

GHS Classification

ID612

Lindane

CAS 58-89-9

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 | Not classified | - | - | - | Non-combustible (ICSC (J) (1994)) |
| 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 | Not classified | - | - | - | Non-combustible (ICSC (J), 1994) and stable to air (JMPR, 1968-2) |
| 11 Self-heating substances and mixtures | Not classified | - | - | - | Not combustible (ICSC(J) (1994)) |
| 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 chlorine (but not oxygen and fluorine) and the chlorine is 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. Corrosive to metals (HSDB, Access on Jan. 2006) |

Health Hazards

| Hazard class | Classification | symbol | signal word | hazard statement | Rational for the classification |
|---|--|----------------------|-------------|----------------------------|---|
| 1 Acute toxicity (oral) | Category 3 | Skull and crossbones | Danger | Toxic if swallowed | The calculation was done based on rat LD50 values: 88mg/kg (ACGIH 7th, 2001, DFGOT vol.16, 2001, PATTY 4th, 1994), 200mg/kg (ACGIH 7th, 2001), 90mg/kg (PATTY 4th, 1994), 225mg/kg (DFGOT vol.16, 2001), 170 to 300 mg/kg (DFGOT vol.16, 2001), 125 to 230 mg/kg (IARC 20, 1979), 125mg/kg (PATTY 4th, 1994), and 90 to 270 mg/kg (EHC 124, 1991). The calculated value was 125mg/kg, and it was set as Category 3. |
| 1 Acute toxicity (dermal) | Category 2 | Skull and crossbones | Danger | Fatal in contact with skin | The calculation value rat LD50 = 450.9mg/kg : based on LD50 = 500 - 1000mg/kg (ACGIH 7th, 2001), 50 - 400mg/kg (DFGOT vol.16, 2001), 900 - 1000mg/kg (IARC 20, 1979), and 900mg/kg (EHC 124, 1991). And the calculation value rabbit LD50 = 68.5mg/kg : based on LD50 = 300mg/kg (ACGIH 7th, 2001, DFGOT vol.16, 2001), 75mg/kg (DFGOT vol.16, 2001), and 50mg/kg (DFGOT vol.16, 2001). The lower rabbit value was adopted, and it was set as Category 2. |
| 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) | Category 4 | Exclamation mark | Warning | Harmful if inhaled | Category 4 because of "SPECIES: Rat; ENDPOINT: LC50(4hr.; VALUE: 1.6mg/L"(DFGOT vol.16, 2001; EHC 124, 1991) |
| 2 Skin corrosion / irritation | Not classified | - | - | - | From descriptions that irritation was not observed in the skin irritation test on rabbits (DFGOT (16 vol. 2001) and EHC 124 (1991)), it was classified as out of Category. |
| 3 Serious eye damage / eye irritation | Category 2B | - | Warning | Causes eye irritation | It was set as Category 2B from description that mild irritation was admitted in the test applied to the eye of the rabbit of DFGOT (vol.16, 2001) and EHC 124 (1991). |
| 4 Respiratory/skin sensitization | respiratory sensitization: Classification not possible; Skin sensitization: Not possible | - | - | - | Respirator: No data Skin: From the description that in a maximization test using the guinea pigs of DFGOT (vol.16, 2001) and EHC 124 (1991), the sensitization was not identified, it was put outside of the Category. |
| 5 Germ cell mutagenicity | Not classified | - | - | - | It gave a negative result in the dominant lethality test using the rat and mouse, which was the in vivo over generation mutagenicity test using the germ cells (DFGOT vol.16, 2001, EHC 124, 1991), and it gave negative in the chromosomal aberration test using the rat, mouse, or hamster marrow cells, which were the in vivo mutagenicity tests using the somatic cells, and it gave the negative result (DFGOT vol.16, 2001, EHC 124, 1991) in the micronucleus test which used the rat, mouse or hamster red corpuscles. So we classified it as Out Of Category. |

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|----|--|--|---------------|-----------------|--|--|
| 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 group 2B by IARC(IARC Suppl.7, 1987), into 2B according to Japan Society for Occupational Health (Occupational Health Society advice, 2005), into A3 according to ACGIH (ACGIH 7th, 2001) and into R according to NTP (NTP RoC 11th, 2005). So it was set as category 2. |
| 7 | Toxic to reproduction | Not classified | - | - | - | Since there is no obvious reproductive toxicity at the dose causing general toxicity to parent animals in the oral administration reproduction study using rat and in the oral administration during pregnancy using rat, mouse, hare, or dog, (DFGOT (16 vol. 2001), IARC 20 (1979), PATTY (4th, 1994), and EHC 124 (1991)), it is considered as on the outside of Category |
| 8 | Specific target organs/systemic toxicity following single exposure | Category 1 (nervous system) | Health hazard | Danger | Cause damage to organs (nervous system) | According to the descriptions that influence on the nerve systems such as spasm etc., was identified in the human evidence of exposure (ACGIH (7th, 2001), DFGOT (16 vol. 2001), IARC 20 (1979), PATTY (4th, 1994), EHC 124 (1991)), and that by a transdermal medication test using rabbits, inhalation exposure test using the rat and oral medication test using dogs, influences on the nerve systems such as spasm etc. were identified with the dosage of the guidance value range of Category 1 (DFGOT (vol.16, 2001), EHC 124 (1991)). So it was set as Category 1(nerve systems). |
| 9 | Specific target organs/systemic toxicity following repeated exposure | Category 1 (liver, kidneys); Category 2 (testes) | Health hazard | Danger; Warning | Causes damage to organs (liver, kidneys) through prolonged or repeated exposure; May cause damage to organs (testes) through prolonged or repeated | It was classified to as Category 1 (liver, kidney) and Category 2 (teste) according to the description that the effects on the liver and kidney were acknowledged by the dosage of the guidance value range of Category 1 in the oral study using rats of DFGOT (vol.16, 2001), IRIS (2006), and EHC 124 (1991), and the description that the effects on the testes were acknowledged by the dosage of the guidance value range of Category 2 in the oral study using rats of EHC 124 (1991). |
| 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 96-hour LC50=0.00017mg/L of Crustacea (Pink shrimp) (EHC124, 1991) . |
| 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, not rapidly degrading (BOD: 0% (existing chemical substances safety inspections data)), and bioaccumulative (BCF=893 (existing chemical substances safety inspections data)). |