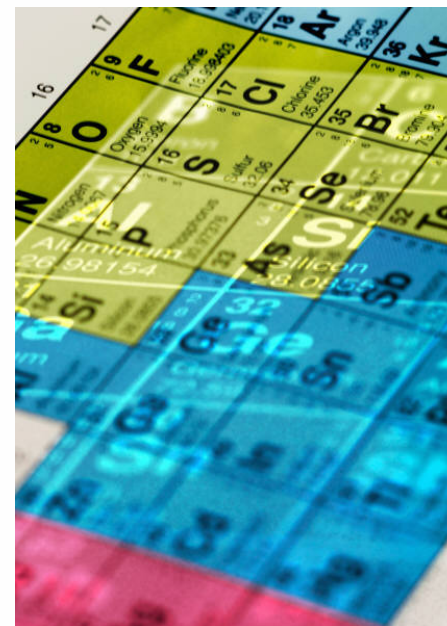


# Understanding Appendix A

Robin Izzo

# Chemicals of Interest

- Three categories
  - Release
  - Theft
  - Sabotage
- Security Issues
  - Seven categories
  - Basis for vulnerability assessment and security plan



# Chemicals of Interest Table

Chemicals of Interest (COI)	Synonym	Chemical Abstract Service (CAS) #	Release		Theft		Sabotage		Security Issue						
			Minimum Concentration (%)	Screening Threshold Quantities (in pounds)	Minimum Concentration (%)	Screening Threshold Quantities (in pounds unless otherwise noted)	Minimum Concentration (%)	Screening Threshold Quantities	Release – Toxic	Release – Flammables	Release – Explosives	Theft – CW/CWP	Theft – WME	Theft – EXP/IEDP	Sabotage/Contamination
Phosphorus trichloride		7719-12-2	1.00	15,000	3.48	45	ACG	APA	X				X		X
Picrite	[Nitroguanidine]	556-88-7	ACG	5,000	ACG	400					X				X
Piperidine		110-89-4	1.00	10,000						X					
Potassium chlorate		3811-04-9			ACG	400									X
Potassium cyanide		151-50-8					ACG	APA							X
Potassium nitrate		7757-79-1			ACG	400									X

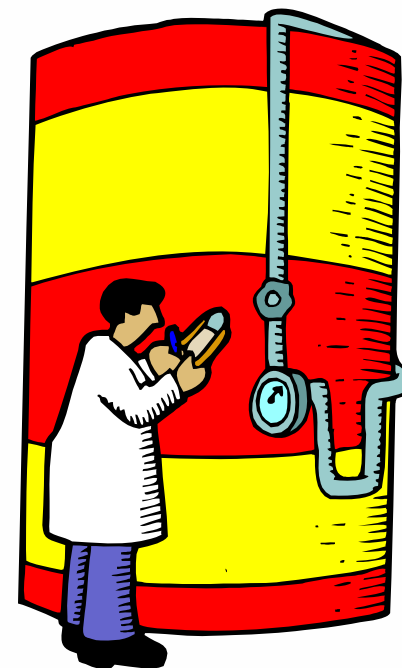
**Release** – Toxic, Flammable or Explosive

**Theft** – Chemical weapons, precursors, weapons of mass effect, explosives, improvised explosive device precursors

**Sabotage** – Sabotage or contamination

# Release Chemicals

- Minimum concentration
- Screening Threshold Quantities
- For most – cumulative of all inventory on campus
- Concern: Release from container(s)





# Mixtures

- Release – Toxic
  - Count only the amount of the COI in the mixture
    - Example: 25,000 lbs of 50% arsenic trichloride, count 12,500 lbs toward total, STQ = 15,000 lbs
- Release – Flammable
  - If the NFPA flammability rating is 4, count entire amount, regardless of percentage
  - If NFPA flammability rating is 1, 2 or 3, do not count the mixture
- Release – Reactive
  - Count entire amount



# Release Chemicals – Exclusions/Special Provisions

- Chemicals in a laboratory are excluded
- Propane
  - Count only propane stored in tanks holding more than 10,000 lbs
- Containers
  - Include inventory in both portable and stationary containers, tanks, etc.

