



CHEMICALS OF CONCERN UNITED STATES DEPARTMENT OF HOMELAND SECURITY CHEMICAL FACILITY ANTI-TERRORISM STANDARDS

Introduction

In November 2007, the United States Department of Homeland Security (DHS) published the final provisions of the **Chemical Facility Anti-Terrorism Standards**, 6 CFR Part 27. This rule requires establishments (which includes academic institutions such as UNL) that possess or intend to possess any “chemical of concern (COC)” above the established threshold quantity to disclose certain information to DHS. Penalties for non-compliance can range from issuance of Orders to civil penalties of up to \$25,000 per day.

Chemicals of Interest

In a laboratory setting, common COCs include, but are not limited to: nitric acid, triethanolamine, triethanolamine hydrochloride, sodium azide, potassium nitrate, ammonium nitrate, boron trifluoride, boron trichloride, nitrobenzene, cyanogen bromide, and certain gases, among others. In non-laboratory settings, chlorine gas and anhydrous ammonia are common. A complete list of COCs can be found in Appendix A for 6 CFR 27. See Government Printing Office website for Electronic Code & Federal Regulations.

Chemicals, as described below, are excluded from the rules:

- Used as structural components.
- Used as products for routine janitorial maintenance.
- Contained in food, drugs, cosmetics, or other personal items.
- In process water or non-contact cooling water as drawn from environmental or municipal sources.
- Contained in articles, as defined in 40 CFR 68.3.
- In solid waste (including hazardous waste), with the exception of RCRA listed P- and U-wastes.
- In naturally occurring hydrocarbon mixtures prior to entry of the mixture into a natural gas processing plant or a petroleum refining process unit. Naturally occurring hydrocarbon mixtures include condensate, crude oil, field gas, and produced water.



Status of UNL

As of the date of this SOP, UNL was **not** subject to the rule because a comprehensive inventory of chemicals at UNL facilities, conducted in January 2008, indicated that the cumulative total of each COC at any UNL facility/location did not exceed the respective regulatory threshold. However, UNL is still obligated to notify DHS if future activities or intentions do or would result in exceeding regulatory thresholds for one or more COCs.

Non-Laboratory Facilities/Areas

Propane, chlorine gas, and ammonium nitrate are listed COCs that could be used/stored at facilities such as UNL. The information below is provided for planning purposes and awareness since no UNL activities at the time of this SOP were subject to the rule. However, future activities/plans should be discussed with EHS if any of the regulatory thresholds may be exceeded.

- **Propane** is subject to regulation only if in tanks of 10,000 pounds or more and in cumulative quantities of 60,000 pounds or more (at a concentration of 1% or more).
- **Chlorine** gas is subject to regulation if stored in cumulative quantities of 500 pounds or more (typically more than 5 standard cylinders). For this reason, as well as concerns regarding safety, chlorination using gaseous chlorine is discouraged.
- **Ammonium nitrate** fertilizer is subject to regulation in solid form with nitrogen concentrations of 23% or more in cumulative quantities of 2000 pounds or more.
- **Anhydrous ammonia** is sometimes used in large chilling or refrigeration units, NO_x scrubbers, and agricultural operations. Anhydrous ammonia is subject to regulation in concentrations of 1% or greater in cumulative quantities of 10,000 pounds or more. A typical mobile field tank may contain up to 5,000 pounds of anhydrous ammonia. Quantities in tanks that are attached to a vehicle (e.g., tractor, truck) do not count toward the possession limits. Farm operations staff should use effective work scheduling and planning to ensure that threshold amounts are not exceeded at any given site.

Laboratories

For laboratories, the rules could become applicable if:

- Any of the following chemicals **in any quantity** are shipped from a UNL facility. Therefore, these materials must not be shipped from any UNL location for any purpose. See the EHS SOP, **Packaging and Shipping Hazardous Materials/Dangerous Goods**.



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| Acetone cyanohydrin, stabilized | Aluminum phosphide | Boron tribromide |
| Bromine pentafluoride | Bromine trifluoride | Calcium phosphide |
| Chloroacetyl chloride | Chlorosulfonic acid | Lithium amide |
| Lithium nitride | Magnesium phosphide | Methyldichlorosilane |
| Phosphorus oxychloride (Phosphoryl chloride) | Phosphorus pentasulfide | Phosphorus trichloride |
| Potassium phosphide | Sodium phosphide | Strontium phosphide |
| Sulfuryl chloride | Titanium tetrachloride | Trichlorosilane |

- Any of the following COCs in a cumulative total of 100 grams or more are present in any given UNL building. Since these materials are regulated at such a low threshold amount, contact EHS before possessing **any quantity** of any of these materials.

