

Wassenaar Arrangement

on

Export Controls for Conventional Arms and
Dual-Use Goods and Technologies



PUBLIC DOCUMENTS

Volume II

List of Dual-Use Goods and Technologies and Munitions List

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These Lists reflect the agreements recorded in Appendix 5 to the Initial Elements, dated 19 December 1995, and all subsequent amendments, including those approved by the Plenary Meeting (5-6 December 2018).

MUNITIONS LIST

- ML7. Chemical agents, "biological agents", "riot control agents", radioactive materials, related equipment, components and materials, as follows:
- a. "Biological agents" or radioactive materials selected or modified to increase their effectiveness in producing casualties in humans or animals, degrading equipment or damaging crops or the environment;
 - b. Chemical warfare (CW) agents, including:
 1. CW nerve agents:
 - a. O-Alkyl (equal to or less than C₁₀, including cycloalkyl) alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) - phosphonofluoridates, such as: Sarin (GB):O-Isopropyl methylphosphonofluoridate (CAS 107-44-8); and Soman (GD):O-Pinacolyl methylphosphonofluoridate (CAS 96-64-0);
 - b. O-Alkyl (equal to or less than C₁₀, including cycloalkyl) N,N-dialkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphoramidocyanidates, such as: Tabun (GA):O-Ethyl N,N-dimethylphosphoramidocyanidate (CAS 77-81-6);
 - c. O-Alkyl (H or equal to or less than C₁₀, 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 (CAS 50782-69-9);
 2. CW vesicant agents:
 - a. Sulphur mustards, such as:
 1. 2-Chloroethylchloromethylsulphide (CAS 2625-76-5);
 2. Bis(2-chloroethyl) sulphide (CAS 505-60-2);
 3. Bis(2-chloroethylthio) methane (CAS 63869-13-6);
 4. 1,2-bis (2-chloroethylthio) ethane (CAS 3563-36-8);
 5. 1,3-bis (2-chloroethylthio) -n-propane (CAS 63905-10-2);
 6. 1,4-bis (2-chloroethylthio) -n-butane (CAS 142868-93-7) ;
 7. 1,5-bis (2-chloroethylthio) -n-pentane (CAS 142868-94-8);
 8. Bis (2-chloroethylthiomethyl) ether (CAS 63918-90-1);
 9. Bis (2-chloroethylthioethyl) ether (CAS 63918-89-8);
 - b. Lewisites, such as:
 1. 2-chlorovinylchloroarsine (CAS 541-25-3);
 2. Tris (2-chlorovinyl) arsine (CAS 40334-70-1);
 3. Bis (2-chlorovinyl) chloroarsine (CAS 40334-69-8);
 - c. Nitrogen mustards, such as:
 1. HN1: bis (2-chloroethyl) ethylamine (CAS 538-07-8);
 2. HN2: bis (2-chloroethyl) methylamine (CAS 51-75-2);
 3. HN3: tris (2-chloroethyl) amine (CAS 555-77-1);
 3. CW incapacitating agents, such as:
 - a. 3-Quinuclidinyl benzilate (BZ) (CAS 6581-06-2);
 4. CW defoliants, such as:
 - a. Butyl 2-chloro-4-fluorophenoxyacetate (LNF);
 - b. 2,4,5-trichlorophenoxyacetic acid (CAS 93-76-5) mixed with 2,4-dichlorophenoxyacetic acid (CAS 94-75-7) (Agent Orange (CAS 39277-47-9));

MUNITIONS LIST

- ML7. c. CW binary precursors and key precursors, as follows:
1. Alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) Phosphonyl Difluorides, such as: DF: Methyl Phosphonyldifluoride (CAS 676-99-3);
 2. O-Alkyl (H or equal to or less than C₁₀, including cycloalkyl) O-2-dialkyl (Methyl, Ethyl, n-Propyl or Isopropyl)-aminoethyl alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphonites and corresponding alkylated and protonated salts, such as:
QL: O-Ethyl O-2-di-isopropylaminoethyl methylphosphonite (CAS 57856-11-8);
 3. Chlorosarin: O-Isopropyl methylphosphonochloridate (CAS 1445-76-7);
 4. Chlorosoman: O-Pinacolyl methylphosphonochloridate (CAS 7040-57-5);
- ML7. d. "Riot control agents", active constituent chemicals and combinations thereof, including:
1. α -Bromobenzeneacetonitrile, (Bromobenzyl cyanide) (CA) (CAS 5798-79-8);
 2. [(2-chlorophenyl) methylene] propanedinitrile, (o-Chlorobenzylidenemalononitrile) (CS) (CAS 2698-41-1);
 3. 2-Chloro-1-phenylethanone, Phenylacetyl chloride (ω -chloroacetophenone) (CN) (CAS 532-27-4);
 4. Dibenz-(b,f)-1,4-oxazaphine, (CR) (CAS 257-07-8);
 5. 10-Chloro-5,10-dihydrophenarsazine, (Phenarsazine chloride), (Adamsite), (DM) (CAS 578-94-9);
 6. N-Nonanoylmorpholine, (MPA) (CAS 5299-64-9);

