SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Endosulfan
Catalog Number : io-2307
CAS Number : 115-29-7
Identified uses : Laboratory chemicals, manufacture of chemical compounds
Company : Ionz

>> R&D Use only

2. Hazards Identification

GHS Classification:

Flammable liquid (category 2)
Acute toxicity, oral (Category 3)
Acute toxicity, dermal (Category 3)
Acute toxicity, inhalation (Category 3)
Specific target organ toxicity, single exposure (Category 1)

Pictogram(s)

GHS Hazard Statements

>> H300+H330 (32.9%): Fatal if swallowed or if inhaled [Danger Acute toxicity, oral; acute toxicity, inhalation]

>> H300 (96.5%): Fatal if swallowed [Danger Acute toxicity, oral]

>> H312 (96.5%): Harmful in contact with skin [Warning Acute toxicity, dermal]

>> H330 (96.5%): Fatal if inhaled [Danger Acute toxicity, inhalation]

>> H400 (100%): Very toxic to aquatic life [Warning Hazardous to the aquatic environment, acute hazard]

>> H410 (100%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P260, P264, P270, P271, P273, P280, P284, P301+P316, P302+P352, P304+P340, P316, P317, P320, P321, P330, P362+P364, P391, P403+P233, P405, and P501

Health Hazards:

>> It is very toxic. The probable oral lethal dose is 50 to 500 mg/kg, or 1 teaspoonful to 1 ounce for a 150 lb. person. (EPA, 1998)

>> Container may explode in heat of fire. Fire or run off from fire control water may release irritating or poisonous gases. Slowly oxidizes in air. Do not store at temperature below 20F. (EPA, 1998)

>> Not combustible. Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes (or gases) in a fire.

3. Composition/Information On Ingredients

Chemical name : Endosulfan
CAS Number : 115-29-7
Molecular Formula : C9H6Cl6O3S
Molecular Weight : 406.9000 g/mol

4. First Aid Measures

First Aid:

>> Signs and Symptoms of Acute Endosulfan Exposure: Ingestion of endosulfan may result in nausea, vomiting, and diarrhea. Dizziness, agitation, nervousness, tremor, incoordination, and convulsions may also occur. Central nervous system depression may terminate in respiratory failure. Contact with endosulfan may irritate or burn the skin, eyes, and mucous membranes.

>> Emergency Life-Support Procedures: Acute exposure to endosulfan may require decontamination and life support for the victims. Emergency personnel should wear protective clothing appropriate to the type and degree of contamination. Air-purifying or supplied-air respiratory equipment should also be worn, as necessary. Rescue vehicles should carry supplies such as plastic sheeting and disposable plastic bags to assist in preventing spread of contamination.

>> Inhalation Exposure:

>> 1. Move victims to fresh air. Emergency personnel should avoid self-exposure to endosulfan.

>> 2. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.

>> 3. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.

>> 4. Transport to a health care facility.

>> Dermal/Eye Exposure:

>> 1. Remove victims from exposure. Emergency personnel should avoid self- exposure to endosulfan.

>> 3. Remove contaminated clothing as soon as possible.

>> 4. If eye exposure has occurred, eyes must be flushed with lukewarm water for at least 15 minutes.

>> 5. Wash exposed skin areas three times. An initial soap and water wash should be followed by an alcohol wash. The third wash should again be with soap and water.

>> 6. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.

>> 7. Transport to a health care facility.

>> Ingestion Exposure:

>> 1. Evaluate vital signs including pulse and respiratory rate, and note any trauma. If no pulse is detected, provide CPR. If not breathing, provide artificial respiration. If breathing is labored, administer oxygen or other respiratory support.

>> 2. Obtain authorization and/or further instructions from the local hospital for administration of an antidote or performance of other invasive procedures.