# Theft Category

- Does include laboratory chemicals
- Include only materials in “transportation packaging”
  - Excludes materials in beakers, equipment, etc.
  - Excludes materials in tanks, stationary containers, etc.
- Cumulative across the facility





# Theft: CUM 100g

- Minimum concentration and STQ designation “CUM 100g”
- Chemical Weapons and Precursors
- For each facility
  - Add together the total quantities of all of these materials
  - Example:
    - 25 g sulfur mustard + 40 g chlorosarin + 50 g tabun  
= **115 g** *Exceeds STQ CUM 100g*



# Sabotage

- Include only chemicals ***shipped*** by the University
- Does not include those that are only received and used
- STQ is the DOT placarded amount
  - 1001 lbs or “any amount”, depending on the material
  - See DOT Table in 49 CFR 172 (or CSHEMA website)

# Special Considerations - RCRA

- RCRA Hazardous Wastes
  - Excluded for Release, Theft and Sabotage
  - P and U listed wastes are not exempt
  - Potential issue:
    - Shipping P or U listed wastes above STQ
    - Aluminum phosphide (P006) – any amount
    - Acetone cyanohydrin (P069) – any amount
    - Phosphorus pentasulfide (U189) – any amount



# Special Considerations - AN

- Ammonium Nitrate
  - Two entries
    - AN as an explosive
      - Release STQ = 5,000 lbs
      - Theft STQ = 400 lbs
    - AN as a solid, such as fertilizer
      - Minimum concentration = 33%
      - Not included in the Release category
      - Theft STQ = 2,000 lbs





# Gathering Top-Screen Data On Your Campus

Peter A. Reinhardt

Director, Office of Environmental Health and Safety  
Yale University

# The Question

Does your college or university have Chemicals of Interest (COI) in quantities greater than their Screening Threshold Quantity (STQ)?

If so, you need to complete and submit a Top-Screen by January 18, 2008 (unless you ask for a 60 day extension).

If not, nothing more is required.  
(We recommend, however, that you document how you made this determination.)





# Release Chemicals of Interest

- Laboratories are exempt
- Release chemicals have high STQs
- Generally, Release STQs are the same as EPA threshold quantities required under the Risk Management Plan regulation
- Propane, not counting containers of 10,000 pounds or less (STQ = 60,000 pounds)
- Chlorine (Release STQ = 2,500 pounds)

# Ammonia (Release-Toxic)

- Anhydrous Ammonia (STQ = 10,000 pounds)
- Ammonia > 20% (STQ = 20,000 pounds)
- Look for:
  - Chilling and refrigeration systems
  - Ice rinks
  - NOx scrubbers at Power Plants





# Sabotage/Contamination Chemicals of Interest

- Only for chemicals that are shipped from campus
- Small quantities; some at “any amount”
- Look for:
  - Laboratory moves on public roads
  - Chemicals shipped when a researcher leaves campus
  - Other research shipments

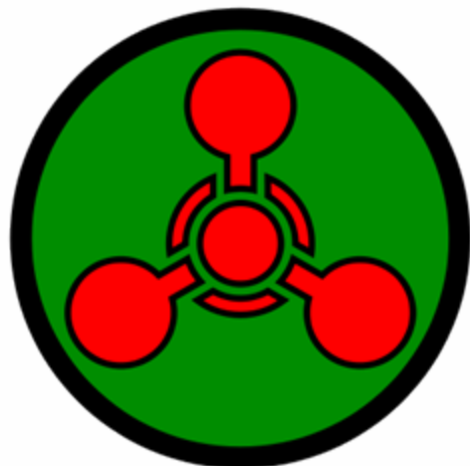
# Sabotage/Contamination Chemicals of Interest

## Hazardous Waste Shipments of

- >1000 lbs acetyl chloride (U006)
- Any amount of waste aluminum phosphide (P006)
- >1000 lbs potassium cyanide (P098)
- >1000 lbs sodium cyanide (P106)



# Theft Chemicals of Interest



- In transportation packaging—manufacturer's or supplier's original container
- Theft—Chemical Weapons/Chemical Weapons Precursors (50)
- Theft—Weapons of Mass Effect (48 gases)
- Theft—Explosives/Improvised Explosive Device Precursors (64)



# Theft Chemicals of Interest

<b>COI</b>	<b>STQ pounds</b>	<b>Theft Risk</b>
Aluminum powder	100	EXP/IEDP
Nitric Acid	400	EXP/IEDP
Nitric Oxide	15	WME
Phosgene	15	WME



# Do You Have COIs > STQs?

- Queries to certain people and data sources may answer this question.
- Decide what areas to survey, and what areas not to survey.
- Can your COI list be shortened? Are there COIs that are extremely unlikely to be at your institution in threshold quantities?
- Except for CW/CWP, you don't have to count every test tube, beaker or bottle.
- COIs not in "transportation packaging" are not counted.
- A good faith effort will satisfy DHS.



