

## GHS Classification

**ID161**

**Trichloroethylene**

**CAS 79-01-6**

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	Classification not possible	-	-	-	There is no flash point (c.c.), according to NFPA (13th, 2002), while the gas combustion explosion DB indicates that the flash point is 32degC. Information on the flammability varies from reference to reference.
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#1710)
9 Pyrophoric liquids	Not classified	-	-	-	Not pyrophoric when in contact with air at ordinary temperatures: the auto-ignition temperature is 410degC (ICSC, 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 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#1710) (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 5,400-7,200mg/kg (ATSDR (1997), EU-RAR No.31 (2004)).
1 Acute toxicity (dermal)	Not classified	-	-	-	Based on the testing data of rabbit LD50 (dermal route) of 29,000mg/kg (NICNAS No.8 (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)	Category 4	Exclamation mark	Warning	Harmful if inhaled	Based on the LC50 value (4 hours) of 4,800ppm, calculated from the lower value of testing data of rat LC50 (4-hour inhalation of vapour) of 26mg/L (NICNAS No.8 (2000)) and 64mg/L (EU-RAR No.31 (2004)), was lower than 90% of the saturated vapour concentration (77,000ppm) under a saturated vapour pressure of 7.8kPa (20degC) (IPCS (2004)), the substance was considered as "vapour containing substantially no mist" and was classified based on standard values expressed in ppm.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Based on the evidence of severe primary skin irritation in rabbit primary skin irritation tests (EU-RAR No.31, 2004).
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	Based on the description in EU-RAR No.31 (2004) of human accidents: an accidental exposure to a droplet of undiluted solution caused eye irritation and corneal epithelial damage, both of which healed completely after a few days; the substance is considered "mildly irritating" to the eyes, though the amount of the droplet is unknown. The results of rabbit eye irritation tests, meanwhile, suggest mild to severe conjunctivitis and epithelial keratosis (after seven days of exposure), both of which healed after two weeks.
4 Respiratory/skin sensitization	Respiratory sensitization: Not classified Skin sensitization: Classification not possible	(Respiratory sensitization) - (Skin sensitization) -	(Respiratory sensitization) - (Skin sensitization)	(Respiratory sensitization) - (Skin sensitization) -	Respiratory sensitization: based on the description in EU-RAR No.31 (2004) "there is no report indicating respiratory sensitization in humans, while accidental inhalation exposure cases suggest that trichloroethane does not cause respiratory sensitization." Skin sensitization: based on the description in EU-RAR No.31 (2004) - Although two cases are reported where patch tests on those who accidentally inhaled trichloroethane and developed cutaneous symptoms show positive, reports on human skin sensitization are sporadic and sensitization development is considered unique to idiosyncratic individuals; trichloroethane should not be considered to cause skin sensitization. No other information is available and data are insufficient.
5 Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on negative data on multi-generation mutagenicity tests (dominant lethal tests), the absence of data on germ cell mutagenicity tests, positive data on somatic cell mutagenicity tests in vivo (micronucleus tests), and the absence of data on germ cell genotoxicity tests in vivo, described in CERI-NITE Hazard Assessment No.37 (2004), EU-RAR No.31 (2004), ATSDR (1997).
6 Carcinogenicity	Category 1B	Health hazard	Danger	May cause cancer	Due to the fact that the substance is classified as Group 2A by IARC, Category R by NTP (2005) and Category A5 by ACGIH.
7 Toxic to reproduction	Category 1B	Health hazard	Danger	May damage fertility or the unborn child	Based on the description in CERI-NITE Hazard Assessment No.37 (2004): Behavioral changes are observed in offspring at dosing levels not toxic to parental animals (Taylor et al.)

8	Specific target organs/systemic toxicity following single exposure	Category 3 (narcotic effects, respiratory tract irritation)	Exclamation mark	Warning	(Respiratory tract irritation) May cause respiratory irritation (Narcotic effects) May cause drowsiness or dizziness	Based on the human evidence including "loss of consciousness, headache, nausea, lacrimation, eye irritation" (CERI-NITE Hazard Assessment No.37 (2004)), and the evidence from animal studies including "anesthesia, eye/respiratory irritation, impaired coordination, depression of the central nervous system, respiratory depression; major toxic symptoms include depression of the central nervous system; no significant changes are observed in the lungs, liver and kidneys," "vacuolation of the Clara cells in the bronchial branches; patchy loss of the epithelium" (CERI-NITE Hazard Assessment No.37 (2004)).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (central nervous system)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (central nervous system)	Based on the human evidence including "narcotic influence, adverse effects on the central nervous system and anaclisis (as suggested by epidemiological studies)," "depression of the central nervous system (as suggested by many reports on the repeated-dose toxicity to humans)" "exhaustion, vertigo, dizziness, headache, amnesia, lack of concentration (common symptoms)" (CERI-NITE Hazard Assessment No.37 (2004)).
10	Aspiration hazard	Category 2	Health hazard	Warning	May be harmful if swallowed and enters airways	Based on the description in ICSC (J) (2002): "May cause aspiration and chemical pneumonia if swallowed (liquid)."

### Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 2	-	-	Toxic to aquatic life	It was classified into Category 2 from 48 hours EC50=7.40mg/L of the crustacea (Daphnia magna) (CERI/NITE Hazard Assessment Report, 2004).
11 Hazardous to the aquatic environment (chronic)	Category 2	Environment	-	Toxic to aquatic life with long lasting effects	Although acute toxicity was Category 2 and the bio-accumulation potential was low (BCF=17(Existing Chemical Safety Inspections Data)), since there was no rapidly degrading (the decomposition by BOD: 2.4%(Existing Chemical Safety Inspections Data)), it was classified into Category 2.