>> 3. Vomiting may be induced with syrup of Ipecac. If elapsed time since ingestion of endosulfan is unknown or suspected to be greater than 30 minutes, do not induce vomiting and proceed to Step

>> 4.Ipecac should not be administered to children under 6 months of age.Warning: Ingestion of endosulfan may result in sudden onset of seizures or loss of consciousness. Syrup of Ipecac should be administered only if victims are alert, have an active gag-reflex, and show no signs of impending seizure or coma. If ANY uncertainty exists, proceed to Step

>> 4.The following dosages of Ipecac are recommended: children up to 1 year old, 10 mL (1/3 oz); children 1 to 12 years old, 15 mL (1/2 oz); adults, 30 mL (1 oz). Ambulate (walk) the victims and give large quantities of water. If vomiting has not occurred after 15 minutes, Ipecac may be readministered. Continue to ambulate and give water to the victims. If vomiting has not occurred within 15 minutes after second administration of Ipecac, administer activated charcoal.

>> 4. Activated charcoal may be administered if victims are conscious and alert. Use 15 to 30 g (1/2 to 1 oz) for children, 50 to 100 g (1-3/4 to 3-1/2 oz) for adults, with 125 to 250 mL (1/2 to 1 cup) of water.

>> 5. Promote excretion by administering a saline cathartic or sorbitol to conscious and alert victims. Children require 15 to 30 g (1/2 to 1 oz) of cathartic; 50 to 100 g (1-3/4 to 3-1/2 oz) is recommended for adults.

>> 6. Transport to a health care facility. (EPA, 1998)

First Aid Measures

Inhalation First Aid

>> Fresh air, rest. Refer for medical attention.

Skin First Aid

>> Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention .

Eye First Aid

>> First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Ingestion First Aid

>> Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Rest. Refer for medical attention .

5. Fire Fighting Measures

>> Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Ventilate closed spaces before entering them. Wear positive pressure breathing apparatus and special protective clothing. Remove and isolate contaminated clothing at the site.

>> Extinguish fire using agent suitable for type of surrounding fire. (Material itself does not burn or burns with difficulty.) Use water in flooding quantities as fog. Use alcohol foam, carbon dioxide or dry chemical. (EPA, 1998)

>> In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

6. Accidental Release Measures

Isolation and Evacuation:

Isolation and evacuation measures to take when a large amount of this chemical is accidentally released in an emergency.

>> Excerpt from ERG Guide 151 [Substances - Toxic (Non-Combustible)]:

>> IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

>> SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

>> FIRE: If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2024)

Spillage Disposal:

Methods for containment and safety measures to protect workers dealing with a spillage of this chemical.

>> Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT wash away into sewer. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

7. Handling And Storage

Safe Storage:

>> Provision to contain effluent from fire extinguishing. Separated from acids, bases, iron and food and feedstuffs. Dry. Well closed.

Storage Conditions:

>> Do not store in or around home. Do not store near heat, open flame, or hot surfaces.

8. Exposure Control/ Personal Protection

REL-TWA (Time Weighted Average)

>> 0.1 mg/m³

>> TWA 0.1 mg/m3 [skin]

PEL-TWA (8-Hour Time Weighted Average)

>> 0.1 mg/m³ (Construction and Maritime only)

>> none See Appendix G

>> 0.1 [mg/m3], inhalable fraction and vapor

>> 0.1 mg/m

TLV-TWA (Time Weighted Average)

>> 0.1 mg/m³ (inhalable fraction and vapor) [2008]

Inhalation Risk:

>> Evaporation at 20 °C is negligible; a harmful concentration of airborne particles can, however, be reached quickly on spraying or when dispersed, especially if powdered.

Effects of Short Term Exposure:

>> The substance may cause effects on the central nervous system and blood. This may result in irritability, convulsions and renal failure. Exposure at high levels could cause death. The effects may be delayed. Medical observation is indicated.

Acceptable Daily Intakes:

An estimate of the amount of a chemical in food or drinking water that can be consumed daily over a lifetime without presenting an appreciable risk to health. It is usually expressed as milligrams of the substance per kilogram of body weight per day and applies to chemicals such as food additives, pesticide residues and veterinary drugs.

>> FAO/WHO ADI: 0.006 mg/kg

Exposure Prevention

>> PREVENT DISPERSION OF DUST! STRICT HYGIENE! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN! IN ALL CASES CONSULT A DOCTOR!

Inhalation Prevention

>> Use local exhaust or breathing protection.

Skin Prevention

>> Protective gloves. Protective clothing.

Eye Prevention

>> Wear face shield or eye protection in combination with breathing protection.

