

**Chemical Weapon Precursors Controlled  
under the Import and Export Ordinance**  
(from 17 September 2021)

<b><u>Schedule No. under CWC</u></b>	<b><u>Dual-Use Goods List Item 1C350 (CAS Registry No<sup>1</sup>)</u></b>
Schedule 2	(1) Thiodiglycol (111-48-8);
Schedule 3	(2) Phosphorus oxychloride (10025-87-3);
Schedule 2	(3) Dimethyl methylphosphonate (756-79-6);
Schedule 1	(4) Methyl phosphonyldifluoride (676-99-3) in the Munitions List;
Schedule 2	(5) Methyl phosphonyl dichloride (676-97-1);
Schedule 3	(6) Dimethylphosphite (868-85-9);
Schedule 3	(7) Phosphorus trichloride (7719-12-2);
Schedule 3	(8) Trimethyl phosphite (121-45-9);
Schedule 3	(9) Thionyl chloride (7719-09-7);
-	(10) 3-Hydroxy-1-methylpiperidine (3554-74-3);
-	(11) N, N-Diisopropyl-(beta)-aminoethyl chloride (96-79-7);
-	(12) N, N-Diisopropyl-(beta)-aminoethane thiol (5842-07-9);
Schedule 2	(13) 3-Quinuclidinol (1619-34-7);
-	(14) Potassium fluoride (7789-23-3);
-	(15) 2-Chloroethanol (107-07-3);
-	(16) Dimethylamine (124-40-3);
-	(17) Diethyl ethylphosphonate (78-38-6);
-	(18) Diethyl-N,N-dimethylphosphoramidate (2404-03-7);
Schedule 3	(19) Diethyl phosphite (762-04-9);
-	(20) Dimethylamine hydrochloride (506-59-2);
-	(21) Ethyl phosphinyl dichloride (1498-40-4);
-	(22) Ethyl phosphonyl dichloride (1066-50-8);
-	(23) Ethyl phosphonyl difluoride (753-98-0) in the Munitions List;
-	(24) Hydrogen fluoride (7664-39-3);
-	(25) Methyl benzilate (76-89-1);
-	(26) Methyl phosphinyl dichloride (676-83-5);
-	(27) N, N-Diisopropyl-(beta)-amino ethanol (96-80-0);
Schedule 2	(28) Pinacolyl alcohol (464-07-3);

Note <sup>1</sup> The CAS Registry No. is a universal identification number assigned to a specific chemical substance by the Chemical Abstract Service. Since synonyms are common for chemicals, traders and carriers are advised to make reference to the CAS Registry No. in the identification of controlled chemicals.

<b><u>Schedule No. under CWC</u></b>	<b><u>Dual-Use Goods List Item 1C350 (CAS Registry No<sup>1</sup>)</u></b>
Schedule 1	(29) See the Munitions List for O-Ethyl-2-di-isopropylaminoethyl methylphosphonite (57856-11-8);
Schedule 3	(30) Triethyl phosphite (122-52-1);
Schedule 2	(31) Arsenic trichloride (7784-34-1);
Schedule 2	(32) Benzilic acid (76-93-7);
-	(33) Diethyl methylphosphonite (15715-41-0);
-	(34) Dimethyl ethylphosphonate (6163-75-3);
-	(35) Ethyl phosphinyl difluoride (430-78-4);
-	(36) Methyl phosphinyl difluoride (753-59-3);
-	(37) 3-Quinuclidone (3731-38-2);
Schedule 3	(38) Phosphorus pentachloride (10026-13-8);
-	(39) Pinacolone (75-97-8);
-	(40) Potassium cyanide (151-50-8);
-	(41) Potassium bifluoride (7789-29-9);
-	(42) Ammonium hydrogen fluoride (1341-49-7);
-	(43) Sodium fluoride (7681-49-4);
-	(44) Sodium bifluoride (1333-83-1);
-	(45) Sodium cyanide (143-33-9);
Schedule 3	(46) Triethanolamine (102-71-6);
-	(47) Phosphorus pentasulphide (1314-80-3);
-	(48) Di-isopropylamine (108-18-9);
Schedule 2	(49) Diethylaminoethanol (100-37-8);
-	(50) Sodium sulphide (1313-82-2);
Schedule 3	(51) Sulphur monochloride (10025-67-9);
Schedule 3	(52) Sulphur dichloride (10545-99-0);
-	(53) Triethanolamine hydrochloride (637-39-8);
-	(54) N, N-Diisopropyl-(Beta)-aminoethyl chloride hydrochloride (4261-68-1);
-	(55) Methyl phosphonic acid (993-13-5);
-	(56) Diethyl methylphosphonate (683-08-9);
-	(57) N,N-Dimethyl aminophosphoryl dichloride (677-43-0);
-	(58) Triisopropyl phosphite (116-17-6);
Schedule 3	(59) Ethyl diethanolamine (139-87-7);
-	(60) O,O-Diethyl phosphorothioate (2465-65-8);
-	(61) O,O-Diethyl phosphorodithioate (298-06-6);
-	(62) Sodium hexafluorosilicate (16893-85-9);
-	(63) Methyl phosphonothioic dichloride (676-98-2);

