GHS Classification

ID285 Mercury dichloride

CAS 7487-94-7 Date Classified: Jun. 20, 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	–	–	–	Containing no chemical groups with explosive properties
2	Flammable gases	Not applicable	–	–	–	Classified as "solid" according to GHS definition
3	Flammable aerosols	Not applicable	–	–	–	Not aerosol products
4	Oxidizing gases	Not applicable	–	–	–	Classified as "solid" according to GHS definition
5	Gases under pressure	Not applicable	–	–	–	Classified as "solid" according to GHS definition
6	Flammable liquids	Not applicable	–	–	–	Classified as "solid" according to GHS definition
7	Flammable solids	Not classified	–	–	–	Non-flammable (ICSC, 2004)
8	Self-reactive substances and mixtures	Not applicable	–	–	–	Containing no chemical groups with explosive or self-reactive properties
9	Pyrophoric liquids	Not applicable	–	–	–	Classified as "solid" according to GHS definition
10	Pyrophoric solids	Not classified	–	–	–	Non-combustible (ICSC, 2004)
11	Self-heating substances and mixtures	Not classified	–	–	–	Non-combustible (ICSC, 2004)
12	Substances and mixtures, which in contact with water, emit flammable gases	Not classified	–	–	–	Stable to water (water solubility: 7.4g/100mL (20degC), ICSC (2004))
13	Oxidizing liquids	Not applicable	–	–	–	Classified as "solid" according to GHS definition
14	Oxidizing solids	Not classified	–	–	–	No data available, though being inorganic compounds containing chlorine. Classified into Division 6.1 (UN#1624) (UN Recommendations on the Transport of Dangerous Goods)
15	Organic peroxides	Not applicable	–	–	–	Not organic compounds
16	Corrosive to metals	Classification not possible	–	–	–	Test methods applicable to solid substances are not available

Health Hazards

	Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1	Acute toxicity (oral)	Category 2	Skull and crossbones	Danger	Fatal if swallowed	Based on the testing data of 25.9mg/kg, representing the lowest value of rat LD50 (oral route) of 25.9-77.7mg/kg (ATSDR(1999)).
1	Acute toxicity (dermal)	Category 1	Skull and crossbones	Danger	Fatal in contact with skin	Based on the rabbit LD50 (dermal route) value of 41mg/kg (ATSDR (1999)).
1	Acute toxicity (inhalation: gas)	Not applicable	–	–	–	Due to the fact that the substance is "solid" according to the GHS definition and inhalation of its gas is not expected.
1	Acute toxicity (inhalation:	Classification not possible	–	–	–	No data available
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 description in the report on rabbit skin irritation tests (CERI Hazard Data 2001-58 (ii) (2002)): "Severe skin irritation" (though the results are not those of 4-hour application). Also based on the human evidence of "skin irritation" (ATSDR (1999)). The substance is thus considered a severe skin irritant.
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 Hazard Data 2001-58 (ii) (2002)): "Severe eye irritation" (though the mode of administration (24-hour exposure) is not comparable to that of the ordinary eye irritation tests). Also based on the human evidence of "eye irritation" (ATSDR (1999)). The substance is thus considered a severe eye irritant.
4	Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Category 1	(Respiratory sensitization) – (Skin sensitization) Exclamation mark	(Respiratory sensitization) – (Skin sensitization) Warning	(Respiratory sensitization) – (Skin sensitization) May cause allergic skin reaction	Respiratory sensitization: No data available Skin sensitization: Based on the "positive" results in animal sensitization tests reported in CERI Hazard Data 2001-58 (ii) (2002), and the description of human health effects in DFGOT vol.15 (2001); the substance causes "skin sensitization." Furthermore, mercury is classified into "Skin Sensitizing Substance" by the ad hoc committee of the Japanese Society of Occupational Allergy, and "Skin Sensitizing Substance: Group 1"* by the Japan Society for Occupational Health (though these classifications do not specify mercury chloride (II) per se). * There is a provision to the effect that "the category refers to the substance concerned and its compounds, but does not identify all substances causing respiratory/skin sensitization.
5	Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on positive data on somatic cell mutagenicity tests in vivo and the absence of data on germ cell genotoxicity in vivo. Positive results (as mercury compounds) are also available in multi-generation mutagenicity tests and germ cell mutagenicity tests in vivo, but not used for effects assessment.
6	Carcinogenicity	Not classified	–	–	–	Due to the fact that the substance is classified as Category C by EPA (1995), Category A4 (as metal mercury and inorganic mercury compounds) by ACGIH (2001), Group 3 (as metal mercury and inorganic mercury compounds) by IARC (1993).
7	Toxic to reproduction	Category 1B	Health hazard	Danger	May damage fertility or the unborn child	Based on the evidence of adverse effects on the reproductive function (decreased copulation rates) and sperm production at dosing levels producing no parental toxicity, described in ATSDR (1999), EHC 118 (1991), IARC 58 (1993) and CERI Hazard Data 2001-58 (2002).

8	Specific target organs/systemic toxicity following single exposure	Category 1 (respiratory organs, kidneys, cardiovascular system, liver, skeletal muscles)	Health hazard	Danger	Causes damage to organs (respiratory organs, kidneys, cardiovascular system, liver, skeletal muscles)	Based on the human evidence including "severe pulmonary edema, increased enzymes of the liver, enlargement/malacia of the liver," "rale, enlargement of the liver, acute renal failure," "loss of P wave, prolongation of the QRS interval and elevation of T wave in ECG," "degeneration of the skeletal muscles" (CICAD 50 (2003)), "albuminuria, anuria and uremia", and the evidence from animal studies including "degeneration of the epithelial cells of renal tubules, proximal renal tubular necrosis" (CERI Hazard Data 2001-58 (ii) (2002)). 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 (central nervous system, kidneys, thyroid gland, testes, cardiovascular system)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (central nervous system, kidneys, thyroid gland, testes, cardiovascular system)	The central nervous system, kidney, thyroid gland, testes and cardiovascular system were considered to be the target organs based on reported adverse effects, including "irritability, fretfulness, sleeplessness, tachycardia and elevated blood pressure" (CICAD 50 (2003)) observed in human studies, and "nephropathy (i.e., dilated tubules with hyaline casts, foci of tubular regeneration, and thickened tubular basement membrane), tubular necrosis"(CICAD 50 (2003)) and "increased thyroid weight, thyroidal iodine uptake and protein-bound iodine in the serum, decreased triiodothyronine and monoiodotyrosine, reduced testis weight and testicular epididymal sperm number, coagulative necrosis in cerebellar granule cells, degeneration and vacuolation in the neurons of dorsal root ganglia, severe ataxia and sensory loss, an increase in blood pressure, and a decrease in cardiac contractility"(CERI hazard data collection 2001-58 (2) (2002)) observed in experimental animal studies. In experimental animals, the effects on central nervous system, kidney, thyroid gland and testes were observed at dosing levels within the guidance value ranges for Category 1 and on the cardiovascular system for Category 2.
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 48 hours LC50=1.8-4.3microg/L(Mercury II Chloride Equivalent: 2.4-5.8microg/L) of the crustacea (Daphnia magna) (EHC86, 1989).
11	Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Since acute toxicity was Category 1, there was bio-accumulation (BCF=4620 (Existing Chemical Safety Inspections Data)) and it was a metallic compound and the underwater action was unknown, it was classified into Category 2.