Ingestion Prevention

>> Do not eat, drink, or smoke during work. Wash hands before eating.

Exposure Control and Personal Protection

Exposure Summary

>> TIH (Toxic Inhalation Hazard) - Term used to describe gases and volatile liquids that are toxic when inhaled. Some are TIH materials themselves, e.g., chlorine, and some release TIH gases when spilled in water, e.g., chlorosilanes. [ERG 2016].

9. Physical And Chemical Properties

Molecular Weight:

>> 406.9

Exact Mass:

>> 405.813931

Physical Description:

>> Endosulfan appears as a brown or colorless crystalline solid with a pungent odor. More dense than water and nearly insoluble in water. Toxic by inhalation, skin absorption, or ingestion. Used as a pesticide, fungicide or herbicide.

>> PURE COLOURLESS CRYSTALS. TECHNICAL: BROWN FLAKES WITH CHARACTERISTIC ODOUR.

Color/Form:

>> Brown crystals ... [Note: Technical product is a tan, waxy, isomer mixture].

Odor:

>> Similar to terpene.

Boiling Point:

>> Decomposes (NIOSH, 2024)

Melting Point:

>> 158 to 212 °F Range of values given is for a mixture of isomers (a isomer 228.7 °F; b isomer 415.9 °F). (EPA, 1998)

>> 106 °C (pure), 70-100 °C (technical)

Solubility:

>> less than 1 mg/mL at 73 °F (NTP, 1992)

>> Solubility in water: none

Density:

>> 1.745 at 68 °F (EPA, 1998) - Denser than water; will sink

>> 1.7 g/cm³

Vapor Pressure:

>> 1e-05 mmHg at 77 °F (EPA, 1998)

>> Vapor pressure, Pa at 80 °C: 1.2

LogP:

>> log Kow = 3.83 (alpha); log Kow = 3.62 (beta)

>> 3.55/3.62

Stability/Shelf Life:

>> Stable to sunlight

Decomposition:

>> When heated to decomposition it emits toxic fumes of /hydrogen chloride and sulfoxides/.

Corrosivity:

The ability of a chemical to damage or destroy other substances when it comes into contact.

>> Corrosive to iron

pH:

pH is an expression of hydrogen ion concentration in water. Specifically, pH is the negative logarithm of hydrogen ion (H+) concentration (mol/L) in an aqueous solution. The term is used to indicate basicity or acidity of a solution on a scale of 0 to 14, with pH 7 being neutral.

>> pH 7.2 in tap water

10. Stability And Reactivity

>> Sightly soluble in water. Slowly hydrolyzes to form sulfur dioxide and a diol; hydrolyzes more rapidly under basic or acidic conditions.

11. Toxicological Information

EPA Provisional Peer-Reviewed Toxicity Values:

This section provides the EPA Provisional Peer-Reviewed Toxicity Values (PPRTVs) and links of related assessment documents.

Chemical Substance

>> Endosulfan

PPRTV Assessment

>> PDF Document

Weight-Of-Evidence (WOE)

>> Inadequate information to assess carcinogenic potential

Last Revision

>> 2009

EPA Human Health Benchmarks for Pesticides:

This section provides the EPA human health benchmarks non-enforceable drinking water levels related to adverse health effects from drinking water exposure to contaminants that have no drinking water standards or health advisories.

Chemical Substance

>> Endosulfan

Acute or One Day PAD (RfD) [mg/kg/day]

>> 0.015

Acute or One Day HHBPs [ppb]

>> 100

Acute HHBP Sensitive Lifestage/Population

>> Children

Chronic or One Day PAD (RfD) [mg/kg/day]

>> 0.006

Chronic or One Day HHBPs [ppb]

>> 40

Chronic HHBP Sensitive Lifestage/Population

>> General Population

Reference (PDF)

>> Human Health Benchmarks for Pesticides - 2021 Update

USGS Health-Based Screening Levels for Evaluating Water-Quality:

This section provides the USGS Health-Based Screening Levels for Evaluating Water-Quality data.