- (64) Diethylamine (109-89-7);
- (65) N,N-Diisopropylaminoethanethiol hydrochloride (41480-75-5);

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**Dual-Use Goods List Item 1C450 (CAS Registry No.<sup>1</sup>)**

(a) Toxic chemicals, as follows :

- Schedule 2 (1) Amiton : O,O-Diethyl S-[2-(diethylamino)ethyl] phosphorothiolate (78-53-5) and corresponding alkylated or protonated salts;
- Schedule 2 (2) PFIB : 1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)-1-propene (382-21-8);
- Schedule 2 (3) BZ : 3-Quinuclidinyl benzilate (6581-06-2);  
N.B. See also the Munitions List.
- Schedule 3 (4) Phosgene : Carbonyl dichloride (75-44-5);
- Schedule 3 (5) Cyanogen chloride (506-77-4);
- Schedule 3 (6) Hydrogen cyanide (74-90-8);
- Schedule 3 (7) Chloropicrin : Trichloronitromethane (76-06-02);

(b) Toxic chemical precursors, as follows :

- Schedule 2 (1) Chemicals, other than those controlled by the Munitions List or by 1C350, containing a phosphorus atom to which is bonded one methyl, ethyl, or propyl (normal or iso) group but not further carbon atoms;  
  
except :  
  
Fonofos : O-Ethyl S-phenyl ethylphosphonothiolothionate (944-22-9);
- Schedule 2 (2) N,N-Dialkyl [methyl, ethyl or propyl (normal or iso)] phosphoramidic dihalides, other than N,N-Dimethyl aminophosphoryl dichloride which is controlled by 1C350;
- Schedule 2 (3) Dialkyl [methyl, ethyl or propyl (normal or iso)] N, N-Dialkyl [methyl, ethyl or propyl (normal or iso)]-phosphoramidates, other than Diethyl-N, N-dimethylphosphoramidate which is controlled by 1C350;
- Schedule 2 (4) N, N-Dialkyl [methyl, ethyl or propyl (normal or iso)] aminoethyl-2-chlorides and corresponding protonated salts, other than N, N-Diisopropyl-(beta)-aminoethyl chloride or N, N-Diisopropyl-(beta)-aminoethyl chloride hydrochloride which are controlled by 1C350;
- Schedule 2 (5) N, N-Dialkyl [methyl, ethyl or propyl (normal or iso)] aminoethane-2-ols and corresponding protonated salts, other than N, N-Diisopropyl-(beta)-aminoethanol (96-80-0) and N, N-Diethylaminoethanol (100-37-8) which are controlled by 1C350; except :
  - (a) N, N-Dimethylaminoethanol (108-01-0) and corresponding protonated salts;
  - (b) Protonated salts of N, N-Diethylaminoethanol (100-37-8);
- Schedule 2 (6) N, N-Dialkyl [methyl, ethyl or propyl (normal or iso)]

aminoethane-2-thiols and corresponding protonated salts, other than N, N-Diisopropyl-(beta)-aminoethane thiol (5842-07-9) and N,N-Diisopropylaminoethanethiol hydrochloride (41480-75-5) which are controlled by 1C350;

