



VUMC Export Compliance

Export-Controlled & Restricted Chemicals

What chemicals are restricted?

The pages below list certain chemicals restricted for export by the U.S. Government. Be aware that this list is not exhaustive and is subject to change at any time.

- For reference, the items on the pages below are provided by the **Commerce Control List** from the U.S. Department of Commerce, as found here:
<https://www.ecfr.gov/current/title-15/part-774>

What is an export?

An export is defined as any oral, written, electronic, or visual disclosure, shipment, transfer or transmission of any commodity, technology (information, technical data, assistance) or software code to anyone outside the U.S., including U.S. citizens, or to a non-U.S. entity or individual, wherever they are located.

- It is important that VUMC faculty and staff are aware of export control requirements and how they may affect their work. If you work with any of the following (or similar) agents and/or you intend to send samples or data abroad, or plan to collaborate with foreign colleagues either here or in foreign countries, we urge you to contact VUMC EC directly on the web at <https://www.vumc.org/globalsupport/export-compliance> or via email at export@vumc.org.
- We will help familiarize you with what restrictions apply to the agents in your lab and how to incorporate the export control requirements into your research program.

1. Toxic Precursors

- Australia Group-controlled precursor chemicals also identified as Schedule 2 chemicals under the CWC, as follows, and mixtures in which at least one of the following chemicals constitutes 30 percent or more of the weight of the mixture:
 - (C.A.S. #7784-34-1) Arsenic trichloride;
 - (C.A.S. #76-93-7) Benzilic acid;
 - (C.A.S. #78-38-6) Diethyl ethylphosphonate;
 - (C.A.S. #683-08-9) Diethyl methylphosphonate;
 - (C.A.S. #15715-41-0) Diethyl methylphosphonite;
 - (C.A.S. #2404-03-7) Diethyl-N,N-dimethylphosphoramidate;
 - (C.A.S. #41480-75-5) N,N-Diisopropylaminoethanethiol hydrochloride;
 - (C.A.S. #5842-07-9) N,N-Diisopropyl-beta-aminoethane thiol;
 - (C.A.S. #96-80-0) N,N-Diisopropyl-beta-aminoethanol;
 - (C.A.S. #96-79-7), N,N-Diisopropyl-beta-aminoethyl chloride;
 - (C.A.S. #4261-68-1) N,N-Diisopropyl-beta-aminoethyl chloride hydrochloride;
 - (C.A.S. #6163-75-3) Dimethyl ethylphosphonate;
 - (C.A.S. #756-79-6) Dimethyl methylphosphonate;
 - (C.A.S. #677-43-0) N,N-Dimethylamino-phosphoryl dichloride;
 - (C.A.S. #1498-40-4) Ethyl phosphonous dichloride [Ethyl phosphinyl dichloride];
 - (C.A.S. #430-78-4) Ethyl phosphonus difluoride [Ethyl phosphinyl difluoride];
 - (C.A.S. #1066-50-8) Ethyl phosphonyl dichloride;
 - (C.A.S. #993-13-5) Methylphosphonic acid;
 - (C.A.S. #676-98-2) Methylphosphonothioic dichloride;
 - (C.A.S. #464-07-3) Pinacolyl alcohol;
 - (C.A.S. #1619-34-7) 3-Quinuclidinol;
 - (C.A.S. #111-48-8) Thiodiglycol.
- Australia Group-controlled precursor chemicals also identified as Schedule 3 chemicals under the CWC, as follows, and mixtures in which at least one of the following chemicals constitutes 30 percent or more of the weight of the mixture:
 - (C.A.S. #762-04-9) Diethyl phosphite;
 - (C.A.S. #868-85-9) Dimethyl phosphite (dimethyl hydrogen phosphite);
 - (C.A.S. #139-87-7) Ethyldiethanolamine;
 - (C.A.S. #10025-87-3) Phosphorus oxychloride;
 - (C.A.S. #10026-13-8) Phosphorus pentachloride;
 - (C.A.S. #7719-12-2) Phosphorus trichloride;
 - (C.A.S. #10545-99-0) Sulfur dichloride;
 - (C.A.S. #10025-67-9) Sulfur monochloride;
 - (C.A.S. #7719-09-7) Thionyl chloride;
 - (C.A.S. #102-71-6) Triethanolamine;
 - (C.A.S. #122-52-1) Triethyl phosphite;
 - (C.A.S. #121-45-9) Trimethyl phosphite.