Chemical

>> Endosulfan

Chronic Noncancer HHBP (Human Health Benchmarks for Pesticides)[µg/L]

>> 40

Reference

>> Smith, C.D. and Nowell, L.H., 2024. Health-Based Screening Levels for evaluating water-quality data (3rd ed.). DOI:10.5066/F71C1TWP

Evidence for Carcinogenicity:

Evidence that this chemical does or may cause cancer. The information here is collected from various sources by the Hazardous Substances Data Bank (HSDB).

>> Cancer Classification: Not Likely to be Carcinogenic to Humans

Exposure Routes:

>> The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

>> inhalation, skin absorption, ingestion, skin and/or eye contact

Inhalation Exposure

>> See Ingestion.

Skin Exposure

>> MAY BE ABSORBED! See Ingestion.

Ingestion Exposure

>> Blue lips, fingernails and skin. Confusion. Headache. Weakness. Dizziness. Nausea. Vomiting. Diarrhoea. Convulsions. Laboured breathing. Unconsciousness.

>> irritation skin; nausea, confusion, agitation, flushing, dry mouth, tremor, convulsions, headache; In Animals: kidney, liver injury; decreased testis weight

Target Organs:

Organs that are affected by exposure to this chemical. Information in this section reflects human data unless otherwise noted.

>> Developmental (effects while organs are developing), Immunological (Immune System), Neurological (Nervous System)

>> Cardiovascular

>> Urinary

Adverse Effects:

An adverse effect is an undesired harmful effect resulting from a medical treatment or other intervention.

>> Occupational hepatotoxin - Secondary hepatotoxins: the potential for toxic effect in the occupational setting is based on cases of poisoning by human ingestion or animal experimentation.

>> Other Poison - Organochlorine

>> ACGIH Carcinogen - Not Classifiable.

Interactions:

>> Citrinin (CIT) (10 mg/kg feed) and endosulfan (1 mg/kg body weight) were administered orally alone and in combination to pregnant Wistar rats from gestational day 6 to 20 and their fetuses were collected to evaluate the histopathological alterations in hepatic and renal tissues. In CIT-fed group fetal liver, the changes were less marked, showing only sinusoidal dilation and mild vacuolar degeneration, whereas the consistent changes in the fetal kidney included tubular degeneration, medullary tubular necrosis, cystic dilatation of tubules, distortion of glomerulur capillary tuft and interstitial fibroblastic proliferation which separated clusters of tubules. In the endosulfan group, the liver was predominantly affected, showing vacuolar degeneration, karyomegaly and severe sinusoidal dilation, whereas the renal changes were mainly confined to tubular degeneration and varying degree of interstitial fibrosis. In the combination group, the hepatic and renal histopathological alterations in the fetus, though of similar nature to those of the individual groups, were more severe.

Antidote and Emergency Treatment:

>> Observation. Persons exposed to high levels of organochlorine pesticides by any route should be observed for sensory disturbances, incoordination, speech slurring, mental aberrations, and involuntary motor activity that would warn of imminent convulsions. /Solid organochlorine insecticides/

Human Toxicity Excerpts:

>> /SIGNS AND SYMPTOMS/ Systemic poisoning causes nervousness, agitation, tremors, and convulsions.

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ ... Dogs showed signs of compound /related/ effects at 200 and 500 mg/kg /acute oral administration/. Levels include salivation, emesis and generalized tonic and clonic convulsions. Dogs which vomited recovered. No consistent compound related responses were seen at ... the lower dose levels.

Non-Human Toxicity Values:

>> LD50 Rat oral 18 mg/kg

National Toxicology Program Studies:

Reports from the National Toxicology Program, an interagency program supported by three government agencies (NIH, FDA, and CDC) within the Department of Health and Human Services. This program plays a critical role in generating, interpreting, and sharing toxicological information about chemicals of public health concerns.

