

GHS Classification

ID512

CAS 115-96-8

Physical Hazards

Tris(2-chloroethyl) phosphate

Date Classified: Sep. 20, 2006 (Environmental Hazards: Mar. 31, 2006)

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Explosives	Not applicable	—	—	—	Containing no chemical groups with explosive properties
2 Flammable gases	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
3 Flammable aerosols	Not applicable	—	—	—	Not aerosol products
4 Oxidizing gases	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
5 Gases under pressure	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
6 Flammable liquids	Not classified	—	—	—	The flash point is 216degC (open cup flash test) (Sax (11th, 2004))
7 Flammable solids	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
8 Self-reactive substances and mixtures	Not applicable	—	—	—	Containing no chemical groups with explosive or self-reactive properties
9 Pyrophoric liquids	Not classified	—	—	—	Not pyrophoric when in contact with air at ordinary temperatures: the auto-ignition temperature is 602degC (Sax, 11th, 2004).
10 Pyrophoric solids	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
11 Self-heating substances and mixtures	Classification not possible	—	—	—	Test methods applicable to liquid substances are not available.
12 Substances and mixtures, which in contact with water, emit flammable gases	Not classified	—	—	—	Stable to water (water solubility: 5g/L (20degC), BUA20 (1987))
13 Oxidizing liquids	Classification not possible	—	—	—	Classification not possible due to lack of data, though being organic compounds containing oxygen bound to elements other than carbon and
14 Oxidizing solids	Not applicable	—	—	—	Classified as "liquid" according to GHS definition
15 Organic peroxides	Not applicable	—	—	—	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Classification not possible	—	—	—	No data available

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 4	Exclamation mark	Warning	Harmful if swallowed	Based on the LD50 value of 542mg/kg calculated from the testing data of rat LD50 (oral route) of 200mg/kg (CERI Hazard Data 98-22 (1999)), 501mg/kg, 430mg/kg, 794mg/kg, 1,230mg/kg, 1,410mg/kg, 1,150mg/kg and 3,600mg/kg (CERI-NITE Hazard Assessment No.205 (2004)).
1 Acute toxicity (dermal)	Not classified	—	—	—	Based on the rabbit LD50 (dermal route) value of > 28,500mg/kg (CERI Hazard Data 98-22 (1999)).
1 Acute toxicity (inhalation: gas)	Not applicable	—	—	—	Due to the fact that the substance is "liquid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	—	—	—	No data available
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	—	—	—	Insufficient data available
2 Skin corrosion / irritation	Category 3	—	Warning	Causes mild skin irritation	Based on the description in the report on rabbit skin irritation tests (CERI Hazard Data 98-22 (1999) and CERI-NITE Hazard Assessment No.205 (2004)); "mild irritation," "mild erythema."
3 Serious eye damage / eye irritation	Category 2B	—	Warning	Causes eye irritation	Based on the description in the report on rabbit eye irritation tests (CERI Hazard Data 98-22 (1999)): "Mildly irritating."
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Classification not possible	(Respiratory sensitization)— (Skin sensitization)—	(Respiratory sensitization)— (Skin sensitization)—	(Respiratory sensitization)— (Skin sensitization)—	Respiratory sensitization: No data available Skin sensitization: "No evidence of skin sensitization" was obtained in Buehler Tests on guinea pigs (CERI-NITE Hazard Assessment No.205 (2004)). However, classification is not possible, with only one set of data showing "negative" available.
5 Germ cell mutagenicity	Category 1B	Health hazard	Danger	May cause genetic defects	Based on positive data on multi-generation mutagenicity tests (dominant lethal tests), described in IARC 71 (1999), CERI-NITE Hazard Assessment No.205 (2004), NTP DB (Access on May 2006) and EHC 209 (1998).
6 Carcinogenicity	Not classified	—	—	—	Due to the fact that the substance is classified as Group 3 by IARC (1999).
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of decreased numbers of live fetuses per litter and testicular effects at parental toxic doses (or in the absence of data on general toxicity) in rat teratogenicity studies and continuous breeding studies, described in MOE Risk Assessment vol. 1 (2002) and EHC 209 (1998).
8 Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system), Category 3 (narcotic effects)	Health hazard	Danger	Causes damage to organs (nervous system) (Narcotic effects) May cause drowsiness or dizziness	Based on the evidence from animal studies including "piloerection and salivation, hunchback position (in all treated animals), abnormal gait, lethargy, labored respiration, blepharoptosis and paleness of extremities," "dose-dependent increase in rearing and tremor (wet dog shakes)" (CERI-NITE Hazard Assessment No.205 (2004)), "(treated animals) convulsed within 60-90 hours and had extensive loss of CA1 hippocampal pyramidal cells when examined after 7 days, suggesting long-term impairment of some brain functions" (EHC 209 (1998)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (nervous system) Category 2 (kidneys)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (nervous system) May cause damage to organs through prolonged or repeated	Based on the human evidence: "Clinical signs included weakness in arms and abdominal muscles and abnormalities in electromyogram and nerve conduction velocities" (NICNAS (2001)). Also based on the evidence from animal studies including "dose-dependent increase in the incidence of hyperplasia of the renal tubular epithelium (renal cortex convoluted tubules); degeneration and necrosis of neurocytes in the brain stem and cerebrum, reactive gliosis, hemorrhage, mineral deposition, pigmentation or hemosiderin deposition, local lesions in the cerebrum and thalamus" (CERI-NITE Hazard Assessment No.205 (2004)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 2.
10	Aspiration hazard	Classification not possible	—	—	—	No data available

Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 3	—	—	Harmful to aquatic life	It was classified into Category 3 from 96 hours LC50=90mg/L of the fish (Goldfish) (CERI/NITE Hazard Assessment Report, 2004).
11 Hazardous to the aquatic environment (chronic)	Category 3	—	—	Harmful to aquatic life with long lasting effects	Although acute toxicity was Category 3 and the bio-accumulation potential was low (BCF=5.1(Existing Chemical Safety Inspections Data)), since there was no rapidly degrading (the decomposition by BOD: 4%(Existing Chemical Safety Inspections Data)), it was classified into Category 3.