

GHS Classification

ID838

2,3,7,8-tetrachlorodibenzo[b,e][1,4]dioxin

CAS 1746-01-6

Date Classified: Jul. 24, 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	-	-	-	There are no chemical groups associated with explosive properties present in the molecules.
2 Flammable gases	Not applicable	-	-	-	Solid (GHS definition)
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Solid (GHS definition)
5 Gases under pressure	Not applicable	-	-	-	Solid (GHS definition)
6 Flammable liquids	Not applicable	-	-	-	Solid (GHS definition)
7 Flammable solids	Classification not possible	-	-	-	No data available
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 applicable	-	-	-	Solid (GHS definition)
10 Pyrophoric solids	Classification not possible	-	-	-	No data available
11 Self-heating substances and mixtures	Classification not possible	-	-	-	No data available
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	-	-	-	Solid (GHS definition)
14 Oxidizing solids	Not applicable	-	-	-	Organic compounds containing oxygen and chlorine (but not fluorine) and these elements are chemically bonded only to carbon and hydrogen (but not to other elements).
15 Organic peroxides	Not applicable	-	-	-	Containing no -O-O- structure
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 1	Skull and crossbones	Danger	Fatal if swallowed	It was set as Category 1 based on rat LD50 values: 0.022mg/kg (PATTY 4th, 1994, IARC 69, 1997, NTP TR209, 1982, ATSDR, 1998), 0.013mg/kg (IARC 69, 1997), 0.043mg/kg (IARC 69, 1997, ATSDR, 1998), 0.34mg/kg (IARC 69, 1997), 0.100mg/kg (NTP TR209, 1982), 0.190mg/kg (NTP TR209, 1982), 0.125mg/kg (NTP TR209, 1982, ATSDR, 1998), 0.060mg/kg (ATSDR, 1998), and 0.164mg/kg (ATSDR, 1998).
1 Acute toxicity (dermal)	Category 1	Skull and crossbones	Danger	Fatal in contact with skin	It was set as Category 1 based on rabbit LD50 value: 0.275mg/kg (PATTY 4th, 1994, IARC 69, 1997, ATSDR, 1998).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Solid (GHS definition)
1 Acute toxicity (inhalation: vapour)	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	From description that hyperkeratosis and epidermal hyperplasia were accepted in the acute dermatitis exposure tests using the mouse (ATSDR (1998)), and description that the skin was stimulated (ICSC (J) (2003)), it was set as Category 2.
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	There is the description that in the test applied to the ocular of the rabbit (ATSDR (1998)), inflammation such as conjunctival edemas was acknowledged. So it was set as Category 2A-2B.
4 Respiratory/skin sensitization	Classification not possible	-	-	-	No data available

5	Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	Since there was a positive result in the chromosome aberration test on rat and mouse marrow cells which is an in vivo mutagenicity test with somatic cells (ATSDR, 1998), and there was no positive result in the in vivo heredity toxicity examination on germ cells. So it was classified as Category 2 .
6	Carcinogenicity	Category 1A	Health hazard	Danger	May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	It was classified into group 1 (IARC 69, 1997), and classified into 1 in Japan Assoc. of Industrial Health (industrial hygiene academic society recommendation, 2005) and classified into K in NTP (NTP RoC 11th, 2005). So it was considered as Category 1A.
7	Toxic to reproduction	Category 1B	Health hazard	Danger	May damage fertility or the unborn child	It was classified into Category 1B based on the description that reduced fertility potential was admitted in the rat fecundity study (IARC 69 (1997), ATSDR (1998), NTP TR209 (1982)), description that embryonic lethality effects, fetal malformation, and reduction of newborn baby's immunity and fertility potential, etc. were observed also in single exposure, and in the pregnant rat, mouse or hamster oral administration examination (IARC 69 (1997), ATSDR (1998), NTP TR209 (1982).) and description that fetotoxicity was observed at dose lower than causing maternal toxicity in the monkey oral administration examination (IARC 69 (1997) and ATSDR (1998)).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (skin, liver, immune system, endocrine, bone marrow, reproductive organs, urinary organs)	Health hazard	Danger	Cause damage to organs (skin, liver, immune system, endocrine, bone marrow, reproductive organs, urinary organs)	As effect by human disaster exposure of IARC 69 (1997), description that chlorance, liver-enzymes change, change of an immune systems or glucose metabolism is admitted, the description that chlorance and the effect of liver is admitted by acute exposure in humans of ATSDR (1998), and in the oral study using the guinea pigs, rats, mice and a monkey of IARC 69 (1997), ATSDR (1998),NTP TR (1982), description that the effect on the immune systems thymic atrophy, etc, effect on liver such as enlargement of liver cells or vacuolation, etc., epithelium fault formation of a renal pelvis, a ureter, and a bladder, marrow, and the cell reduction in deferent, from description that the effect of the endocrine systems on changes of thyroid hormones etc. was admitted with the given dose of the guidance value range of Category 1. So it was set as Category 1 (skin, liver, an immune systems, an endocrine systems, marrow, genitals, urinary organs)
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (skin, liver, immune system, endocrine system, nervous system, blood, kidneys)	Health hazard	Danger	Causes damage to organs (skin, liver, immune system, endocrine system, nervous system, blood, kidneys) through prolonged or repeated exposure	Based on descriptions that as effect of the human occupational exposure, chloracne, in liver-enzymes change, description that change of an immune systems or sugar metabolism is observed (IARC 69 (1997)), and humans evidence of exposure, hepatotoxicity, the effect of the endocrine systems on the skin influences of chloracne etc., sugar metabolism, thyroid dysfunction, etc., and the symptoms in peripheral and a central nervous systems are observed (ATSDR (1998)), and also that in the oral study using rat,mice or guinea pigs, the effect of the immunity systems on thymic atrophy etc., the denaturation of the effect of the blood on a liver damages, a thrombocytopenias, etc., the kidney, and the thyroid gland was observed with the given dose of the guidance value range of Category 1 (IARC 69 (1997), ATSDR (1998),NTP TR209 (1982)), and it was classified into Category 1 (the skin, liver, an immune systems, an endocrine systems, a nervous systems, blood, kidney)
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)	Classification not possible	-	-	-	Insufficient data available.
11 Hazardous to the aquatic environment (chronic)	Classification not possible	-	-	-	Classification not possible due to lack of data