

GHS Classification

ID590

Demeton-methyl

CAS 8022-00-2

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	-	-	-	Classification not possible due to lack of data, though it is flammable (ICSC, 2001)
7 Flammable solids	Not applicable	-	-	-	Liquid (GHS definition)
8 Self-reactive substances and mixtures	Classification not possible	-	-	-	Classification not possible due to lack of data, though the substance contains P-O bonds as chemical groups with self-reactive properties present.
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	Not classified	-	-	-	Since aqueous solubility measurements is performed, it judges to be stable in the water (ICSC (2001) etc.).
13 Oxidizing liquids	Classification not possible	-	-	-	Classification not possible due to lack of data, though organic compounds containing oxygen chemically bonded to phosphorus.
14 Oxidizing solids	Not applicable	-	-	-	Liquid (GHS definition)
15 Organic peroxides	Not applicable	-	-	-	Organic compounds 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)	O-:Category 2; S-:Category 2	Skull and crossbones	Danger	Fatal if swallowed	O-object: It was set as Category 2 based on rat LD50= 30mg/kg obtained from the calculation using eight data (ACGIH (2001), JMPR 264 (1973), JMPR 790 (1989)). S-object: It was set as Category 2 based on rat LD50= 47g/kg obtained from the calculation using six data (ACGIH (2001), PATTY (5th, 2001), JMPR 264 (1973)).
1 Acute toxicity (dermal)	O-:Category 2; S-:Category 1	Skull and crossbones	Danger	Fatal in contact with skin	O-object: It was set as Category 2 based on LD50 = 100mg/kg calculated from four data (JMPR 264 (1973), JMPR 790 (1989)) of rat LD50 value. S-object: It was set as Category 1 based on LD50 = 45g/kg calculated from four data (PATTY (5th, 2001), JMPR 264 (1973)) of rat LD50 value.
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)	O-:Category 2; S-:Category 2	Skull and crossbones	Danger	Fatal if inhaled	The saturated vapor pressures concentrations pressure of this product is 0.396ppm (0.00373mg/L), and it is thought that the inhalation study was done in mist. It was set as Category 2 based on LC50 = 0.427mg/L calculated from three data (JMPR 790 (1989)) of O-body: rat LC50 value. It was set as Category 2 based on LC50=0.21mg/L calculated from four data (PATTY (5th, 2001)) of S-body: rat LC50 value.
2 Skin corrosion / irritation	O-:Category 3; S-:Category 3	-	Warning	Causes mild skin irritation	O-body: Based on the description that although erythema was seen on rabbits, it recovered 72 hours afterward to indicate mild skin irritation (JMPR 790 (1989)), it was classified as Category 3. S-body: Based on descriptions that although slight erythema and edema were observed on rabbits, it disappeared three days afterward (PATTY (5th, 2001) vol.7) and that it has mild irritation on humans (HSDB (2005)), it was classified as Category 3.

