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INTERNATIONAL BIOLOGICAL and CHEMICAL THREAT REDUCTION

Chemical Security Program

Chemical Security Standards
Security Assessment Ratings

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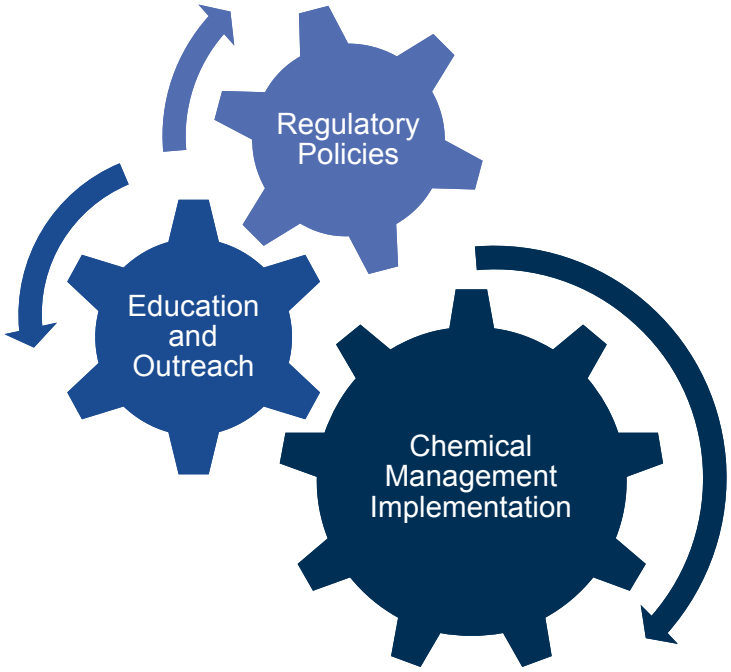
What is Chemical Risk Management?

Combination of policies, education, and tools designed to ensure that all chemicals are processed, stored, transported, and used in an environmentally sound and secure manner in order to minimize and/or avoid risks to human health and the environment whether caused by an accidental or by malicious intent*.



*Adapted from April 2017 OPCW Workshop, Indonesia

How are chemical safety and chemical security related?

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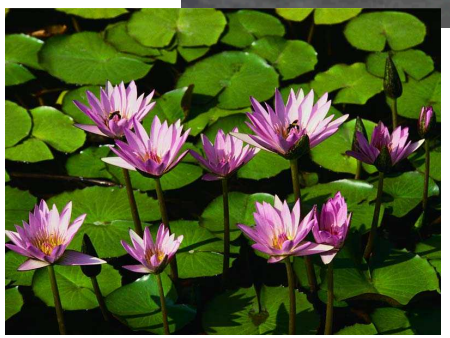
Both Ensure Protection of:

- Workers
- Plant facilities
- Plant processes
- Community
- Environment
- Economy



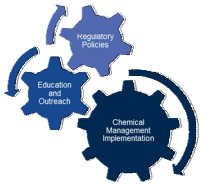
Chemical Safety:

- Protects people from chemicals

Chemical Security:

- Protects chemicals from people

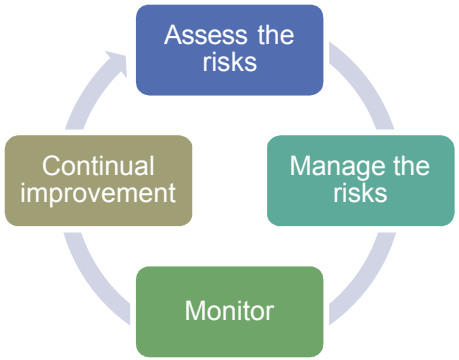
What is the standard for implementation of chemical security?



Based on a Chemical Security Risk Management Framework

The framework should be a performance based system for managing the institutions unique risks. This framework should include:

1. Assessing the security risks
2. Implementing risk mitigation measures
3. Monitoring and review of the process
4. Continual improvement



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Assessing the risks

Risk-Based Security Vulnerability Assessment

- Not all facilities require the same level of security, the required level of security is based upon the **Chemical Asset Identification and Prioritization**, which is based upon the consequences to the environment, human, or flora/fauna, of theft and subsequent misuse, release, or sabotage of chemicals existing at the facility.

- The security vulnerability assessment is used to define the objective of the security system and gaps in current practices.

Assessing the risks, cont'd

Chemical Asset Identification and Prioritization

- Prioritization of some chemicals may be based upon a legislative framework
- In general, priority chemicals would be those with the potential to have adverse consequences to the environment, humans, or flora/fauna if released or misused (for example TICs), this would include the potential for these chemicals to be combined with other chemicals (such as precursor chemicals)
- Chemicals of high intellectual or economic value may also be considered priority chemicals.

Assessing the risks - summary

The process used to evaluate the security risks and vulnerabilities must answer these questions:

1. What could happen?

   E.g. Theft and misuse, sabotage, release of chemicals; Which chemicals? Someone inside? Someone outside?

2. How likely is it to occur?

   E.g. How could they do it? What are the site's security vulnerabilities?

3. What would the impact be?

   E.g. Human or environmental impact, economic impact, reputation

Implementation of Risk mitigation measures

IMPLEMENTATION OF SAFETY

1. Substitution
   Do we need this chemical? Can we use less?
2. Engineering
   Do we need and what do we currently have… Fume hoods, Lab Benches, Emergency Response tools such as fire suppression, etc.?
3. Administrative and Procedures
   Do we need and what do we currently have… No eating or drinking, hand washing, reducing number of people in the laboratory, etc.?
4. Personal Protective Equipment
   Do we need and what do we currently have… Lab coats, goggles, gloves, etc.?