# Ask People Who Are Knowledgeable About Chemicals on Campus and in Their Areas

- Chemical waste handlers
- Environmental health and safety
- Facilities staff
- Fire marshal
- Procurement, purchasing
- Researchers
- Science faculty and support staff
- Transportation and shipping services

# Possible Sources of Top-Screen Data on Your Campus



- Chemical inventory systems
- OSHA hazard communication records
- Emergency hazardous materials data
- Purchasing records
- Chemical waste shipment manifests

# Campus-Wide Survey Options

- Letter from the President
- Broadcast e-mail (with attachment)
- Individual contacts, door-to-door (especially for follow-up)
- On-line survey tool





# Email to Laboratory Principle Investigators

Dear Principle Investigator or Manager,

By January 7, 2008, you must complete a chemical inventory for your laboratory or work area. To complete your inventory, follow the directions at [URL]. Your staff or students may complete this inventory as long as they are knowledgeable about the chemicals present there.

This inventory is required by a new U.S. Department of Homeland Security chemical security law. Depending on the inventory results, the University may be subject to new security requirements. If so, you will be informed of those requirements.

We encourage you to remove those chemicals from your lab that you no longer need. Please contact Environmental Health and Safety for chemical disposal or redistribution.



# On-line Survey Tool

1

2

3

4

5

## Step 3 – Chemical Amounts (Klein, Robert)

For each of the chemicals below, please enter the total amount present in all of your laboratories or work areas. Make your best estimate. A one significant figure estimate is fine (e.g. 1, 20, 300). Use units that make the most sense for you. Please use your judgement to make your best estimate with respect to different concentrations, physical forms, and container weights.

To delete a chemical from the list, check the box next to it and click **Delete Selected**.

Click the **Save & Continue** button to proceed to the next step. Click **Save & Logout** (or the **Logout** link above) to save your progress and continue later. To go back to the previous step, click **Previous Page**.

[Previous Page](#)[Delete Selected](#)[Save & Logout](#)[Save & Continue](#)

Select	Chemical Name	Units	Total Amount
<input type="checkbox"/>	Nitric acid	Litres <input type="text" value="v"/>	<input type="text" value="50"/>
<input type="checkbox"/>	Nitrocellulose	Litres <input type="text" value="v"/>	<input type="text" value="20"/>
<input type="checkbox"/>	Nitroglycerine	Litres <input type="text" value="v"/>	<input type="text" value="2"/>
<input type="checkbox"/>	Nitromethane	Litres <input type="text" value="v"/>	<input type="text" value=".5"/>
<input type="checkbox"/>	Phosphorus	Kilograms <input type="text" value="v"/>	<input type="text" value="1.1"/>
<input type="checkbox"/>	Potassium chlorate	Grams <input type="text" value="v"/>	<input type="text" value="300"/>

# Survey Issues



- Abbreviated list or entire list?
- Add to the list? (HF, organomercury compounds)?
- Transportation packing only, or all containers?
- “Present within the last 60 days”
- Estimating pounds in gas cylinders

# Where to Look for Theft Chemicals

- Clean rooms
- Clinical laboratories
- Research animal care facilities\*
- Research laboratories
- Science stockrooms\*
- Teaching laboratories



# Where Else to Look for Chemicals



- Art studios
- Chemical stores
- Chillers
- Power plants
- Refrigeration systems
- Shops
- Swimming pools



# Single or Multiple Top-Screen Submissions?

- DHS will accept either single and multiple Top-Screen submissions for a single college or university.
- By street address.
- Determined by each institution.
- Reasonable and complete, and not submitted in a way to avoid the rule's requirements.
- In the preamble, colleges and universities have flexibility in “defining the boundaries of their facility” and can, “if appropriate, submit a Top-Screen on a building-by-building basis or a campus-wide basis.”



# Examples of Top-Screen Submission Alternatives

- A small college with a COI > STQ may submit a Top-Screen for the entire campus, or a for just the building where the chemical is located.
- If a few COIs > STQs are found in the science building, you can submit a Top-Screen just for that building.
- A large university with several COIs > STQs may submit a campuswide Top-Screen, or separate Top-Screens for those campuses/blocks/buildings with chemicals in STQs.



