

GHS Classification

ID155

Tetrachloroethylene

CAS 127-18-4

Date Classified: Mar. 23, 2006 (Environmental Hazards: Feb. 10, 2006)

Physical Hazards

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	-	-	-	Non-combustible (ICSC, 2000)
7 Flammable solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
8 Self-reactive substances and mixtures	Not classified	-	-	-	No data available, though containing unsaturated bonds. Not classified, based on the classification by UN Recommendations on the Transport of Dangerous Goods (Division 6.1, UN#1897)
9 Pyrophoric liquids	Not classified	-	-	-	Non-combustible (ICSC, 2000)
10 Pyrophoric solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
11 Self-heating substances and mixtures	Not classified	-	-	-	Non-combustible (ICSC, 2000)
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	-	-	-	Containing no metals or metalloids (B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At)
13 Oxidizing liquids	Not applicable	-	-	-	Organic compounds containing chlorine (but not oxygen and fluorine), with the chlorine bound to carbon and hydrogen (but not to other elements)
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	Not classified	-	-	-	Classified into Division 6.1 (UN#1897) (UN Recommendations on the Transport of Dangerous Goods)

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Not classified	-	-	-	Based on the testing data of rat LD50 (oral route) of 13,000mg/kg (EHC 31 (1984)).
1 Acute toxicity (dermal)	Category 5	-	Warning	May be harmful in contact with skin	Based on the testing data of mouse LD50 (dermal route) of 5,000mg/kg (IUCLID (2000)).
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: vapour)	Not classified	-	-	-	Based on the LC50 value (4 hours) of 5,020ppm, calculated from the testing data of rat LC50 (4-hour inhalation of vapour) of 27.8mg/L (EHC 31 (1984)), was lower than 90% of the saturated vapour concentration (18,500ppm) under a saturated vapour pressure of 1.87kPa (20degC) (CERI Hazard Data 96-11 (1997)), the substance was considered as "vapour containing substantially no mist" and was classified based on standard values
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 1A-1C	Corrosion	Danger	Causes severe skin burns and eye damage	Based on the description in the report on human epidemiological studies and rabbit skin irritation tests (CERI-NITE Hazard Assessment No.65 (2005)); Severe skin irritation associated with dermal necrosis is observed, although the substance should be placed in Category 1A from the viewpoint of safety.
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	Based on the description in the report on rabbit eye irritation tests (CERI-NITE Hazard Assessment No.65 (2005)): "moderate irritant."
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 data available
5 Germ cell mutagenicity	Not classified	-	-	-	Based on the negative data on multi-generation mutagenicity tests (dominant lethal tests), the absence of data on germ cell mutagenicity tests in vivo, and negative data on somatic cell mutagenicity tests in vivo (micronucleus tests) described in CERI-NITE Hazard Assessment No. 65, 2005, ATSDR (1997).
6 Carcinogenicity	Category 1B	Health hazard	Danger	May cause cancer	Due to the fact that the substance is classified as Category R by NTP (2005) and Group 2A by IARC (1995).
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the description in CERI-NITE Hazard Assessment No.65 (2005), ACGIH (7th, 2001), ATSDR (1997) and NICNAS (2001): Adverse effects are observed in the embryonic development of rats and mice.

8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, respiratory organs, liver), Category 3 (narcotic effects)	Health hazard and Exclamation mark	Danger Warning	Causes damage to organs (nervous system, respiratory organs, liver) (Narcotic effects) May cause drowsiness or dizziness	Based on the human evidence including "nausea, belching, headache, dizziness, malaise, extreme exhaustion, physical weakness, sleepiness, perspiration, a decrease in blood pressure, severe rigor, areflexia, hypomyotonia, visual impairment, adverse effects on the central nervous system (shallow respiration, etc.), pulmonary edema" (CERI-NITE Hazard Assessment No.65 (2005)), and the evidence from animal studies including "hepatic fatty degeneration (EHC 31 (1984)). 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, liver, respiratory organs, kidneys)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (nervous system, liver, respiratory organs, kidneys)	Based on the human evidence including "a severe disorder of neuropsychological function (sensibility, perception speed, cautiousness, memory, concentration, etc.), symptoms of autonomic disorder (pricking sense disorder, tingling sensation in the hands and feet, rheumatoid pain, staggering gait, etc.), changes in the personality structure (emotional instability, etc.)," "irregular defecation, constipation, diarrhea, decreased libido, alcohol intolerance, gait disorder, speech disorder, rigidity of the fingers, fever-related seizure, hepatopathy, cirrhosis, pulmonary edema, dyspnea" (CERI-NITE Hazard Assessment No.65 (2005)), and the evidence from animal studies including "nucleus hypertrophy of renal tubular epithelial cells, hepatocellular vacuolar degeneration and necrosis, inflammatory cellular infiltration, urinary cast, nephrosis," "diminished muscle tone, convulsions, restlessness, coma, areflexia, an increase in ALT levels, an increase in triglyceride concentrations, hepatic fatty degeneration, accumulation of BSP (bromo-sulphophthalein) (diminished renal excretion), tremor, depression of the central nervous system" (CERI-NITE Hazard Assessment No.65 (2005)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.
10	Aspiration hazard	Category 2	Health hazard	Warning	May be harmful if swallowed and enters airways	Based on the description in ICSC (J) 2003: "Effects of short-term exposure – may cause chemical pneumonia if swallowed."

Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 48 hours EC50=0.602mg/L of the crustacea (Daphnia magna) (CERI/NITE Hazard Assessment Report, 2005).
11 Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Although acute toxicity is Category 1 and bio-accumulation is low (BCF=77.1(Existing Chemical Safety Inspections Data.)), since there was no rapidly degrading (the decomposition by BOD: 11%(Existing Chemical Safety Inspections Data)), it was classified into Category 1.