

List-A substances

Substances in this list (substances requiring extreme caution) may only be manufactured in, or brought onto, workplaces controlled by the University into legally compliant facilities with written authorisation from the Head of Safety and Health.

The reason for this additional control is that the University does not have the infrastructure to work safely or legally with these substances. However, if appropriate facilities are put in place then an A-listed substance may be obtained, but only with approval in writing from the Head of Safety and Health.

In brief, the following types of hazardous substances are identified as List-A substances:

Chemicals

- Any schedule 1 toxic chemicals or schedule 1 precursors or schedule 2 toxic chemicals listed by the **Chemical Weapons** Convention¹ with the exception of Ricin and Saxitoxin (both of which are on the B-list).

Biological

- Any **viable** (i.e. infectious) **hazard group 4 pathogenic organism** listed by the HSE² or DEFRA³.

Full details are provided in the tables below.

¹ <https://www.opcw.org/chemical-weapons-convention/annexes/annex-on-chemicals/>

² <http://www.hse.gov.uk/pubns/misc208.pdf>

³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/400360/animal-pathogens-guidance-controls.pdf

Chemicals**Chemical weapons: schedule 1 toxic chemicals, schedule 1 precursors, and schedule 2 toxic chemicals**

Schedule 1 – Toxic chemical:		CAS #
1)	O Alkyl (<C10, incl. cycloalkyl) alkyl (Me, Et, n-Pr or i-Pr) phosphono-fluoridates e.g. Sarin: O Isopropyl methylphosphonofluoridate e.g. Soman: O Pinacolyl methylphosphonofluoridate	107-44-8 96-64-0
2)	O Alkyl (<C10, incl. cycloalkyl) N,N dialkyl (Me, Et, n Pr or i Pr) phosphoramido cyanidates e.g. Tabun: O Ethyl N,N dimethylphosphoramidocyanidate	77-81-6
3)	O Alkyl (H or <C10, incl. 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. VX: O Ethyl S 2 diisopropylaminoethyl methyl phosphonothiolate	50782-69-9
4)	<i>Sulfur mustards:</i> 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
5)	<i>Lewisites:</i> 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
6)	<i>Nitrogen mustards:</i> HN1: Bis(2 chloroethyl)ethylamine HN2: Bis(2 chloroethyl)methylamine HN3: Tris(2 chloroethyl)amine	538-07-8 51-75-2 555-77-1

Schedule 1 – Precursors:		CAS #
7)	Alkyl (Me, Et, n Pr or i Pr) phosphonyldifluorides e.g. DF: Methylphosphonyldifluoride	676-99-3
8)	O Alkyl (H or <C10, incl. 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. QL: O Ethyl O 2 diisopropylaminoethyl methylphosphonite	57856-11-8
9)	Chlorosarin: O Isopropyl methylphosphonochloridate	1445-76-7
10)	Chlorosoman: O Pinacolyl methylphosphonochloridate	7040-57-5
Whenever reference is made to groups of dialkylated chemicals, followed by a list of alkyl groups in parentheses, all chemicals possible by all possible combinations of alkyl groups listed in the parentheses are considered as listed.		

Schedule 2 – Toxic chemical:		CAS #
1)	Amiton: O,O Diethyl S [2 (diethylamino)ethyl] phosphorothiolate and corresponding alkylated or protonated salts	78-53-5
2)	PFIB: 1,1,1,3,3,3 Pentafluoro 2 (trifluoromethyl) 1 propene	382-21-8
3)	BZ: 3 Quinuclidinyl benzilate	6581-06-2

Biological**Hazard group 4 organisms that infect humans (edited copy from HSE)**

1)	Chapare virus
2)	Crimean/Congo haemorrhagic fever virus
3)	Ebolavirus – Sudan ebolavirus
4)	Ebolavirus – Bundibugyo ebolavirus
5)	Ebolavirus – Reston ebolavirus - includes strain Siena
6)	Ebolavirus – Tai Forest ebolavirus (previously known as Ebola Cote d'Ivoire virus)
7)	Ebolavirus – Zaire ebolavirus
8)	Guanarito virus
9)	Hendra virus (formerly equine morbillivirus) (also classified as a HG4 animal virus)
10)	Junin virus
11)	Kyasanur Forest disease virus
12)	Lassa fever virus
13)	Lujo virus
14)	Macacine herpesvirus 1 (also known as: Herpesvirus simiae; B virus)
15)	Machupo virus
16)	Marburg marburgvirus
17)	Nipah virus (also classified as a hazard group 4 animal virus)
18)	Omsk haemorrhagic fever virus
19)	Russian spring–summer encephalitis virus (also known as: Far Eastern tick-borne encephalitis virus; subtype of Tickborne encephalitis virus)
20)	Sabia virus
21)	Variola virus (major and minor) all strains including Whitepox virus

Hazard group 4 organisms that infect animals (direct copy from DEFRA)

1)	African swine fever virus
2)	Avian influenza viruses which are: a) uncharacterised; or b) Type A viruses which have an intravenous pathogenicity index in six week old chickens of greater than 1.2; or c) Type A viruses H5 or H7 subtype for which nucleotide sequencing has demonstrated multiple basic amino acids at the cleavage site of haemagglutinin
3)	Foot and mouth disease virus
4)	Hendra disease virus (also classified as a hazard group 4 human virus)
5)	Newcastle disease (avian paramyxovirus type 1) viruses which are: a) uncharacterised, or b) have an intracerebral pathogenicity index in one-day-old chicks of 0.4 or more, when not less than 10 million 50% egg infectious doses (EID ₅₀) are administered to each bird in the test
6)	Nipah disease virus (also classified as a hazard group 4 human virus)
7)	Peste des petits ruminants virus
8)	Rinderpest virus
9)	Rabies virus and all viruses of the genus Lyssavirus (also classified as a HG3 human virus)
10)	Swine vesicular disease virus
11)	Teschen disease virus