>> A bioassay of technical grade endosulfan for possible carcinogenicity was conducted using Osborne-Mendel rats and B6C3F1 mice. Endosulfan was admin in the feed at either two concn, to groups of 50 male and 50 female animals of each species. The time weighted avg high and low dietary concn of endosulfan, were, respectively, 952 and 408 ppm for the male rats, and 445 and 223 ppm for the female rats. In mice the high and low time weighted avg concn were, respectively, 6.9 and 3.5 ppm for the males and 3.9 and 2.0 ppm for the females. Twenty animals of each sex and species were placed on test as controls. The bioassay of high dose male rats was terminated at wk 82, and the bioassay of low dose male rats was determined during wk 74. After a 78 wk period of chemical admin, observation of female rats continued for 33 additional wk and observation of mice continued for 14 additional wk. At the doses admin to rats in this study endosulfan was toxic, inducing a high incidence of toxic nephropathy in both sexes and testicular atrophy in males. In both species early mortality was observed in the male groups and no conclusions concerning the carcinogenicity of endosulfan can be drawn from this part of the bioassay. However, survival among females of both species was sufficient for meaningful statistical evaluation of the incidence of late developing tumors. It is concluded that under the conditions of this bioassay, technical grade endosulfan was not carcinogenic in female Osborne-Mendel rats or in female B6C3F1 mice. Levels of Evidence of Carcinogenicity: Male Rats: Inadequate Study; Female Rats: Inadequate Study; Male Mice: Inadequate Study; Female Mice: Negative.

TSCA Test Submissions:

Under the Toxic Substances Control Act (TSCA), EPA has broad authority to issue regulations designed to require manufacturers (including importers) or processors to test chemical substances and mixtures for health and environmental effects. This section provides information on test reports submitted for this chemical under TSCA.

>> Endosulfan (CAS # 115-29-7) was evaluated for developmental toxicity in the offspring of primigravida Charles River-CD rats (5/group) administered single dermal applications upon clipped backs at doses of 0 (DMSO vehicle control), 450, 670, 1000, 1500, and 2250 mg/kg bodyweight on gestation Day 1 (Day 11 in a few instances due to breeder error). All surviving animals were then sacrificed on gestation Day 20 (Day 31 in a few instances due to breeder error) for observation of acute maternal, embryo-, and fetotoxicity. One female rat each died following 1500 and 2250 mg/kg exposures. Gross examination of uteri, with evaluation of number of implantation sites, number of live fetuses, early and late resorptions, fetal weight, and fetal crown-rump length, revealed no significant treatment- related abnormalities relative to vehicle control. Upon examination of fetuses, 3 and 2 instances of exoencephaly were identified among those of mothers receiving 670 and 1000 mg/kg dermal applications. Results were summarized and no further information regarding method or results was provided.

Populations at Special Risk:

>> The central nervous system is a major target of endosulfan-induced toxicity in both humans and animals. Therefore, individuals with seizure disorders, such as epilepsy, may be particularly susceptible because exposure to endosulfan may reduce the threshold for tremors, seizures, and other forms of neurotoxicity, as demonstrated in studies in rats.

12. Ecological Information

Resident Soil (mg/kg)

>> 4.70e+02

Industrial Soil (mg/kg)

>> 7.00e+03

Tapwater (ug/L)

>> 1.00e+02

MCL (ug/L)

>> 2.00e+01

Risk-based SSL (mg/kg)

>> 1.40e+00

Chronic Oral Reference Dose (mg/kg-day)

>> 6.00e-03

Volatile

>> Volatile

Mutagen

>> Mutagen

Fraction of Contaminant Absorbed in Gastrointestinal Tract

>> 1

ICSC Environmental Data:

>> The substance is very toxic to aquatic organisms. This substance may be hazardous to the environment. Special attention should be given to birds and soil organisms. Bioaccumulation of this chemical may occur in aquatic organisms. The substance may cause long-term effects in the aquatic environment. Avoid release to the environment in circumstances different to normal use.

Sediment/Soil Concentrations:

Concentrations of this compound in sediment/soil.