IMPLEMENTATION OF SECURITY

1. Substitution
   Do we need this chemical? Can we use less?
2. Engineering
   Do we need and what do we currently have… Perimeters, doors, access control systems, chemical storage containers, etc.?
3. Administrative and Procedures
   Do we need and what do we currently have… Chemical inventory management, chemical storage, personal, etc. ?

Implementation of Risk mitigation measures –

The specific measures implemented must be effective and sustainable

Security systems must provide:

- Deterrence
- Detection
- Delay
- And Response

The specific techniques used for each is dependant upon the potential risks and regulatory requirements

Some Mitigation Examples

DETECTION (ALSO SUPPORTS DETERRENCE)

Roving guards

Workers

Video assessment systems

Sensors (like door or window sensors)

Inventory systems

Access control

DELAY (ALSO SUPPORTS DETERRENCE)

Locked doors

Locked /secured windows

Fences

Locked gates

Locked chemical warehouses or supply cabinets

Process safety barriers

Response

Local guards

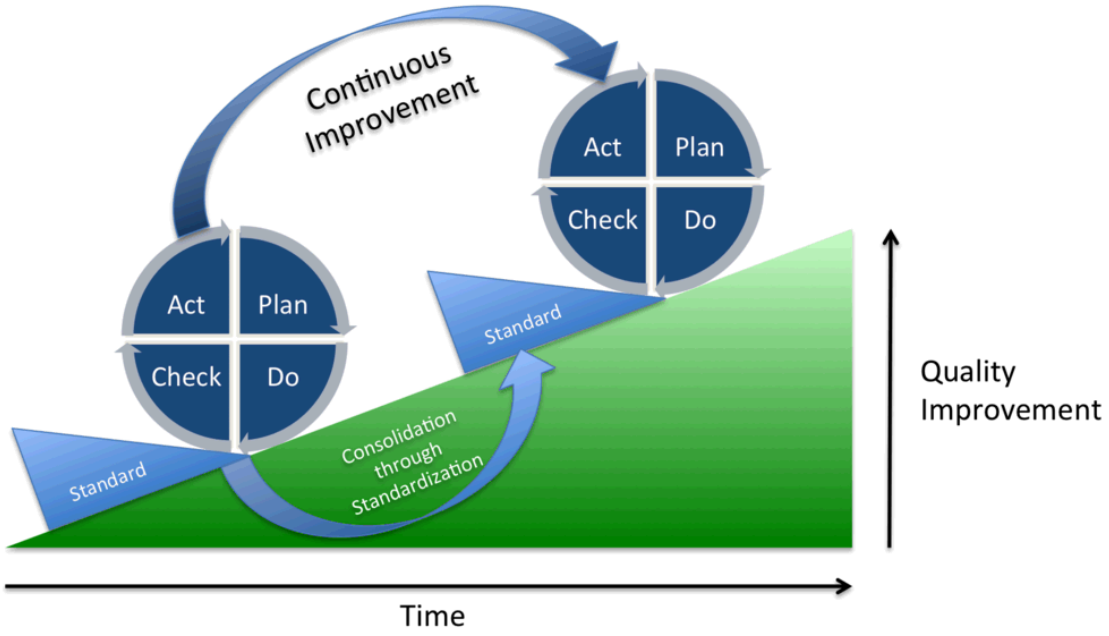
Workers

Local law enforcement

Reporting

Monitoring and Continual Improvement

Systems to support the evaluation and ensure the implemented framework is working as designed and there are measures for communication and continued improvement



Security Assessment Ratings

Concepts here are similar to those used in the US Chemical Facilities Anti-Terrorism Standards and align with Responsible Care Security Codes of many countries.

- Facilities are prioritized based upon the level and type of security risk to ensure that these facilities have the appropriate security measures in place to reduce the risks associated with these chemicals.

- The process incorporates a dynamic multi-tiered risk assessment process and requires facilities to meet and maintain performance-based security standards appropriate to the facilities and the risks they pose.

Security Assessment Ratings

Examples from Responsible Care Security Code (ICC and ACC)

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Level I

- Facilities with no chemicals that could cause significant consequences if stolen and misused or released into the environment
  - Security based upon good security practices

Level II

- Facilities with chemicals that are a theft or diversion risk only and with only minimal potential consequences if misused (or minimal economic or reputational consequences)
  - Security practices should focus on measures that deter internal threats and external threats

Level III

- Facilities with chemicals that are a theft or diversion risk only but have potentially high consequences if misused (or high economic or reputational consequences)
  - Security practices should focus on measures that provide detection, delay, and response in order to contain the internal or external threats before they depart with the chemical
- Facilities with chemicals that are a release risk only
  - Security practices should focus on measures that deny access to the chemical by the internal or external threat (robust detection, delay, and response)

Level IV

- Facilities with chemicals that are a theft or diversion risk and a release risk with potentially high consequences if misused (or high economic or reputational consequences)
  - Security practices should focus on measures that deny access to the chemical by the internal or external threat

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Conclusions

Chemical security systems will vary based on:

- Resources
- Choice of technology
- Security system strategy
    - *Deterrence, Detection, Delay, Response*
- **Security based risk and vulnerability assessment!**

Security systems should be performance based

- Low and higher technology options

Must consider unique aspects and requirements of the facility