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| 1,4-Bis (2-chloroethylthio) -n-butane | Bis(2-chloroethylthio)methane | Bis(2-chloroethylthiomethyl)ether |
| 1,5-Bis(2-chloroethylthio)-n-pentane | 1,3-Bis(2-chloroethylthio)-n-propane | 2-Chloroethylchloromethylsulfide |
| Chlorosarin | Chlorosoman | DF (Methyl phosphonyl difluoride) |
| Ethyl phosphonyl difluoride | HN-1 (nitrogen mustard-1) | HN-2 (nitrogen mustard-2) |
| HN-3 (nitrogen mustard-3) | Isopropylphosphonyl difluoride | Lewisite 1 |
| Lewisite 2 | Lewisite 3 | Sulfur mustard (Mustard gas (H)) |
| O-Mustard (T) | Propylphosphonyl difluoride | QL [o-Ethyl-o-2-diisopropylaminoethyl methylphosphonite] |
| Sarin | Sesquimustard | Soman |
| Tabun | VX | |

- Using or storing of certain gases. Contact EHS prior to ordering and receiving any of the gases in the following table in **any quantity** with concentrations equal to or greater than what is indicated in the table.

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|---------------------------------------|--------------------------------|----------------------------------|
| Arsine (0.67%) | Boron trifluoride (26.87%) | Carbonyl fluoride (0.67%) |
| Chlorine pentafluoride (4.07%) | Chlorine trifluoride (9.97%) | Cyanogen (11.67%) |
| Cyanogen chloride (2.67%) | Diborane (2.67%) | Dichlorosilane (10.47%) |
| Dinitrogen tetroxide (3.8%) | Fluorine (6.17%) | Germane (20.73%) |
| Germanium tetrafluoride (2.11%) | Hexafluoroacetone (15.67%) | Hydrogen cyanide (4.67%) |
| Hydrogen fluoride, anhydrous (42.53%) | Hydrogen selenide (0.07%) | Hydrogen sulfide (23.73%) |
| Methylchlorosilane (20%) | Nitric oxide (3.83%) | Oxygen difluoride (0.09%) |
| Perchloryl fluoride (25.67%) | Phosgene (0.17%) | Phosphine (0.67%) |
| Selenium hexafluoride (1.67%) | Silicon tetrafluoride (15%) | Stibine (0.67%) |
| Sulfur tetrafluoride (1.33%) | Tellurium hexafluoride (0.83%) | Trifluoroacetyl chloride (6.93%) |
| Tungsten hexafluoride (7.10%) | | |



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- Use or storage of less common laboratory chemicals that are also identified as COCs. Contact EHS prior to ordering or receiving quantities of 0.25 pounds or more in a concentration of 30% or more of these materials.

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| Arsenic trichloride | N,N-(2-diethylamino) ethanethiol | o,o-Diethyl S-[2-(diethylamino)ethyl] |
| Dethyl methylphosphonite | N,N-Diethyl phosphoramidic dichloride | N,N-(2-diisopropylamino) ethanethiol |
| N,N-Diisopropyl phosphoramidic dichloride | N,N-(2-dimethylamino) ethanethiol | N, N-Dimethyl phosphoramidic dichloride |
| N,N-(2-dipropylamino) ethanethiol | N,N-Dipropyl phosphoramidic dichloride | Ethylphosphonothioic dichloride |
| Isopropylphosphonothioic dichloride | Methylphosphonothioic dichloride | Nitrogen mustard hydrochloride |
| Thiodiglycol | | |

- Use or storage of moderate amounts of certain relatively uncommon laboratory chemicals that are also identified as COCs. Contact EHS prior to ordering or receiving quantities of 4 pounds or more of these materials.

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|-------------------|-------------------|------------------------|---------------------|
| Boron tribromide | Boron trichloride | Bromine chloride | Bromine trifluoride |
| Nitrogen trioxide | Nitrosyl choride | Phosphorus trichloride | |

- Use or storage of relatively large amounts of laboratory chemicals that are also identified as COCs. Contact EHS prior to ordering or receiving quantities of 25 pounds or more of these materials.

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|------------------------------|--------------|------------------------|-----------------|
| Nitric acid (68% or greater) | Nitrobenzene | Phosphorus oxychloride | Triethanolamine |
| Triethanolamine HCl | | | |

Use or storage of large amounts of laboratory chemicals (typically not considered laboratory-scale). Contact EHS prior to ordering or receiving quantities of 100 pounds or more of any chemical that is not otherwise listed above.