

## Schedule 1A & 1B

Chemical Name	CAS Registry No	Product Code
<b>Schedule 1A</b>		
1. O-Alkyl ( $\leq C_{10}$ , including cycloalkyl) alkyl (Me, Et, n-Pr or i-Pr)-phosphonofluoridates e.g.: <i>Sarin</i> <i>Soman</i>	107-44-8 96-64-0	S1AN01
2. O-Alkyl ( $\leq C_{10}$ , including cycloalkyl) N, N-dialkyl (Me, Et, n-Pr or i-Pr) phosphoramidocyanidates e.g.: <i>Tabun</i>	77-81-6	S1AN02
3. O-Alkyl (H or $\leq C_{10}$ , including cycloalkyl) S-2-dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl alkyl (Me, Et, n-Pr or i-Pr) phosphonothiolates and corresponding alkylated or protonated salts e.g.: <i>VX</i>	50782-69-9	S1AN03
4. Sulphur mustards: 2-Chloroethylchloromethylsulfide Mustard Gas: Bis(2-chloroethyl)sulfide Bis(2-chloroethylthio)methane Sesquimustard: 1,2-Bis(2-chloroethylthio)ethane 1,3-Bis(2-chloroethylthio)-n-propane 1,4-Bis(2-chloroethylthio)-n-butane 1,5-Bis(2-chloroethylthio)-n-pentane Bis(2-chloroethylthiomethyl)ether O-Mustard: Bis(2-chloroethylthioethyl)ether	2625-76-5 505-60-2 63869-13-6 3563-36-8 63905-10-2 142868-93-7 142868-94-8 63918-90-1 63918-89-8	S1AB01 S1AB02 S1AB03 S1AB04 S1AB05 S1AB06 S1AB07 S1AB08 S1AB09
5. Lewisites: Lewisite 1: 2-Chlorovinylchloroarsine Lewisite 2: Bis(2-chlorovinyl)chloroarsine Lewisite 3: Tris(2-chlorovinyl)arsine	541-25-3 40334-69-8 40334-70-1	S1AB10 S1AB11 S1AB12
6. Nitrogen mustards: HN1: Bis(2-chloroethyl)ethylamine HN2: Bis(2-chloroethyl)methylamine HN3: Tris(2-chloroethyl)amine	538-07-8 51-75-2 555-77-1	S1AB13 S1AB14 S1AB15
7. Saxitoxin	35523-89-8	S1AT01
8. Ricin	9009-86-3	S1AT02
<b>Schedule 1B</b>		
9. Alkyl (Me, Et, n-Pr or i-Pr) phosphonyl difluorides e.g.: <i>DF</i>	676-99-3	S1BN01
10. O-Alkyl (H or $\leq C_{10}$ , including cycloalkyl) O-2-dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl alkyl (Me, Et, n-Pr or i-Pr)-phosphonites and corresponding alkylated or protonated salts e.g.: <i>QL</i>	57856-11-8	S1BN02
11. Chlorosarin: O-Isopropyl methylphosphonochloridate	1445-76-7	S1BN03
12. Chlorosoman: O-Pinacolyl methylphosphonochloridate	7040-57-5	S1BN04

- A total of 12 chemicals or groups of chemicals
- Types of chemicals: Chemicals that may be used as chemical weapons or as precursors in the final single technological stage of production of a chemical weapon.
- Little or no commercial applications

Some possible product categories that may use Schedule 1 Chemicals:

- Pesticide development
- Insecticide development
- Medicinal & pharmaceutical preparations
  - antineoplastic agents
  - neurovascular blocking agents
  - monoclonal antibody preparations
  - intermediates for analgesics
- Flame-retardant additive research (plastics, resins, fibres)

## Schedule 2A, 2A\* & 2B

Chemical Name	CAS Registry No	Product Code
<b>Schedule 2A</b>		
1. Amiton: O,O-Diethyl S-[2-(diethylamino)ethyl] phosphorothiolate and corresponding alkylated or protonated salts	78-53-5	S2AN01
2. PFIB: 1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)-1-propene	382-21-8	S2AT01
<b>Schedule 2A*</b>		
3. BZ: 3-Quinuclidinyl benzilate	6581-06-2	S2AT02
<b>Schedule 2B</b>		
4. 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 e.g.: Methylphosphonyl dichloride Dimethyl methylphosphonate	676-97-1 756-79-6	S2BN01
Exemption: Fonofos: O-Ethyl S-phenyl ethylphosphonothiolothionate	944-22-9	
5. N,N-Dialkyl (Me, Et, n-Pr or i-Pr) phosphoramidic dihalides		S2BN02
6. Dialkyl (Me, Et, n-Pr or i-Pr) N,N-dialkyl (Me, Et, n-Pr or i-Pr)-phosphoramidates		S2BN03
7. Arsenic trichloride	7784-34-1	S2BB01
8. 2,2-Diphenyl-2-hydroxyacetic acid: Benzilic acid	76-93-7	S2BT01
9. Quinuclidin-3-ol	1619-34-7	S2BT02
10. N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethyl-2-chlorides and corresponding protonated salts		S2BB02
11. N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-ols and corresponding protonated salts Exemptions: N,N-Dimethylaminoethanol and corresponding protonated salts N,N-Diethylaminoethanol and corresponding protonated salts	108-01-0 100-37-8	S2BB03
12. N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2- thiols and corresponding protonated salts		S2BN04
13. Thiodiglycol: Bis(2-hydroxyethyl)sulfide	111-48-8	S2BB05
14. Pinacolyl alcohol: 3,3-Dimethylbutan-2-ol	464-07-3	S2BN05

