

## Science and Technology for NPTS - Chemistry Module Glossary

**Isotopes** Atoms that have the same number of protons but different numbers of neutrons. They have the same atomic number but different mass numbers.

**Atomic number** The number of protons in an atom's nucleus. It establishes the element's identity.

**Mass number** The sum of the number of protons and neutrons in an atom's nucleus.

**Covalent bond** A link between atoms that results from their sharing two electrons.

**Lone pair** Two electrons that are not involved in the covalent bonds between atoms but are important for explaining the arrangement of atoms in molecules. They are represented by pairs of dots in Lewis structures.

**Lewis structure** A representation of a molecule that consists of the elemental symbol for each atom in the molecule, lines to show covalent bonds, and pairs of dots to indicate lone pairs.

**Chemical Weapons Convention (CWC)** An arms control agreement that bans the production, stockpiling, transferring, and use of chemical weapons. Approved by the U.N. General Assembly in November, 1992.

**Organization for the Prohibition of Chemical Weapons (OPCW)** Implementing body of the CWC...given the mandate to achieve the object and purpose of the Convention, to ensure the implementation of its provisions, including those for international verification of compliance with it, and to provide a forum for consultation and cooperation among States Parties.

**Toxic chemical** According to the CWC, any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals.

**Precursor** According to the CWC, any chemical reactant that takes part at any stage in the production by whatever method of a toxic chemical.

**Schedule 1 chemicals** According to the CWC, chemicals that have few or no uses other than as chemical weapons or to make chemical weapons.

**Schedule 2 chemicals** According to the CWC, chemicals that could be used as weapons or to make weapons, but also have legitimate small-scale uses.

**Schedule 3 chemicals** According to the CWC, chemicals that can be used as chemical weapons or to make chemical weapons but that also have large-scale uses other than chemical weapons.

**Choking agents** Compounds that disrupt the victim's ability to breathe. Chlorine and phosgene are examples.

**Blister agents** Compounds that cause severe skin, eye, and mucus membrane pain and irritation. They cause severe chemical burns and painful water blisters. Sulfur mustard is an example.

**Blood agents** Toxic compounds that are quickly absorbed into the blood. Hydrogen cyanide is an example.

**Enzyme** A naturally occurring catalyst.

**Substrate** A molecule that an enzyme causes to react.

**Active site** A specific section of the protein structure of an enzyme in which the substrate fits and reacts.

**Nerve agents** Phosphorus-containing organic compounds that disrupt the process by which nerves transfer messages to organs. The disruption is caused by deactivating the enzyme acetylcholinesterase, leading to a buildup of the neurotransmitter acetylcholine. Tabun, Sarin, Soman, and VX are examples.

**Neurotransmitters** Chemicals that transmit signals from nerve cells (neurons) to a target cell across a synapse.

**1925 Geneva Protocol** Protocol on the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare

**Hydrolysis** The reaction in which water,  $H_2O$ , divides into  $H$ , which combines with one part of a molecule, and  $OH$ , which combines with another part of the molecule, splitting the molecule into two parts.

**Isomers** Compounds that have the same molecular formula but different molecular structures.

**Toxin** A poisonous substance produced within living cells or organisms.