# Completing the Top-Screen

**Maureen Kotlas**

Director, Department of Environmental Safety

University of Maryland College Park



# Chemical Security Assessment Tool (CSAT)

- DHS system for collecting and analyzing data from chemical facilities
- Comprised of four, web-based tools:
  - Facility Registration Questionnaire
  - Consequence Screening Questionnaire (Top-Screen)
  - Security Vulnerability Assessment (SVA) tool
  - Site Security Plan (SSP) template



# Top-Screen Access

- Must register to access the CSAT first
  - User Guide and User Change Request Guide
- Facility Information
  - Name, address, county
  - Latitude and Longitude
- Submit, print form, sign and mail/fax to DHS
- DHS will email usernames and passwords
- Web browser security settings are required



# Who Can Submit the Top-Screen?

- Must designate Preparer, Submitter & Authorizer
  - One individual or different individuals
  - Reviewer is optional
  - Institution determines who performs these roles with general criteria from DHS
    - e.g., Submitter / Authorizer must be Officers of Corporation or designee
- Separate username/password for each registration submitted



# Completing the Top-Screen

- Consult CSAT Top-Screen Questions & User Manual (check for updated versions)
- Required information includes:
  - Facility location, owner/operator, regulatory mandates (MTSA, Safe Drinking Water Act, NRC, etc.)
  - # full time employees and contractors
  - Previous security vulnerability assessment and methodology used



# Chemicals of Interest Questions

- Categories and data required are based on security concerns
- Does the facility possess or did it possess within the past 60 days the chemical of interest at or above the STQ ? Yes or No
- If yes, depending on category:
  - Total quantity on-site
  - Total quantity in area of highest quantity
  - Distance of concern
  - Type of portable / storage container



# Calculating Quantities and Distances

- Total on-site quantity
  - Maximum aggregate quantity at any one point in time within the past 60 days
  - Use reasonable judgment and be able to explain how estimates were developed (DHS)
- Area of Highest Quantity
  - 170 foot radius where greatest amount is located (e.g., large storage vessel)
- Distance of Concern
  - RMP\*Comp modeling program (EPA)



# Submitting the Top-Screen

- Preparer completes survey, views summary report, prints copy, transmits survey to DHS
- Preparer transfers to Submitter for review
- Submitter reviews and completes final validation or returns to Preparer
- Submitter transmits Top-Screen to DHS
- Submitter prints and saves copy



# Chemical-terrorism Vulnerability Information (CVI)

- Information pursuant to the Top-Screen process
- Security Vulnerability Assessments
- Site Security Plans & Alternative Security Programs
- Documents from DHS to chemical facility
- Inspection and audit documents, notices, orders
- Records required to be maintained by facility
- Other as determined by DHS



# Protection of CVI

- Covered persons (“need to know” basis)
  - Chemical facility employees and their contractors
  - On-line training is required
  - Must sign a non-disclosure agreement
- Safeguarding and handling requirements
- Physical control and protection
  - Secure storage, document marking, restricted access, limited reproduction, secure transmission, appropriate destruction



# Top-Screen CVI

- CVI information will display after completion and before submission of Top-Screen
- Top-Screen becomes CVI after submission to DHS
- User must read and accept Authorizing Statements before submitting Top-Screen
- Records used to submit Top-Screen or created prior to submittal are not CVI



# CSAT User Registration

User Guide  
October 2007

Version 1.2.3



# CSAT Top-Screen

User Manual  
September 2007

Version 1.1.2



# CSAT Top-Screen

Questions

November 2007

Version 1.3



# Federal Register

Tuesday,  
November 20, 2007

Part II

Department of  
Homeland Security

6 CFR Part 27  
Appendix to Chemical Facility Anti-Terrorism Standards Final Rule

**CHEMICAL-TERRORISM VULNERABILITY INFORMATION**  
Requirements for Use  
Nondisclosure

**WARNING:** This record contains Chemical Terrorism Vulnerability Information controlled by 6 CFR 27.400. Do not disclose to persons without a "need to know" in accordance with 6 CFR § 27.400(c). Unauthorized release may result in civil penalties or other action. In any administrative or judicial proceeding, this information shall be treated as classified information in accordance with 6 CFR 27.400(b) and (d). By reviewing this cover sheet and accepting the attached CVI you are agreeing to abide by the guidance contained herein. Your acceptance provides immediate access only to the attached CVI.

**Access**

In addition to agreeing to not further disclose this information, individuals seeking access to CVI must meet the following requirements:

- Government officials and contractors must be covered by a Memorandum of Agreement signed with the Chemical Security Compliance Division
- All individuals must complete CVI Authorized User Training
- All individuals must demonstrate a valid need-to-know for specific CVI. For state and local officials this determination will be made by the state CVI Security Officer

**Storage:** When not in your possession, store in a secure environment such as in a locked desk drawer or locked container. Do not leave this document unattended.

**Transmission:** You may transmit CVI by the following means to an eligible individual who meets the access requirements listed above. In all cases, the recipient must accept the terms for Non-Disclosure Agreement before being given access to CVI.

