

GHS Classification

ID159

Ethane, 1,1,1-trichloro-

CAS 71-55-6

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	-	-	-	There are no chemical groups associated with explosive properties present in the molecules.
2 Flammable gases	Not applicable	-	-	-	Liquid (GHS definition)
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Liquid (GHS definition)
5 Gases under pressure	Not applicable	-	-	-	Liquid (GHS definition)
6 Flammable liquids	Not classified	-	-	-	Flash point: none (Hommel, 1991; Card No.196; Sax, 8th, 1992, p 2287 to 2288)
7 Flammable solids	Not applicable	-	-	-	Liquid (GHS definition)
8 Self-reactive substances and mixtures	Not applicable	-	-	-	There are no chemical groups associated with explosive or self-reactive properties present in the molecule.
9 Pyrophoric liquids	Not classified	-	-	-	Nonflammable. (Merck (Access on May 2005))
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Not classified	-	-	-	Non-flammable (Merck, access on May 2005)
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	-	-	-	The chemical structure of the substance does not contain 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) chemically bonded only to carbon and hydrogen (but not to other elements).
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	Containing no -O-O- structure
16 Corrosive to metals	Not classified	-	-	-	UNRTDG Class: 6.1

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Not classified	-	-	-	Based on rat oral LD50 value = 4640mg/kg (CERI Hazard Data (1998)), 15800mg/kg (CERI Hazard Data (1998)), 11000mg/kg (EHC 136 (1992)), 10300mg/kg (PATTY (4th, 1994), ATSDR (2004)), and 12996mg/kg (ATSDR (2004)), calculation value was applied to make Category. LD50 calculated value = 7924.3 mg/kg
1 Acute toxicity (dermal)	Not classified	-	-	-	It was categorized to use calculated LD50 value = 10706mg/kg. This value based on rabbit percutaneous LD50 value = 10000mg/kg (CERI Hazard Data (1998)), 16000mg/kg (CERI Hazard Data (1998)), and 15800mg/kg (EHC 136 (1992)).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Not classified	-	-	-	Rat inhalation LC50 (1 hour) value = 24000ppm (from steam pressure, it was judged to be steam. 4 hour exposure equivalent value is 12000ppm. CERI Hazard Data (1998)), and based on rat inhalation LC50 (4 hours) value = 18400ppm (EHC 136 (1992)), since this LC50 value indicate that the state of this compound was steam close to gas phase, Category was determined using the same standard values as for gases. LC50 value with 4-hour exposure is about 1.5 times the value of the limit of Category 5 (5000 - 12500ppm). Since the 4-hour equivalent obtained from LC50 value with 1 hour exposure was almost the same as the upper limit of Category 5, it was classified as out of Category.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	From descriptions that it shows irritation in human exposure cases (EHC 136 (1992), ATSDR (2004)), that moderate irritation was found on rabbits (CERI Hazard Data (1998), EHC 136 (1992), and ATSDR (2004)), and that moderate irritation was found on guinea pigs (CERI Hazard Data (1998), ACGIH (7th, 2001), and ATSDR (2004)), it was classified as Category 2.
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	From description that mild irritation was seen in humans evidence of exposure (EHC 136 (1992), ATSDR (2004)), and from description that the mild or moderate irritation was acknowledged with the rabbit (CERI Hazard Data(1998), EHC 136 (1992), PATTY (4th, 1994) and ATSDR (2004)), it was set as Category 2A-2B.
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Not classified	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	(Respiratory sensitization)-; (Skin sensitization)-	Respirator: No data Skin : One case of allergic contact dermatitis is reported without mentioning the possibility that the added stabilizer is its cause (ATSDR (2004)). In addition, one case is reported that a detergent including this product induced allergic reactions without specifying the causative agent (BUA 156 (1994)). On the other hand, because of a description that 50 volunteers with 18 cutaneous administration for three weeks showed no allergic skin reactions (BUA 156 (1994)), and a description that a guinea pig test showed no skin sensitization (BUA 156 (1994)), we classified this as out of category judging that there is no skin sensitization.