Continued on next page...

- Other Australia Group-controlled precursor chemicals not also identified as Schedule 1, 2, or 3 chemicals under the CWC, as follows, and mixtures in which at least one of the following chemicals constitutes 30 percent or more of the weight of the mixture:
 - (C.A.S. #1341-49-7) Ammonium hydrogen fluoride;
 - (C.A.S. #107-07-3) 2-Chloroethanol;
 - (C.A.S. #109-89-7) Diethylamine;
 - (C.A.S. #100-37-8) N,N-Diethylaminoethanol;
 - (C.A.S. #589-57-1) Diethyl chlorophosphite;
 - (C.A.S. #298-06-6) O,O-Diethyl phosphorodithioate;
 - (C.A.S. #2465-65-8) O,O-Diethyl phosphorothioate;
 - (C.A.S. #108-18-9) Di-isopropylamine;
 - (C.A.S. #124-40-3) Dimethylamine;
 - (C.A.S. #506-59-2) Dimethylamine hydrochloride;
 - (C.A.S. #142-84-7) Dipropylamine;
 - (C.A.S. #762-77-6) Ethyl chlorofluorophosphate;
 - (C.A.S. #1498-51-7) Ethyl dichlorophosphate;
 - (C.A.S. #460-52-6) Ethyl difluorophosphate;
 - (C.A.S. #7664-39-3) Hydrogen fluoride;
 - (C.A.S. #3554-74-3) 3-Hydroxyl-1-methylpiperidine;
 - (C.A.S. #76-89-1) Methyl benzilate;
 - (C.A.S. #754-01-8) Methyl chlorofluorophosphate;
 - (C.A.S. #677-24-7) Methyl dichlorophosphate;
 - (C.A.S. #22382-13-4) Methyl difluorophosphate;
 - (C.A.S. #14277-06-6) N,N Diethylacetamidine;
 - (C.A.S. #53510-30-8) N,N-Diethylbutanamidine;
 - (C.A.S. #90324-67-7) N,N-Diethylformamidine;
 - (C.A.S. #1342789-47-2) N,N Diethylisobutanamidine;
 - (C.A.S. #84764-73-8) N,N-Diethylpropanamidine;
 - (C.A.S. #1315467-17-4) N,N-Diisopropylbutanamidine;
 - (C.A.S. #857522-08-8) N,N-Diisopropylformamidine;
 - (C.A.S. #2909-14-0) N,N-Dimethylacetamidine;
 - (C.A.S. #1340437-35-5) N,N-Dimethylbutanamidine;
 - (C.A.S. #44205-42-7) N,N-Dimethylformamidine;
 - (C.A.S. #321881-25-8) N,N-Dimethylisobutanamidine;
 - (C.A.S. #56776-14-8) N,N-Dimethylpropanamidine;
 - (C.A.S. #1339586-99-0) N,N-Dipropylacetamidine;
 - (C.A.S. #1342422-35-8) N,N-Dipropylbutanamidine;
 - (C.A.S. #48044-20-8) N,N-Dipropylformamidine;
 - (C.A.S. #1342700-45-1) N,N-Dipropylisobutanamidine;
 - (C.A.S. #1341496-89-6) N,N-Dipropylpropanamidine;
 - (C.A.S. #1314-80-3) Phosphorus pentasulfide;
 - (C.A.S. #75-97-8) Pinacolone;
 - (C.A.S. #7789-29-9) Potassium bifluoride;
 - (C.A.S. #151-50-8) Potassium cyanide;
 - (C.A.S. #7789-23-3) Potassium fluoride;
 - (C.A.S. #3731-38-2) 3-Quinuclidone;
 - (C.A.S. #1333-83-1) Sodium bifluoride;
 - (C.A.S. #143-33-9) Sodium cyanide;
 - (C.A.S. #7681-49-4) Sodium fluoride;
 - (C.A.S. #16893-85-9) Sodium hexafluorosilicate;
 - (C.A.S. #1313-82-2) Sodium sulfide;
 - (C.A.S. #637-39-8) Triethanolamine hydrochloride;
 - (C.A.S. #116-17-6) Tri-isopropyl phosphite.

