

GHS Classification

ID42

CAS 76-06-2

Physical Hazards

Trichloronitromethane; Chloropicrin

Date Classified: Jul. 24, 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 classified	-	-	-	Cannot be classified due to lack of data, though containing nitro groups with its oxygen budget calculated at 0. A study shows that the substance packaged in amounts exceeding the maximum quantity is liable to undergo an explosion by impact (Bretherick (J) (5th, 1998)), and hence it could be classified into "Explosives." Classified into Division 6.1 (UN#1580) (UN Recommendations on the Transport of Dangerous Goods)
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, 1999)
7 Flammable solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
8 Self-reactive substances and mixtures	Not classified	-	-	-	No data available, though the substance contains chemical groups associated with explosive properties that contain nitro groups. Classified into Division 6.1 (UN#1580) (UN Recommendations on the Transport of Dangerous Goods)
9 Pyrophoric liquids	Not classified	-	-	-	Non-combustible (ICSC, 1999)
10 Pyrophoric solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
11 Self-heating substances and mixtures	Not classified	-	-	-	Non-combustible (ICSC, 1999)
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 classified	-	-	-	No data available, though being organic compounds containing oxygen bound to elements other than carbon and hydrogen. Classified into Division 6.1 (UN#1580) (UN Recommendations on the Transport of Dangerous Goods)
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#1580) (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)	Category 3	Skull and crossbones	Danger	Toxic if swallowed	Based on the rat LD50 (oral route) value of 250mg/kg (MOE Risk Assessment vol. 2 (2003)).
1 Acute toxicity (dermal)	Classification not possible	-	-	-	No data available
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 1	Skull and crossbones	Danger	Fatal if inhaled	Based on the rat LC50 (4 hour inhalation of vapour) of 6.6ppm (PATTY (4th, 1999)) representing the lower of the two testing data, 14.4ppm (MOE Risk Assessment vol. 2 (2003)) and 6.6ppm, was lower than 90% of the saturated vapour concentration (22,400ppm) under a saturated vapour pressure of 2.26kPa (20degC), the substance was considered as "vapour containing substantially no mist" and was classified based on standard
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 descriptions in the report on epidemiological studies of human exposure (CERI Hazard Data 2000-3 (2001)): "The substance causes irritation of the skin, eye and mucous membranes of the respiratory tract/digestive organs" "dermatitis was observed following dermal exposure." Also due to the fact that the substance is assigned to R36/37/38 by EU classification.
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Based on the descriptions in the report on epidemiological studies of human exposure (CERI Hazard Data 2000-3 (2001)): "Inadvertent eye contact resulted in severe edema." The substance is thus considered severely irritating to the eye. Although classified as Category 1-2A, given the absence of data on reversibility, the substance should be placed in Category 1 from the viewpoint of safety.
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	Classification not possible	-	-	-	NTP DB (Access on Apr., 2006) and CERI Hazard Data 2000-3 (2001) contain descriptions on the substance giving positive data on in vitro mutagenicity tests (mutation and chromosome aberration), but the results were not definitive. Moreover, no data are available on in vivo mutagenicity
6 Carcinogenicity	Not classified	-	-	-	Due to the fact that the substance is classified as Category A4 by ACGIH (2001).
7 Toxic to reproduction	Classification not possible	-	-	-	Classification not possible due to the insufficiency of data (no data are available on parental animals).

8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, respiratory organs, blood system)	Health hazard	Danger	Causes damage to organs (nervous system) (Narcotic effects) May cause drowsiness or dizziness	Based on the human evidence including: "coughing, lacrimation, runny nose, bronchitis and nasal inflammation were observed in members of a family" (DFGOT vol.6 (1994)), "died from pulmonary edema when sprayed in the face with chloropicrin." (CERI Hazard Data 2000-3 (2001)), "developed a dry cough with erythema of the nasal/pharyngeal mucosa and edema" (ACGIH (7th, 2002)), "irritation of the upper respiratory tract accompanied by lacrimation, runny nose, coughing, headache and dyspnea; methemoglobin formation was detected among those exposed to higher doses" (DFGOT vol.6 (1994)). Also based on the evidence from animal studies including "accelerated respiration, reduced locomotor activity, conjunctival injection, inspiratory dyspnea, abdominal bloating due to retention of the air in the gastrointestinal tract by swelling and stenosis of the respiratory tract, pulmonary congestion, pneumonia and pulmonary edema" (CERI Hazard Data 2000-3 (2001)), "hemorrhagic pulmonary edema (DFGOT vol.6 (1994)). 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 (respiratory organs, central nervous system) Category 2 (blood system)	Health hazard	Danger Warning	Causes damage to organs through prolonged or repeated exposure (nervous system)	Based on the human evidence including "prolonged exposure to high doses may cause death from pulmonary edema" (CERI Hazard Data 2000-3 (2001)), "exhibited clinical symptoms such as lacrimation, coughing, dizziness, headache, nausea, retching and fatigue" (HSDB (2005)), and the evidence from animal studies including "decreased hemoglobin and hematocrit levels" (CERI Hazard Data 2000-3 (2001)), "damage to the nasal cavity (such as inflammation and atrophy of the olfactory epithelium) and the lung (such as hemorrhage and hyperplasia of the bronchoalveolar smooth muscle)" (MOE Risk Assessment vol. 4 (2005)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.
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 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 96 hours LC50=0.0165mg/L of the fish (Rainbow Trout) (CERI Hazard Data, 2001).
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 (log Kow=2.09(PHYSPROP Database, 2005)), since there was no rapidly degrading (the decomposition by BOD: 0%(Existing Chemical Safety Inspections Data)), it was classified into Category 1.