- Schedule 3 (7) See 1C350 for Ethyldiethanolamine (139-87-7);  
Schedule 3 (8) Methyldiethanolamine (105-59-9);

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**Munitions List Item 7(b) (CAS Registry No. <sup>1</sup>)**

- (1) CW nerve agents:
- Schedule 1 (a) O-Alkyl (equal to or less than C<sub>10</sub>, including cycloalkyl) alkyl (Methyl, Ethyl, n-Propyl or Isopropyl)-phosphonofluoridates, such as:  
Sarin (GB): O-Isopropyl methylphosphonofluoridate (107-44-8); and  
Soman (GD): O-Pinacolyl methylphosphonofluoridate (96-64-0);
- Schedule 1 (b) O-Alkyl (equal to or less than C<sub>10</sub>, including cycloalkyl) N,N-dialkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphoramidocyanidates, such as:  
Tabun (GA): O-Ethyl N,N-dimethylphosphoramidocyanidate (77-81-6);
- Schedule 1 (c) O-Alkyl (H or equal to or less than C<sub>10</sub>, including cycloalkyl) S-2-dialkyl (Methyl, Ethyl, n-Propyl or Isopropyl)-aminoethyl alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphonothiolates and corresponding alkylated and protonated salts, such as:  
VX: O-Ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate (50782-69-9);
- Schedule 1 (d) P-alkyl (H or equal to or less than C<sub>10</sub>, incl. cycloalkyl) N-(1-(dialkyl (equal to or less than C<sub>10</sub>, incl. cycloalkyl) amino)) alkylidene (H or equal to or less than C<sub>10</sub>, incl. cycloalkyl) phosphonamidic fluorides and corresponding alkylated or protonated salts, such as:  
(1) N-(1-(di-n-decylamino)-n-decylidene)-P-decylphosphonamidic fluoride (2387495-99-8);  
(2) Methyl-(1-(diethylamino) ethylidene) phosphonamidofluoridate (2387496-12-8);
- Schedule 1 (e) O-alkyl (H or equal to or less than C<sub>10</sub>, incl. cycloalkyl) N-(1-(dialkyl (equal to or less than C<sub>10</sub>, incl. cycloalkyl) amino)) alkylidene (H or equal to or less than C<sub>10</sub>, incl. cycloalkyl) phosphoramidofluoridates and corresponding alkylated or protonated salts, such as:  
(1) O-n-Decyl N-(1-(di-n-decylamino)-n-decylidene) phosphoramidofluoridate (2387496-00-4);  
(2) Methyl-(1-(diethylamino) ethylidene) phosphoramidofluoridate

