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Chemical Facility Anti-Terrorism Standards: Tiering Methodology

Overview

To determine if facilities that possess hazardous chemicals—known as chemicals of interest (COI)—are high-risk under the Chemical Facility Anti-Terrorism Standards (CFATS) program, the Cybersecurity and Infrastructure Security Agency (CISA) uses a risk-based tiering methodology that incorporates aspects of vulnerability, consequence, and threat.

What Is CFATS?

The CFATS program works with high-risk facilities to ensure security measures are in place that reduce the risk of certain hazardous chemicals being weaponized. High-risk facilities are assigned to one of four risk-based tiers and must develop a security plan tailored to the tier level and unique circumstances. Appendix A of the CFATS regulation lists more than 300 COI and the respective screening threshold quantities (STQ), concentrations, and security issues. Any facility that manufactures, stores, uses, or distributes COI at or above the STQ and concentration is required to report those chemicals to CISA via an online survey—known as the Top-Screen—within 60 days of coming into possession of the COI.

What Is Risk-Based Tiering?

The CFATS regulation follows a risk-based approach that allows CISA to focus its resources on high-risk chemical facilities. To identify a facility's specific level of risk, CISA analyzes information submitted through the Top-Screen to determine which facilities are high-risk and assigns those facilities to one of four tiers, with Tier 1 representing the highest risk.

Enhanced Tiering Methodology

In 2013, the Department of Homeland Security (DHS) undertook a thorough review of the CFATS risk-tiering methodology. This included a peer review of the prior methodology conducted by a panel of experts drawn from across industry, academia, and government; a review of the proposed new methodology by external experts from industry, government, and the Homeland Security Studies and Analysis Institute; and an independent verification by Sandia National Laboratories.

In 2016, DHS rolled out the enhanced risk-tiering methodology that accounts for three main elements of risk when determining a facility's tier—threat, vulnerability, and consequence—and identifies elements of risk based upon each facility's unique circumstances resulting in a more precise risk-tiering determination for each facility.

While much of the methodology is sensitive and/or classified, the following tables provide information to help facilities better understand the types of items that may impact the facility's high-risk status and, as applicable, risk tiers.

Vulnerability

This variable considers inherent characteristics of the facility and/or assets that reduce vulnerability to a terrorist attack—for example, a COI storage container located in an underground earth formation.

Factors Considered to Reduce Vulnerability	Applicable Security Issue
Higher design pressure of a storage container	• Release
Below-grade storage	• Release
Larger, less portable COI containers	• Theft
COI is not shipped from the facility	• Diversion • Sabotage

Consequence

This variable incorporates improved tools that allow CISA to more accurately calculate, through physics-based dispersion and blast modeling, the onsite and offsite impacts of COI exploitation and misuse.

Factors Considered for Consequence	Applicable Security Issue
Topography surrounding facility (urban or rural terrain)	• Release
Potentially exposed population surrounding facility	• Release
COI toxicity	• Release–Toxics • Theft/Diversion–Weapons of Mass Effect/Chemical Weapons (WME/CW) • Sabotage
COI flammability	• Release
COI explosive energy	• Release–Explosives (EXP) • Theft/Diversion–EXP/Improvised Explosive Device Precursors (IEDP)
COI quantity and concentration	• Release • Theft/Diversion • Sabotage
COI storage: container location and pressure rating	• Release
COI storage: types of packaging	• Theft/Diversion
COI precursor characteristics: toxicity/explosive energy	• Theft/Diversion–Chemical Weapons Precursors (CWP)/IEDP
Mode of shipping	• Sabotage

Threat

This variable includes factors informed by the intelligence community that may affect the level of threat of terrorist attack or exploitation for a facility.

Factors Considered for Threat	Applicable Security Issue
Specific COI	• Release • Theft/Diversion
Mode of shipping	• Theft/Diversion • Sabotage

Tools and Resources

- CFATS Tiering Methodology: cisa.gov/cfats-tiering-methodology
- Chemical Security Assessment Tool (CSAT) Help Desk (technical assistance): Call 1-866-323-2957 or email CSAT@hq.dhs.gov
- To discuss your specific facility's risk, email your facility's ID to CFATS@hq.dhs.gov.