## 1. What is the CWC & the NA(CWC)?

The Chemical Weapons Convention (CWC), also known as the Convention on the Prohibition of the development, production, stockpiling and use of Chemical Weapons and on its destruction, entered into force on 29 April 1997. Singapore ratified this convention in May 1997.

## 2. What is the NA(CWC) Licence?

The NA(CWC) Licence is a Licence that is issued by the Director, National Authority (Chemical Weapons Convention) in accordance with the Chemical Weapons (Prohibition) Act (Chapter 37B).

This Licence authorises companies that are involved in activities pertaining to the chemicals, both Scheduled Chemicals and Unscheduled Discrete Organic Chemicals (DOCs), controlled under the Chemical Weapons Convention or CWC, to carry out their activities.

The Licence reflects the maximum quantity that is applied for the chemical and its relevant activities that the company is allowed to handle for the year until the Licence expires. The company shall not exceed the licenced threshold that is allowed for the year unless an amended Licence has been granted to the company upon application for the amendment of the existing Licence prior to the commencement of the activity or activities. Please refer to "6. Terms & Conditions of the NA(CWC) Licence".

## 3. Controlled Activities & Definitions

| Controlled Activity | Definitions |
|---|---|
| Production (of a chemical) | Refers to its formation through chemical reaction; or by biochemical or biologically mediated reaction. |
| Processing (of a chemical) | Refers to a physical process, such as formulation, extraction and purification, in which a chemical is not converted into another chemical. |
| Consumption (of a chemical) | Refers to its conversion into another chemical via a chemical reaction. |
| Import / Export | Refers to the transfer of chemical(s) between a destination in the local territory and other destination(s)in another territory. |
| Local Sale / Distribution | Refers to the transfer of chemical(s) between a destination and other destination(s) within the same. |

## 4. When do you need a NA(CWC) Licence?

A NA(CWC) Licence is required if you are involved in one or more of the following activities with respect to Scheduled Chemicals1:

| Activity | Schedule 1 | Schedule 2 | Schedule 3 |
|---|---|---|---|
| Production* | ✓ | ✓ | ✓ |
| Processing* | ✓ | ✓ | ✗ |
| Consumption* | ✓ | ✓ | ✗ |
| Storage | ✓ | ✗ | ✗ |
| Import / Export* | ✓ | ✓ | ✓ |
| Local sale / distribution* | ✓ | ✗ | ✗ |

* Please refer to "3. Controlled Activities & Definitions"

You will also require a NA(CWC) Licence for the PRODUCTION of unscheduled DOCs1 that meets either one or both of the following conditions:

| Types of Unscheduled Chemicals | Quantity Produced per Year |
|---|---|
| Total DOCs (including both PSF-containing & non-PSF containing) | More than 200 tonnes |
| Any one PSF-containing | More than 30 tonnes |

**Note:** For cases where multistep processes are involved, the company would need to look into the individual reaction process to determine if any relevant DOC would be produced as intermediates.

## Schedule 1A & 1B

| Chemical Name | CAS Registry No | Product Code |
|---|---|---|
| **Schedule 1A** | | |
| 1. O-Alkyl(≤C10, including cycloalkyl) alkyl (Me, Et, n-Pr or i-Pr)-phosphonofluoridates<br>e.g. : *Sarin*<br>*Soman* | <br>107-44-8<br>96-64-0 | S1AN01 |
| 2. O-Alkyl (≤C10, including cycloalkyl) N, N-dialkyl (Me, Et, n-Pr or i-Pr) phosphoramidocyanidates<br>e.g.: *Tabun* | <br>77-81-6 | S1AN02 |
| 3. O-Alkyl (H or ≤C10, 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<br>e.g.: *VX* | <br><br><br>50782-69-9 | S1AN03 |
| 4. Sulphur mustards:<br>2-Chloroethylchloromethylsulfide<br>Mustard Gas: Bis(2-chloroethyl)sulfide<br>Bis(2-chloroethylthio)methane<br>Sesquimustard: 1,2-Bis(2-chloroethylthio)ethane<br>1,3-Bis(2-chloroethylthio)-n-propane<br>1,4-Bis(2-chloroethylthio)-n-butane<br>1,5-Bis(2-chloroethylthio)-n-pentane<br>Bis(2-chloroethylthiomethyl)ether<br>O-Mustard: Bis(2-chloroethylthioethyl)ether | <br>2625-76-5<br>505-60-2<br>63869-13-6<br>3563-36-8<br>63905-10-2<br>142868-93-7<br>142868-94-8<br>63918-90-1<br>63918-89-8 | <br>S1AB01<br>S1AB02<br>S1AB03<br>S1AB04<br>S1AB05<br>S1AB06<br>S1AB07<br>S1AB08<br>S1AB09 |
| 5. Lewisites:<br>Lewisite 1: 2-Chlorovinyldichloroarsine<br>Lewisite 2: Bis(2-chlorovinyl)chloroarsine<br>Lewisite 3: Tris(2-chlorovinyl)arsine | <br>541-25-3<br>40334-69-8<br>40334-70-1 | <br>S1AB10<br>S1AB11<br>S1AB12 |
| 6. Nitrogen mustards:<br>HN1: Bis(2-chloroethyl)ethylamine<br>HN2: Bis(2-chloroethyl)methylamine<br>HN3: Tris(2-chloroethyl)amine | <br>538-07-8<br>51-75-2<br>555-77-1 | <br>S1AB13<br>S1AB14<br>S1AB15 |
| 7. Saxitoxin | 35523-89-8 | S1AT01 |
| 8. Ricin | 9009-86-3 | S1AT02 |
| **Schedule 1B** | | |
| 9. Alkyl (Me, Et, n-Pr or i-Pr) phosphonyl difluorides<br>e.g. : *DF* | <br>676-99-3 | S1BN01 |
| 10.O-Alkyl (H or ≤C10, 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<br>e.g.: *QL* | <br><br>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:

i. Pesticide development
ii. Insecticide development
iii. Medicinal & pharmaceutical preparations
  a) *antineoplastic agents* c) *monoclonal antibody preparations*
  b) *neuromuscular blocking agents* d) *intermediates for analgesics*
iv. Flame-retardant additive research (plastics, resins, fibres)

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

| Chemical Name | CAS Registry No | Product Code |
|---|---|---|
| **Schedule 2A** | | |
| 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 |
| **Schedule 2A*** | | |
| 3. BZ: 3-Quinuclidinyl benzilate | 6581-06-2 | S2AT02 |
| **Schedule 2B** | | |
| 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<br>e.g.: Methylphosphonyl dichloride<br>Dimethyl methylphosphonate<br><br>Exemption:<br>Fonofos: O-Ethyl S-phenyl ethylphosphonothiolothionate | <br>676-97-1<br>756-79-6<br><br><br>944-22-9 | S2BN01 |
| 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<br>Exemptions:<br>N,N-Dimethylaminoethanol and corresponding protonated salts<br>N,N-Diethylaminoethanol and corresponding protonated salts | <br><br>108-01-0<br><br>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:

i. Insecticides
ii. Flame retardant additive research (plastics, resins, fibres)
iii. Medical & pharmaceutical preparations
  a) *anticholinergics* c) *tranquilliser preparations*
  b) *arsenicals* d) *hypotensive agent preparations*
iv. Herbicides
v. Fungicides
vi. Defoliants
vii. Rodenticides
viii. General product additives, inter alia :
  a) *antioxidants (fuels, lubricats, etc.)* c) *lubricant additives*
  b) *colour stabilisers* d) *antistatic agents*
ix. Dyes, and photographic industries
  a) *printing ink* c) *copy mediums*
  b) *ball point pen fluids* d) *paints, coatings, etc.*
x. Metal plating preparations
xi. Toiletries including perfumes and scents
xii. Epoxy resins

## Schedule 3A & 3B

| Chemical Name | CAS Registry No | Product Code |
|---|---|---|
| Schedule 3A | | |
| 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 |
| Schedule 3B | | |
| 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. Methyldiethanolamine | 105-59-9 | S3BB05 |
| 17. Triethanolamine | 102-71-6 | S3BB06 |

- A total of 17 chemicals
- Type of chemicals: Chemicals that may be used as chemicals 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:

i. Resin and plastic production
   a) *polycarbonates* c) *polyurethanes* e) *polysulfides*
   b) *polyestercarbonates* d) *polymethylmetacrylate*
ii. Isocyanates
iii. Toiletries
iv. Pharmaceuticals
v. Pesticides
vi. Herbicides
vii. Insecticides
viii. Amine manufacture
ix. Acrylonitrile manufacture
x. Cyanic acid manufacture
xi. Cyanogen manufacture
xii. Cyanogen chloride manufacture
xiii. Gold and other noble metal extraction solutions
xiv. Metal plating preparations
xv. Soil fumigants
xvi. Organic phosphate esters (hydraulic fluids, flame retardants, surfactants, sequestering agents)
xvii. Organic phosphates (stabilizers, antioxidants, flame retardants, lubricants, plasticizers)
xviii. Vulcanising agents for rubber
xix. Batteries
xx. Leather tannery and finishing supplies
xxi. Surfactants for detergents, oil drilling emulsions, cutting oils, soaps and toiletries
xxii. Corrosion inhibitors
xxiii. 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 and explosives are excluded from the purview of the NA(CWC), and do not require a 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**

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

# A Guide to NA(CWC) Licence

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