Note 1 ML7.d. does not apply to "riot control agents" individually packaged for personal self-defence purposes.

Note 2 ML7.d. does not apply to active constituent chemicals, and combinations thereof, identified and packaged for food production or medical purposes.

- ML7. e. Equipment, specially designed or modified for military use, designed or modified for the dissemination of any of the following, and specially designed components therefor:
1. Materials or agents specified by ML7.a., ML7.b. or ML7.d.; or
 2. CW agents made up of precursors specified by ML7.c.;
- ML7. f. Protective and decontamination equipment, specially designed or modified for military use, components and chemical mixtures, as follows:
1. Equipment designed or modified for defence against materials specified by ML7.a., ML7.b. or ML7.d., and specially designed components therefor;
 2. Equipment designed or modified for decontamination of objects contaminated with materials specified by ML7.a. or ML7.b., and specially designed components therefor;
 3. Chemical mixtures specially developed or formulated for the decontamination of objects contaminated with materials specified by ML7.a. or ML7.b.;

Note ML7.f.1. includes:

- a. Air conditioning units specially designed or modified for nuclear, biological or chemical filtration;
- b. Protective clothing.

N.B. For civil gas masks, protective and decontamination equipment, see also 1.A.4. on the Dual-Use List.

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ML7. g. Equipment, specially designed or modified for military use designed or modified for the detection or identification of materials specified by ML7.a., ML7.b. or ML7.d., and specially designed components therefor;

Note ML7.g. does not apply to personal radiation monitoring dosimeters.

N.B. See also 1.A.4. on the Dual-Use List.

ML7. h. "Biopolymers" specially designed or processed for the detection or identification of CW agents specified by ML7.b., and the cultures of specific cells used to produce them;

ML7. i. "Biocatalysts" for the decontamination or degradation of CW agents, and biological systems therefor, as follows:

1. "Biocatalysts" specially designed for the decontamination or degradation of CW agents specified by ML7.b., and resulting from directed laboratory selection or genetic manipulation of biological systems;
2. Biological systems containing the genetic information specific to the production of "biocatalysts" specified by ML7.i.1., as follows:
 - a. "Expression vectors";
 - b. Viruses;
 - c. Cultures of cells.

Note 1 ML7.b. and ML7.d. do not apply to the following:

- a. Cyanogen chloride (CAS 506-77-4);
- b. Hydrocyanic acid (CAS 74-90-8);
- c. Chlorine (CAS 7782-50-5);
- d. Carbonyl chloride (phosgene) (CAS 75-44-5);
- e. Diphosgene (trichloromethyl-chloroformate) (CAS 503-38-8);
- f. Not used since 2004
- g. Xylyl bromide, ortho: (CAS 89-92-9), meta: (CAS 620-13-3), para: (CAS 104-81-4);
- h. Benzyl bromide (CAS 100-39-0);
- i. Benzyl iodide (CAS 620-05-3);
- j. Bromo acetone (CAS 598-31-2);
- k. Cyanogen bromide (CAS 506-68-3);
- l. Bromo methylethylketone (CAS 816-40-0);
- m. Chloro acetone (CAS 78-95-5);
- n. Ethyl iodoacetate (CAS 623-48-3);
- o. Iodo acetone (CAS 3019-04-3);
- p. Chloropicrin (CAS 76-06-2).

Note 2 The cultures of cells and biological systems specified by ML7.h. and ML7.i.2. are exclusive and these sub-items do not apply to cells or biological systems for civil purposes, such as agricultural, pharmaceutical, medical, veterinary, environmental, waste management, or in the food industry.