>> SEDIMENTS: alpha-Endosulfan was detected in 36% of the samples of suspended sediment from the Lower Niagara River, Canada at an avg concn of 4 ng/g, and beta-endosulfan was detected in 4% of the samples at a reported avg concn of less than 1 ng/g(1). Suspended solids from surface waters in the Federal Republic of Germany contained 22-24 ng/L alpha-endosulfan and 9.6 ng/L beta- endosulfan(2). Bed load (detritus and sediment) and bottom material samples collected from Big Creek in Ontario in 1973 contained less than 1 to 3 and less than 0.1 to 0.7 ppb endosulfan, respectively(3). Endosulfan was detected in suspended sediment in Yawgoo Pond, RI at a concn of 5 ppb(4). alpha-Endosulfan was detected in the Rhine River, Netherlands bottom mud at 0.24-0.33 ppb, and beta-endosulfan was detected at 0.21-0.33 ppb(5). Endosulfan was detected in suspended sediment from Sheridan Creek, Ontario Canada at 15 ppm(6). alpha-Endosulfan was reported in sediment from the Niagara River, Canada at not detected-0.025 ppm and beta-endosulfan was reported at not detected-0.021 ppm(7). Endosulfan was detected in sediment from Del Puerto Creek in California at a concentration of 17.7 ng/g, with the alpha-isomer comprising about 10%, but reaching 50% in some samples(8). Endosulfan was found in concentrations below the detection limit (0.042 ug/L) in sediment samples from River Sabaki in Kenya taken in Jan 1998 and 1999(9).

Fish/Seafood Concentrations:

Concentrations of this compound in fish or seafood.

>> Residues of endosulfan insecticide (alpha- and beta-isomers, and endosulfan sulfate) in fish and their predators were measured during and after operation to control tsetse fly in the Okavango Delta, Botswana. Six ULV doses of endosulfan 35% EC (6-12 g ai/ha) were applied from the air in a period of 12 weeks over 2500 sq km. The concn of residues found in living fish was less than or equal to 0.19 mg/kg wet wt in caudal muscle, and usually 0.8 mg/kg wet wt in pooled viscera (max 2.8 mg/kg). These values returned to near-normal within 3 months after cessation of spraying, but residues were still detectable after 12 months. By comparison, fish killed by spraying contained a max residue level (whole body) of 1.5 mg/kg wet wt. Lean fish were more susceptible to poisoning than fat fish. Residue levels in fish predators (fish-eating birds and crocodiles) were similar to those in their prey, and the risk to them was consequently low.

Animal Concentrations:

Concentrations of this compound in animals.

>> Endosulfan was applied to forage crops on which cattle were allowed to graze beginning seven days after application. Endosfulfan sulfate was found in the silage and in the fat of only one animal. ... No detectable residues were found in the milk from dairy cows fed the treated silage.

Average Daily Intake:

The average amount of the compound taken into the body through eating, drinking, or breathing.

>> FOOD INTAKE: 1.18 ug - obtained by averaging the average daily intake values for the years 1971-76(1).

13. Disposal Considerations

Spillage Disposal

>> Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT wash away into sewer. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting.

Carefully collect remainder. Then store and dispose of according to local regulations.

Disposal Methods

>> Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste number P050, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

>> Potential candidate for rotary kiln incineration with a temperature range of 820-1600 °C with a residence time for liquids and gases: seconds; Solids: hours.

>> Peer-review: Large amt should be incinerated @ high temp in a unit with effluent gas scrubbing. (Peer-review conclusions of an IRPTC expert consultation (May 1985))

14. Transport Information

DOT

Endosulfan
6.1
UN Pack Group: II
Reportable Quantity of 1 lb or 0

IATA

Endosulfan
6.1,
UN Pack Group: II

15. Regulatory Information

Clean Water Act Requirements:

The Clean Water Act (CWA) of 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under CWA, the U.S. Environmental Protection Agency (EPA) developed the Toxic Pollutant List (40 CFR Part 401.15) and the Priority Pollutant List (40 CFR Part 423, Appendix A). These lists are to be used by EPA and States to develop the Effluent Guidelines regulations and ensure water quality criteria and standards.

>> Endosulfan is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance.

Regulatory Information

REACH List of substances subject to POPs Regulation (POPs)

>> Substance: Endosulfan

>> EC: 204-079-4

>> Date of inclusion in the POPs Regulation: 19-Jun-2012

>> POPs Regulation Annex: Annex I, part A; Annex IV

16. Other Information

Other Safety Information

Chemical Assessment

>> IMAP assessments - 6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3.alpha.,5a.alpha.,6.beta.,9.beta.,9a.alpha.)-: Human health tier I assessment

>> IMAP assessments - 6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3.alpha.,5a.alpha.,6.beta.,9.beta.,9a.alpha.)-: Environment tier I assessment

Chemical Assessment

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