3	Serious eye damage / eye irritation	O--:Category 2A-2B; S--:Category 2B	Exclamation mark	Warning	Causes serious eye irritation	O-body: In the rabbit, although corneal cloudings, conjunctival redness, and gum of eyelid were seen, it recovered 21 days afterward altogether, and it is thought that it is a stimulant of primaries to eye (JMPR 790 (1989)). Based on above statement it was set as Category 2A-2B. S-body : although tearing and miosis were seen with the rabbit and the slight corneal cloudings, discontinuous redness, and a conjunctiva dropsy were seen, and it disappeared seven days afterward (PATTY(5th, 2001) vol.7, JMPR 264 (1973)), and it had mild irritation in humans (HSDB (2005)). So it was set as Category 2B.
4	Respiratory/skin sensitization	Respiratory sensitization: Classification not possible; Skin sensitization:O--:Category 1, S--:Category 2	(Respiratory sensitization)--; (Skin sensitization)Exclamation mark	(Respiratory sensitization)--; (Skin sensitization)Warning	(Respiratory sensitization)--; (Skin sensitization)May cause allergic skin reaction	Respiratory sensitization: No data Skin sensitization: O-object: Based on the statement (JMPR 790 (1989)) that it showed skin sensitivity by the maximization test, the Klecak test, and the patch test with guinea pigs.it was referred to as Category 1. S-object : Baded on the statement (PATTY(5th, 2001) vol.7, JMPR 790 (1989)) that although the maximization test indicated skin sensitization in guinea pigs, the skin patch tests did not show the sensitization, it was referred to as Category 1.
5	Germ cell mutagenicity	O--:Not classified; S--: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)	O-body : The substance was regarded as outside the categories. Because there are no positive results in human multi-generation epidemiological tests, multi-generation mutagenicity tests and in vivo mutagenicity tests using germ cells and somatic cells, and there are records of negative results from the in vivo dominant lethal tests in mice (PATTY (5th, 2001) vol. 7, JMPR 697 (1984)). S-body: The substance was classified as Category 2. Because there are no positive test results from human multi-generation epidemiological tests, multi-generation mutagenicity tests and in vivo mutagenicity tests in germ cells, and there is a record of a negative test result from the in vivo chromosome aberration test using Syrian hamster bone-marrow cells (PATTY (5th, 2001) vol. 7).
6	Carcinogenicity	O--:Classification not possibleS--:Classification not possible	-	-	-	O--: Classification not possible due to lack of data S--: Classification not possible due to lack of data
7	Toxic to reproduction	O--: Category 2, S--:Category 2	Health hazard	Warning	Suspected of damaging fertility or the undorn child	O-object : since there is the description that there were the significant reduction of the gravidity and of the litter count in rat, the reduction of oogenesis in third generation of 3/10 female, and there is the vacuolating of the epididymis epithelium of parent occurs in dose dependence at the dose no description about general toxicity to parent (JMPR 790(1988)), and there is the description that there is the reduction of conception rate and survival rate of neonatal in the dose causing reduced weight gain in parent (JMPR 264 (1973)), it is classified into the Category 2. S-object : since there is the description that there is suppress of survival rate, nursing rate, weight gaining in rat, and there is the reduction of the average of weight of embryo in rabbit, with the dose no description about general toxicity to parent (PATTY(5th, 2001) vol.7, JMPR 697 (1984)), it is classified into the Category 2.
8	Specific target organs/systemic toxicity following single exposure	Mixture: Category 1 (nervous system); O--:Category 1 (nervous system); S--: Category 1 (nervous system)	Health hazard	Danger	Mixture: Cause damage to organs (nervous system); O--: Cause damage to organs (nervous system); S--: Cause damage to organs (nervous system)	Mixture : In humans, spasm, giddiness, stuffiness, nausea, constricted pupil, muscular spasticity, salivation, sweating, loss of consciousness, stomach cramps, diarrhea, vomiting etc. are observed, and the serum cholinesterase activity is decreased (ACGIH (2001), PATTY(5th, 2001) vol.7, ICSC (J) (2001), HSDB (2005)). So it was classified into Category 1(nerve systems). O-Body : In humans, miosis, muscle spasticity, salivation, sweating, nausea, dizziness, closeness, feeling of weariness, stomach cramp, vomiting, diarrhea, cramp, loss of consciousness, dysphoria, cough, and muscle fasciculation etc., are observed, and the serum cholinesterase activity is decreased (ACGIH (2001), PATTY (5th, 2001) vol. 7, ICSC (J) (2001), HSDB (2005)). So it was classified into Category 1. S-Body : In humans, based on the description that miosis, muscle spasticity, salivation, sweating, nausea, vomited, stomach cramps, diarrhea, dizziness, closeness, feeling of weariness, loss of consciousness, gastrointestinal disorder, fatigue, headach, sweating, lacrimation, tremor, ataxia, hiccup, muscular fasciculation, etc. are observed, and the serum cholinesterase activity is decreased (PATTY (5th, 2001) vol. 7, ICSC (J) (2001)). So it was classified into Category 1 (nerve systems).
9	Specific target organs/systemic toxicity following repeated exposure	O--:Category 1 (nervous system); S--:Category 1 (nervous system)	Health hazard	Danger	O--:Causes damage to organs (nervous system) through prolonged or repeated exposure; S--:Causes damage to organs (nervous system) through prolonged or repeated exposure	O-object : It was classified to as Category 1 (nervous systems) since the toxic symptoms of cholinergics are looked, and inhibition of cholinesterase activity in brains, plasma and serum are indicated by the dosage of guidance value within the limits of Category 1 in rats (JMPR 264 (1973), JMPR 790 (1989)), and cholinesterase inhibition is indicated in humans (JMPR 264 (1973)). S-object : It was referred to as Category 1 (nervous systems) since the toxic symptoms of the cholinergics (mild tremor and bundle twitch) are seen, and inhibition of cholinesterase activity in brains, plasma and serum is indicated in rats and dogs, by the dosage of guidance value within the limits of Category 1(PATTY(5th, 2001) vol.7, JMPR 264 (1973), JMPR 790 (1989)).
10	Aspiration hazard	O--: Classification not possible; S--: Classification not possible	-	-	-	No data available (o-, S-)

Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
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11	Hazardous to the aquatic environment (acute)	Category 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 96-hour LC50=190microg/L of Crustacea (Amphipod) (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 was Category 1, supposed not rapidly degrading (BIOWIN), though supposed less bioaccumulative (log Kow=1.11(PHYSROP Database, 2005)).