- (2387496-04-8);
- (3) Ethyl-(1-(diethylamino) ethylidene) phosphoramidofluoridate (2387496-06-0);
- Schedule 1 (f) Methyl-(bis (diethylamino) methylene) phosphonamidofluoridate (2387496-14-0);
- Schedule 1 (g) Carbamates (quaternaries and bisquaternaries of dimethylcarbamoyloxy pyridines):
- (1) Quaternaries of dimethylcarbamoyloxy pyridines:  
1-[N,N-dialkyl (equal to or less than C<sub>10</sub>)-N-(n-(hydroxyl, cyano, acetoxy) alkyl (equal to or less than C<sub>10</sub>)) ammonio]-n-[N-(3-dimethylcarbamoy- $\alpha$ -picolinyl)-N,N-dialkyl 1 (equal to or less than C<sub>10</sub>) ammonio] decane dibromide (n=1-8), such as:  
1-[N,N-dimethyl-N-(2-hydroxy) ethylammonio]-10-[N-(3-dimethylcarbamoy- $\alpha$ -picolinyl)-N,N-dimethylammonio] decane dibromide (77104-62-2);
- (2) Bisquaternaries of dimethylcarbamoyloxy pyridines:  
1,n-Bis[N-(3-dimethylcarbamoy- $\alpha$ -picolyl)-N,N-dialkyl (equal to or less than C<sub>10</sub>) ammonio]-alkane-(2,(n-1)-dione) dibromide (n=2-12), such as:  
1,10-Bis[N-(3-dimethylcarbamoy- $\alpha$ -picolyl)-N-ethyl-N-methyl ammonio] decane-2,9-dione dibromide (77104-00-8);
- (2) CW vesicant agents:
- Schedule 1 (a) Sulfur mustards, such as:
- (1) 2-Chloroethylchloromethylsulfide (2625-76-5)  
(2) Bis (2-chloroethyl) sulfide (505-60-2)  
(3) Bis (2-chloroethylthio) methane (63869-13-6)  
(4) 1,2-Bis (2-chloroethylthio) ethane (3563-36-8)  
(5) 1,3-Bis (2-chloroethylthio)-n-propane (63905-10-2)  
(6) 1,4-Bis (2-chloroethylthio)-n-butane (142868-93-7)  
(7) 1,5-Bis (2-chloroethylthio)-n-pentane (142868-94-8)  
(8) Bis (2-chloroethylthiomethyl) ether (63918-90-1)  
(9) Bis (2-chloroethylthioethyl) ether (63918-89-8);
- Schedule 1 (b) Lewisites, such as :
- (1) 2-chlorovinyl dichloroarsine (541-25-3)  
(2) Tris (2-chlorovinyl) arsine (40334-70-1)  
(3) Bis (2-chlorovinyl) chloroarsine (40334-69-8)
- Schedule 1 (c) Nitrogen mustards, such as :
- (1) HN1 : bis (2-chloroethyl) ethylamine (538-07-8)  
(2) HN2 : bis (2-chloroethyl) methylamine (51-75-2)  
(3) HN3 : tris (2-chloroethyl) amine (555-77-1)
- Schedule 2 (3) CW incapacitating agents, such as :
- 3-Quinuclidinyl benzilate (BZ) (6581-06-2);

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- (4) CW defoliants, such as:
- (a) Butyl 2-chloro-4-fluorophenoxyacetate (LNF);
  - (b) 2,4,5-trichlorophenoxyacetic acid (93-76-5) mixed with 2,4-dichlorophenoxyacetic acid (94-75-7) (Agent Orange) (39277-47-9);

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**Munitions List Item 7(c) (CAS Registry No. 1)**

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| Schedule 1 | (1) Alkyl (Methyl, Ethyl, n-Propyl or Isopropyl Phosphonyl Difluorides, such as :<br>DF : Methyl Phosphonyldifluoride (676-99-3);                                                                                                                                                                                                             |
| Schedule 1 | (2) O-Alkyl (H or equal to or less than C <sub>10</sub> , including cycloalkyl) O-2-dialkyl (Methyl, Ethyl, n-Propyl or Isopropyl) aminoethyl alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphonite and corresponding alkylated and protonated salts, such as :<br>QL : O-Ethyl O-2-di-isopropylaminoethyl methylphosphonite (57856-11-8); |
| Schedule 1 | (3) Chlorsoarin : O-Isopropyl methylphosphonochloridate (1445-76-7);                                                                                                                                                                                                                                                                          |
| Schedule 1 | (4) Chlorosoman : O-Pinacolyl methylphosphonochloridate (7040-57-5).                                                                                                                                                                                                                                                                          |

Remarks: The products list is for reference only and may be subject to change from time to time. Traders are advised to refer to the schedules promulgated in the Imports and Exports (Strategic Commodities) Regulations (Cap. 60G) for up-to-date information in relation to scope of products subject to licensing requirements.