5	Germ cell mutagenicity	Not classified	-	-	-	The substance was regarded as outside the categories. Because the dominant lethal tests in mice are negative (CERI Hazard Data (1998), EHC 136 (1992)), and the in vivo mutagenicity tests using somatic cells (the chromosome aberration tests in rat bone-marrow cells, and micronucleus test in mouse bone-marrow/peripheral blood cells) are negative (CERI Hazard Data (1998), EHC 136 (1992), IARC 71 (1999), NTP DB (Access on Aug 2005), ATSDR (2004)).
6	Carcinogenicity	Not classified	-	-	-	It is classified into D according to EPA, and classified into a group 3 according to D and IARC 71 (1999) and is classified into A4 according to ACGIH (7th, 2001). So it was considered as the outside of Category.
7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Minimal effects are observed, such as mutation, delayed ossification, and low body weight in fetus/born child, in spite of observing bat effects on reproductive function, fertility property and generations in using rats, mice, and rabbits before mating, during pregnancy or lactating administration test (CERI Hazard Data Description (1998), EHC 136 (1992), PATTY (4th, 1994), IARC 71 (1999), NTP DB (Access on Aug 2005), ATSDR (2004), and ACGIH (7th, 2001)). On the other hand, there is a report that increase in mortality rate and change in behavior of offspring are observed at the dose affecting parental animals of general toxicity in a pregnant rat inhalation exposure test (CERI Hazard Data Description (1998) and ATSDR (2004)). Therefore, it was classified into Category 2. In addition, although there is a description of an epidemiological study, the clear association between reproductive toxicity and exposure is not indicated (ATSDR (2004)).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system, heart); Category 3 (narcotic effects, respiratory tract irritation)	Health hazard	Danger	Cause damage to organs (central nervous system, heart); May cause respiratory irritation or may cause drowsiness and dizziness (narcotic effects, respiratory tract irritation)	There is the descriptions that CNS depression effect is observed in the human exposure example in CERI Hazard Data (1998), EHC 136 (1992), ACGIH (7th, 2001), PATTY (4th, 1994), IARC 71 (1999), industrial hygiene academic society advice, and ATSDR (2004). And that in the human exposure example the abnormal heart rhythm by cardiac hypersensitivity to adrenalin effect in CERI Hazard Data, PATTY (4th, 1994), and ATSDR (2004). So it is considered that the target organs are central nervous systems and heart. Therefore, it was classified into Category 1. Moreover, due to the descriptions that the anesthetic action was observed in human exposure example in CERI Hazard Data (1998), ATSDR (2004), and ACGIH (7th, 2001), and that mild respiratory irritation was observed in human exposure example in ATSDR (2004), it was classified into Category 3.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (central nervous system, liver, heart); Category 2 (lung)	Health hazard	Danger	Causes damage to organs (central nervous system, liver, heart) through prolonged or repeated exposure; May cause damage to organs (lung) through prolonged or repeated	In CERI Hazard Data (1998), EHC 136 (1992), ACGIH (7th, 2001), PATTY (4th, 1994), IARC 71 (1999), industrial hygiene academic society advice (1974), and ATSDR (2004), there is the description that central nervous system manifestations is observed by the human repeated exposure, there is the description that the arrhythmia was observed in the example of the human repeated exposure in ATSDR (2004), and there is the description that liver damages were observed for the example of the human repeated exposure in EHC 136 (1992), IARC 71 (1999), and ATSDR (2004), due to above results it is considered that target organs were central nervous system, heart and liver, and they all were classified into Category 1. Furthermore, it was classified into Category 2 due to the description that the lung change was observed to the guinea pig by moderate level inhalation in CERI Hazard Data (1998) and ACGIH (7th, 2001).
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 2	-	-	Toxic to aquatic life	It was classified into Category 2 from 24-hour LC50=8000microg/L of Crustacea (Brine shrimp) (MOE Risk Assessment No.2, 2003).
11 Hazardous to the aquatic environment (chronic)	Category 2	Environment	-	Toxic to aquatic life with long lasting effects	Classified into Category 2, since acute toxicity was Category 2 and not rapidly degrading (BOD: 0% (existing chemical safety inspections data)), though less bio-accumulative (BCF=4.9 (existing chemical safety inspections data)).