**Hand Delivery:** Authorized individuals may hand carry material as long as access to the material is controlled while in transit. Email: Encryption should be used. If encryption is not available, send CVI as an encrypted attachment or password protected attachment and provide the password under separate cover. Whenever the recipient forwards or disseminates CVI via email, place that information in an attachment. Do not send CVI to personal, non-employment related email accounts.

**Mail (USPS First Class mail or commercial equivalent):** Place in an opaque envelope or container, sufficiently sealed to prevent inadvertent opening and to show evidence of tampering, and then place in a second envelope that has no markings on it to identify the contents as CVI. Envelope or container must bear the complete name and address of the sender and addressee. The envelope must bear the following statement below the return address: "POSTMASTER: DO NOT FORWARD. RETURN TO SENDER."

**Fax:** You are encouraged, but not required, to use a secure fax. When sending via non-secure fax, coordinate with the recipient to ensure that the faxed materials will not be left unattended or subjected to unauthorized disclosure on the receiving end.

**Telephone:** You are encouraged, but not required, to use a Secure Telephone Unit/Equipment, Use cellular or cordless phones to discuss CVI only in urgent circumstances. Do not engage in a conversation in a public place or in environments that will allow anyone that does not have a need to know to overhear the conversation.

**Reproduction:** Ensure that a copy of this sheet is the first and last page of all reproductions containing CVI. Clear copy machine reflections and ensure all paper paths are checked for CVI. Destroy all unusable papers immediately.

**Destruction:** Destroy (i.e., shred or burn) this document when no longer needed. For laptops or CPUs, delete file and empty recycle bin.

**Restrictive Information**

You may use CVI to create a product that is released to the public such as an advisory, alert or warning. In this case, the product must not reveal any information that:

- Is proprietary, business sensitive, or trade secret
- Relates specifically to, or identifies the submitting person or entity (explicitly or implicitly) and
- Is otherwise not appropriately found in the public domain

**Mark any newly created document containing CVI with "CHEMICAL-TERRORISM VULNERABILITY INFORMATION" on the top of each page that contains CVI and the distribution limitation statement on the bottom. Place a copy of this page over all newly created documents containing CVI. The CVI Tracking Number(s) of the source document(s) must be included on the electronically created document in the form of an envelope.**

Tracking Number: \_\_\_\_\_  
**CHEMICAL-TERRORISM VULNERABILITY INFORMATION**

Version 1.3 (effective 6/2007)

[www.dhs.gov/chemicalsecurity](http://www.dhs.gov/chemicalsecurity)

*We Mean Business in Higher Education*



# After the Top-Screen —What Comes Next

**Peter A. Reinhardt**

Director, Office of Environmental Health and Safety  
Yale University

# Two Paths to a “High Risk” Designation

1. Top-Screen
2. “Covered” versus “Not covered”
3. Security Vulnerability Assessment
4. Assignment of Risk Tier 1-4
5. Prepare and implement a Security Plan. Some universities will be asked to develop a security plan.



**My understanding:** Some states have designated certain universities as “critical infrastructure,” which has resulted in their inclusion on classified lists of key national assets.

*So, some universities are already identified as “High Risk” Tier 1 facilities. Those universities will need to do a Vulnerability Assessment and Security Plan regardless of their Top-Screen results.*



## 40 CFR 27.210(a)(1)(i)



Homeland  
Security

*Facilities shall complete and submit a Top-Screen...within 60 calendar days for facilities that come into possession of any of the chemicals listed in Appendix A at the corresponding STQs.*

# Tracking COIs After the Top-Screen

- Prudent if  $COI > STQ$ . This is important data if DHS contacts you about follow-up.
- Definitely if COI is slightly less than STQ. If you exceed the STQ in the future, you need to submit or update your Top-Screen.
- How?
  - Monitoring chemical purchases
  - Monitor shipments, including waste aluminum phosphide
  - Periodically re-survey the campus
  - Implement a chemical inventory system



# Voluntary Chemical Security



- Even if COIs < STQs, perform Security Vulnerability Analysis for chemicals
- Make security improvements for your highest risks
- Require authorization for the use/possession of CW/CWP, Poison Inhalation Hazards and other Chemicals of Interest—just as we do for biohazards and radioactive material.



# Resources

Department of Homeland Security  
Frequently Asked Questions at:

[http://www.dhs.gov/xnews/releases/pr\\_1193971455405.shtm](http://www.dhs.gov/xnews/releases/pr_1193971455405.shtm)

Campus Safety, Health and Environmental Management  
(CSHEMA) CFATS Site:

<http://www.cshema.org/about/dhs.cfm>



# Thank You For Your Participation

Please complete the  
online evaluation