2. Chemical Weapons Convention (CWC) Schedule 2 and 3 chemicals and families as follows

- CWC Schedule 2 chemicals and mixtures containing Schedule 2 chemicals:
 - Toxic chemicals, as follows, and mixtures containing toxic chemicals:
 - PFIB: 1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)-1-propene (C.A.S. 382-21-8) and mixtures in which PFIB constitutes more than 1 percent of the weight of the mixture;
 - Precursor chemicals, as follows, and mixtures in which at least one of the following precursor chemicals constitutes more than 10 percent of the weight of the mixture:
 - Chemicals, except for those listed in Schedule 1, containing a phosphorus atom to which is bonded one methyl, ethyl, or propyl (normal or iso) group but not further carbon atoms.
 - *NOTE: Fonofos: O-Ethyl S-phenyl ethylphosphonothiothionate (C.A.S. 944-22-9) is not controlled.*
 - FAMILY: N,N-Dialkyl (Me, Et, n-Pr or i-Pr) phosphoramidic dihalides;
 - FAMILY: Dialkyl (Me, Et, n-Pr or i-Pr) N,N-Dialkyl (Me, Et, n-Pr, or i-Pr)-phosphoramidates;
 - FAMILY: N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethyl-2-chlorides and corresponding protonated salts;
 - FAMILY: N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-ols and corresponding protonated salts;
 - *NOTE: N,N-Dimethylaminoethanol and corresponding protonated salts (C.A.S. 108-0) or N,N-Diethylaminoethanol and corresponding protonated salts (C.A.S. 100-37-8) are not controlled.*
 - *FAMILY: N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-thiols and corresponding protonated salts.*
- CWC Schedule 3 chemicals and mixtures containing Schedule 3 chemicals:
 - Toxic chemicals, as follows, and mixtures in which at least one of the following toxic chemicals constitutes 30 percent or more of the weight of the mixture:
 - Phosgene: Carbonyl dichloride (C.A.S. 75-44-5);
 - Cyanogen chloride (C.A.S. 506-77-4);
 - Hydrogen cyanide (C.A.S. 74-90-8);
 - Chloropicrin: Trichloronitromethane (C.A.S. 76-06-2).
 - Precursor chemicals, as follows, and mixtures in which at least one of the following precursor chemicals constitutes 30 percent or more of the weight of the mixture:
 - Methyl-diethanolamine (C.A.S. 105-59-9).

3. Mixtures and Medical, Analytical, Diagnostic, and Food Testing Kits as follows

- Mixtures containing more than 10 percent, but less than 30 percent, by weight of any single CWC Schedule 2 chemical identified above in **Toxic Precursors**;
- "Medical, analytical, diagnostic, and food testing kits" that contain CWC Schedule 2 or 3 chemicals, identified above in **Toxic Precursors**, in an amount *not* exceeding 300 grams per chemical.
- Mixtures containing the following concentrations of **Toxic Precursor** chemicals (as identified above):
 - Mixtures containing 10% or less, by weight, of any single CWC Schedule 2 chemical;
 - Mixtures containing less than 30%, by weight, of:
 - Any single CWC Schedule 3 chemical; or
 - Any single precursor chemical
- Mixtures containing the following concentrations of toxic or precursor chemicals:
 - Mixtures containing the following concentrations of CWC Schedule 2 chemicals:
 - Mixtures containing 1% or less, by weight, of any single CWC Schedule 2 toxic chemical; or
 - Mixtures containing 10% or less, by weight, of any single CWC Schedule 2 precursor chemical.
 - Mixtures containing less than 30%, by weight, of any single CWC Schedule 3 chemical.

4. Ammonium Nitrate

- Includes:
 - Fertilizers and Fertilizer Blends Containing More Than 15% by Weight Ammonium Nitrate
 - Except Liquid Fertilizers (Containing Any Amount of Ammonium Nitrate)
 - Dry Fertilizers Containing Less Than 15% by Weight Ammonium Nitrate

5. Non-flourinated polymeric substances, as follows:

- Polyarylene ether ketones, as follows:
 - Polyether ether ketone (PEEK);
 - Polyether ketone ketone (PEKK);
 - Polyether ketone (PEK);
 - Polyether ketone ether ketone ketone (PEKEKK);

6. Specific materials, as follows:

- Tributyl phosphate;
- Nitric acid in concentrations of 20% weight or greater;
- Flourine

NOTE: Technology from any of the categories above is also controlled.

Specifically, technology for the development or production of processing equipment related to any of the above categories.