

GHS Classification

ID940

hexamethylphosphoric triamide

CAS 680-31-9

Date Classified: Nov. 1, 2005 (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	-	-	-	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: >93degC
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	Classification not possible	-	-	-	No data available
10 Pyrophoric solids	Not applicable	-	-	-	Liquid (GHS definition)
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Test methods applicable to liquid substances are not available
12 Substances and mixtures, which in contact with water, emit flammable gases	Classification not possible	-	-	-	No data available
13 Oxidizing liquids	Classification not possible	-	-	-	No data available
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	Containing no -O-O- structure
16 Corrosive to metals	Classification not possible	-	-	-	No data available

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 5	-	Warning	May be harmful if swallowed	Category 5 based on SPECIES: Rat; ENDPOINT: LD50; VALUE: :2650mg/kg; (male), 3360mg/kg; (female) REFERENCE SOURCE: ACGIH (7th, 2001) and IARC Vol. 15 (1977)
1 Acute toxicity (dermal)	Category 5	-	Warning	May be harmful in contact with skin	It was set as Category 5 based on rabbit LD50 value: 2600mg/kg (ACGIH (7th, 2001) and IARC Vol.15 (1977)).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Liquid (GHS definition)
1 Acute toxicity (inhalation: vapour)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	Classification not possible due to lack of data
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Based on description that there was severe irritation in the skin irritation test in guinea pigs (RTECS (2005)), and description that it might indicate irritation when the human skin were touched (HSFS (2001)), it was set as Category 2.
3 Serious eye damage / eye irritation	Classification not possible	-	-	-	Insufficient data available.
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Classification not possible	-	-	-	No data available
5 Germ cell mutagenicity	Category 1B	Health hazard	Danger	May cause genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	There is positive finding (IARC Vol. 15 (1977), IARC Vol. 71 (1999)) by the dominant lethal test using a mouse (rodent), and the classification in EU ANNEX I (2005) into Category 2; R46. So it is set as Category 1B.

6	Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	It was classified into the category 2 in EU (EU ANNEX I (2005)). But it was classified into 2B in IARC (IARC 71 (1999)) and in Japan Assoc. of Industrial Health (industrial hygiene academic society recommendation, 2005), A3 in ACGIH (ACGIH (7th, 2001)), and R in NTP (NTP RoC (11th, 2005)). So it was considered as Category 2.
7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	There is the description that in ACGIH (7th, 2001), "testicular atrophy and aspermia happen by oral administration to rat", in IARC Vol.15 (1977), "azoospermia, testes weight loss and gonad cell destruction are observed at the observation period for 23 weeks after 500mg/kg/day carries out repetitive oral administration for six days to rat." In addition, it was considered as category 2 based on the description that as human impact, to HSFS (2001) "a teste (males gonadal) may be destroyed", and the description that "a male teste is damaged and there is limited evidence to which it is supposed that spermatogenesis may be affected" in SITTIG (4th, 2002).
8	Specific target organs/systemic toxicity following single exposure	Category 2 (respiratory, kidneys, central nervous system)	Health hazard	Warning	May cause damage to organs (respiratory, kidneys, central nervous system)	As effects on humans, based on a description that "lungs, kidneys, and central nervous systems are affected and then functional disorder and functional fall may be caused"(ICSC (J) (1994)), and on a description that "noses and throats may be stimulated by inhalation"(HSFS (2001)), and on a description that "noses, throats, and lungs are stimulated and damaged and nasal discharges may be caused and lungs can be changed through exposure"(SITTIG (4th, 2002)). So it was judged as Category 2 (respiratory systems, kidneys, central nervous systems).
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs); Category 2 (kidneys)	Health hazard	Danger; Warning	Causes damage to organs (respiratory organs) through prolonged or repeated exposure; May cause damage to organs (kidneys) through prolonged or repeated exposure	We have the description that the degeneration of the kidney nephric tubule epithelium was observed with 0.4 ppm exposure in the guidance value range of Category 2 in the three-month inhalation exposure test in the rat (ACGIH 7th, 2001), description that respiratory mucosal and lung dysfunction were observed with the dose in the guidance value range of Category 1 in the 6-to-24-month inhalation exposure test for the rat (IARC 71 (1999)), and the description that in the feeding administration tests for 52 to 72 days in the rat, bronchial mucosas damage was observed with just about the dose of the guidance value range of Category 2. Moreover, as the impact on human, there is a description that "respiratory tract, the kidney, and marrow may be affected"(ICSC (J) (1994)), and there's a description that the respiratory system is affected (HSFS (2001)), and there was description that it might effect on the kidney, lungs, and the respiratory tract (STIG (4th, 2002)), therefore the target organs of this product were judged to be respiratory systems and the kidney, so we classified it as Category 1 and 2, respectively. In addition, for marrow, neither animal data nor the clinical case reports was clear.
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)	Not classified	-	-	-	It carried out the outside of Category from 48-hour LC50=667000microg/L of Crustacea (Daphnia magna) (AQUIRE, 2003).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since not water-insoluble (water solubility=1.00*106mg/L(PHYSROP Database, 2005)) and acute toxicity is low.