GHS Classification

ID53 **ethion**

CAS 563-12-2 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	–	–	–	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	Classification not possible	–	–	–	No data available by regulated examination methods, though it is flammable (ICSC(J), 1998)
7	Flammable solids	Not applicable	–	–	–	Liquid (GHS definition)
8	Self-reactive substances and mixtures	Classification not possible	–	–	–	No data available
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 -0-0- 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 2	Skull and crossbones	Danger	Fatal if swallowed	Calculated based on rat LD50 value: 27mg/kg (ACGIH, 2003, ATSDR, 2001), 21mg/kg (ACGIH, 2003), and 208mg/kg (PATTY 4th, 1993). Since the calculation values were lower than the lowest values of these values, 21mg/kg of the lowest values was adopted, and set it to Category 2.
1	Acute toxicity (dermal)	Category 2	Skull and crossbones	Danger	Fatal in contact with skin	It was set as Category 2 based on the lowest value of 62mg/kg of a rat. (Rat LD50 values: 62mg/kg (ACGIH, 2003, ATSDR, 2001), 838mg/kg (ACGIH, 2003), and rabbit LD50 value: 915mg/kg (ACGIH, 2003, PATTY 4th, 1993))
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)	Category 2	Skull and crossbones	Danger	Fatal if inhaled	There are rat LC50 (4 hours) value: 0.864mg/L (ACGIH, 2003) and 0.45mg/L (ACGIH, 2003, ATSDR, 2001). Adopting the lower value, it was set as Category 2
2	Skin corrosion / irritation	Not classified	–	–	–	Since ACGIH (2003) reports that it slightly irritates skin of the rabbit, it was judged not to match the irritation criteria and was classified as out of Category.
3	Serious eye damage / eye irritation	Not classified	–	–	–	From description that the eye of the rabbit was stimulated only slightly (only slightly) on ACGIH (2003), it was judged that it was not adapted for basis of irritation, and was set as the outside of Category.
4	Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization: Classification not possible	–	–	–	No data available
5	Germ cell mutagenicity	Not classified	–	–	–	There are negative results from the dominant lethal test in mice, which is an in vivo multi-generation mutagenicity test using germ cells (JMPR, 1972) and the chromosome aberration test using rat bone-marrow cells, which is an in vivo mutagenicity test using somatic cells (JMPR, 1986). So the substance was regarded as outside the categories
6	Carcinogenicity	Not classified	–	–	–	Since it was classified into A4 (ACGIH, 2003) according to ACGIH, it was set as the outside of Category.

7	Toxic to reproduction	Not classified	–	–	–	In the pregnancy peroral administration using rat and rabbit, and the third generation reproduction study using rat (ACGIH (2003), IRIS (2006), ATSDR (2001)), there was no clear reproductive toxicity in the dose causing general toxicity for parent animals. So it was considered as on the outside of Categry.
8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system)	Health hazard	Danger	Cause damage to organs (nervous system)	The substance was classified as Category 1 (nervous system). Based on the reports that cholinergic effects, such as tremors and convulsions, were observed at the dosage within the guidance values for Category 1 in an oral administration test using rats in ATSDR (2001), and that symptoms for neurotoxicity were observed in a case of accidental ingestion by an infant, and that the major target organs of acute toxicity are the central and peripheral nervous systems.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (nervous system)	Health hazard	Danger	Causes damage to organs (nervous system) through prolonged or repeated exposure	Dut to the descriptions that Cholinergic symptoms by cholinesterase inhibition, such as ataxia and nerve tremor in the oral study using dog (ACGIH, 2003, PATTY 4th, 1993, IRIS, 2005, ATSDR, 2001) , the descriptions that the decrease in activity of brain cholineesterase in the oral study using rat (IRIS, 2005, ATSDR, 2001) and in the dermal administration test using rabbit (ACGIH, 2003, ATSDR, 2001) were observed with the given dose of the guidance value range of Category 1, and the description that the observation of cholinergic toxic phenomena in the repeated episodes of exposure to human (ACGIH (2003) and IRIS (2005)), it was classified into Category 1 (nerve system).
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 50= 0.056ppb of 48-hour EC of Crustacea (Daphnia magna) (AQUIRE, 2003).
11	Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Classified into Category 1, since acute toxicity is Category 1, supposed not rapidly degrading (BIOWIN), and bioaccumulative (log Kow=5.07 (PHYSPROP Database, 2005)).