

GHS Classification

ID68

Phosgene

CAS 75-44-5

Date Classified: Dec. 19, 2006 (Environmental Hazards: Mar. 31, 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	-	-	-	Classified as "gas" according to GHS definition
2 Flammable gases	Not classified	-	-	-	Non-combustible (ICSC, 2004)
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not classified	-	-	-	Classified into Division 2.3 and Class 8 (UN#1076) (UN Recommendations on the Transport of Dangerous Goods)
5 Gases under pressure	Liquefied gas	Gas cylinder	Warning	Contains gas under pressure; may explode if heated	The boiling point is 8degC (ICSC (2004)), and the critical temperature is 182degC (HSDB (2006)) - i.e., liquefied gas. Classified into Division 2.3 and Class 8 (UN#1076) (UN Recommendations on the Transport of Dangerous Goods)
6 Flammable liquids	Not applicable	-	-	-	Classified as "gas" according to GHS definition
7 Flammable solids	Not applicable	-	-	-	Classified as "gas" according to GHS definition
8 Self-reactive substances and mixtures	Not applicable	-	-	-	Classified as "gas" according to GHS definition
9 Pyrophoric liquids	Not applicable	-	-	-	Classified as "gas" according to GHS definition
10 Pyrophoric solids	Not applicable	-	-	-	Classified as "gas" according to GHS definition
11 Self-heating substances and mixtures	Not applicable	-	-	-	Classified as "gas" according to GHS definition
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	-	-	-	Classified as "gas" according to GHS definition
13 Oxidizing liquids	Not applicable	-	-	-	Classified as "gas" according to GHS definition
14 Oxidizing solids	Not applicable	-	-	-	Classified as "gas" according to GHS definition
15 Organic peroxides	Not applicable	-	-	-	Classified as "gas" according to GHS definition
16 Corrosive to metals	Classification not possible	-	-	-	Test methods applicable to gas substances are not available

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Classification not possible	-	-	-	No data available
1 Acute toxicity (dermal)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: gas)	Category 1	Skull and crossbones	Danger	Fatal if inhaled	Based on human LC50 (inhalation of gas) value of 2ppm (4 hours; converted from 170 min), representing the two testing data, rat LC50 of 5.58ppm (4 hours) (CERL Hazard Data 2000-51 (2001)) and human LC50 of 3ppm (170 min).
1 Acute toxicity (inhalation: dust, mist)	Not applicable	-	-	-	Due to the fact that the substance is "gas" according to the GHS definition and inhalation of its vapour is not expected.
1 Acute toxicity (inhalation: dust, mist)	Not applicable	-	-	-	Due to the fact that the substance is "gas" according to the GHS definition and inhalation of its dust/mist is not expected.
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Based on the description in EHC 193 (1997): "Dermal contact with high concentrations of the substance causes irritation of the skin." There have been reports of human health effects (EHC 193 (1997) and IRIS (2006)): "Skin contact with phosgene has been known to cause severe skin burns in humans. Vapor contact with moist or wet skin can lead to irritation and erythema."
3 Serious eye damage / eye irritation	Category 2A	Exclamation mark	Warning	Causes serious eye irritation	Based on the descriptions of human health effects (CERL Hazard Data 2000-51 (2001), MOE Risk Assessment vol. 4 (2004) and EHC 193 (1997), ACGIH (7th, 2001)): "The substance has a strong irritancy potential, showing irritation of eyes and nose at 3ppm or higher. Accidental eye spillage of the substance results in severe damage to the eye," "eye irritation and burning sensation." The substance is thus considered a strong 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 absence of data on multi-generation mutagenicity tests and germ cell mutagenicity tests in vivo, and negative data on somatic cell mutagenicity tests in vivo (micronucleus tests), described in IRIS (2006).
6 Carcinogenicity	Classification not possible	-	-	-	Classification not possible based on expert judgment, given the absence of existing classification.
7 Toxic to reproduction	Classification not possible	-	-	-	No data available
8 Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory organs)	Health hazard	Danger	Causes damage to organs (respiratory organs)	Based on the human evidence: "abnormalities observed mainly in the lung," "dyspnea and collapse," "brain damage is considered secondary to phosgene-related hypoxemia and low blood pressure" (IRIS (2005)), "headache, nausea, coughing, dyspnea, fatigue, pharyngalgia, chest tightness, chest pain and fever were observed in human subjects, 7 of whom developed pulmonary edema" (EHC 194 (1997)). Also based on the evidence from animal studies including "damage to the alveolar cells (type 1)," "accumulation of monoblasts in the bronchial branches and alveolar wall" (EHC 193 (1997)). 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)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (respiratory organs)	The effects on humans are reported as follows: "25 showed x-ray and clinical evidence of pneumonitis", "in two of these cases, bronchitis due to phosgene poisoning had been reported"(EHC 193 (1997)), "rapid, shallow breathing, high minute volume and low oxygen extract" (IRIS (2005)). In animal studies, "GPD activity increase, alveolar cell hyperplasia, macrophages with vacuolated cytopla" (EHC 193 (1997)), "interstitial thickening of the alveolus, inflammatory cell influx to terminal bronchiole/alveolus, increased collagen staining of terminal bronchiole/peribronchiolar" (IRIS (2005)) were reported. Based on these effects, the respiratory organs are considered to be the target organs. And these effects were observed within the guidance values for Category 1 in the repeated-dose study. Therefore, the substance was classified as Category 1 (respiratory organs).
10	Aspiration hazard	Not applicable	-	-	-	Not applicable

Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Classification not possible	-	-	-	No data available
11 Hazardous to the aquatic environment (chronic)	Classification not possible	-	-	-	No data available