- A total of 14 chemicals or groups of chemicals
- Type of chemicals: Chemicals that may be used as chemical weapons or as precursors in one of the chemical reactions at the final stage of formation of a chemical listed in Schedule 1.
- Have moderate number of commercial applications

Some possible product categories that may use Schedule 2 Chemicals:

- Insecticides
- Flame retardant additive research (plastics, resins, fibres)
- Medical & pharmaceutical preparations
  - anticholinergics
  - antioxidants (fuels, lubricants, etc.)
  - tranquilliser preparations
  - hypotensive agent preparations
- Herbicides
- Fungicides
- Defoliants
- Rodenticides
- General product additives, *inter alia*:
  - antioxidants (fuels, lubricants, etc.)
  - colour stabilisers
  - lubricant additives
  - antistatic agents
- Dyes, and photographic industries
  - printing ink
  - ball point pen fluids
  - copy mediums
  - paints, coatings, etc.
- Metal plating preparations
- Toiletries including perfumes and scents
- Epoxy resins

## Schedule 3A & 3B

Chemical Name	CAS Registry No	Product Code
<b>Schedule 3A</b>		
1. Phosgene: Carbonyl dichloride	75-44-5	S3AC01
2. Cyanogen chloride	506-77-4	S3AT01
3. Hydrogen cyanide	74-90-8	S3AT02
4. Chloropicrin: Trichloronitromethane	76-06-2	S3AC02
<b>Schedule 3B</b>		
5. Phosphorus oxychloride	10025-87-3	S3BN01
6. Phosphorus trichloride	7719-12-2	S3BN02
7. Phosphorus pentachloride	10026-13-8	S3BN03
8. Trimethyl phosphite	121-45-9	S3BN04
9. Triethyl phosphite	122-52-1	S3BN05
10. Dimethyl phosphite	868-85-9	S3BN06
11. Diethyl phosphite	762-04-9	S3BN07
12. Sulfur monochloride	10025-67-9	S3BB01
13. Sulfur dichloride	10545-99-0	S3BB02
14. Thionyl chloride	7719-09-7	S3BB03
15. Ethyldiethanolamine	139-87-7	S3BB04
16. Methyl-diethanolamine	105-59-9	S3BB05
17. Triethanolamine	102-71-6	S3BB06

- A total of 17 chemicals
- Type of chemicals: Chemicals that may be used as chemical weapons or is important in the production of one or more chemicals listed in Schedule 1 or Schedule 2.
- Have large number of commercial applications

Some possible product categories that may use Schedule 3 Chemicals:

- Resin and plastic production
  - polycarbonates
  - polyester carbonates
  - polyurethanes
  - polymethylmetacrylate
  - polysulfides
- Isocyanates
- Toiletries
- Pharmaceuticals
- Pesticides
- Herbicides
- Insecticides
- Amine manufacture
- Acrylonitrile manufacture
- Cyanic acid manufacture
- Cyanogen manufacture
- Cyanogen chloride manufacture
- Gold and other noble metal extraction solutions
- Metal plating preparations
- Soil fumigants
- Organic phosphate esters (hydraulic fluids, flame retardants, surfactants, sequestering agents)
- Organic phosphates (stabilizers, antioxidants, flame retardants, lubricants, plasticizers)
- Vulcanising agents for rubber
- Batteries
- Leather tannery and finishing supplies
- Surfactants for detergents, oil drilling emulsions, cutting oils, soaps and toiletries
- Corrosion inhibitors
- Cement manufacture supplies

## Unscheduled Discrete Organic Chemicals (DOCs)

Refers to any chemical belonging to the class of chemical compounds consisting of all compounds of carbon except for its oxides, sulfides and metal carbonates. They are identifiable by chemical name, structural formula (if known) and Chemical Abstracts Services (CAS) Registry Number (if assigned)

This term does not cover:

1. Oligomers & Polymers, whether or not containing Phosphorus, Sulfur or Fluorine.
2. Chemicals containing only carbon & metal.
3. Carbon monoxide & Carbon dioxide  
(as referred in the term "*oxides of carbon*" in the above definition)
4. Carbon disulfide or Carbonyl sulfide  
(as referred in the term "*sulfides of carbon*" in the above definition)

Note:

Plant sites that **exclusively** produce hydrocarbons or explosives are excluded from the purview of the NA(CWC), and do not require an NA(CWC) licence.

There are 2 types of unscheduled DOCs:

- **PSF containing**  
DOCs containing the elements Phosphorus, Sulfur and/or Fluorine
- **Non-PSF containing**  
DOCs that do not contain the elements Phosphorus, Sulfur and/or Fluorine

E.g.: *Acetone is a non-PSF containing DOCs;*  
*Carbon dioxide and Calcium carbonate are not DOCs;*  
*Fluoromethane is a PSF-containing DOCs.*

**For further queries, please contact the NA(CWC) at –**  
**Helpdesk: 6775 5137**  
**Fax: 6775 5946**  
**Email: [customs\\_nacwc@customs.gov.sg](mailto:customs_nacwc@customs.gov.sg)**

**Or you may wish to visit our website at:**  
**[www.customs.gov.sg/nacwc](http://www.customs.gov.sg/nacwc)**  
**for more information.**

## Controlled Chemicals under NA(CWC)

Schedule 1 Chemicals

Schedule 2 Chemicals

Schedule 3 Chemicals

Unscheduled Discrete  
Organic Chemicals



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