ionz

SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Naled
Catalog Number : io-2703
CAS Number : 300-76-5
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)

>> Warning

GHS Hazard Statements

>> H302 (100%): Harmful if swallowed [Warning Acute toxicity, oral]

>> H312 (100%): Harmful in contact with skin [Warning Acute toxicity, dermal]

>> H315 (100%): Causes skin irritation [Warning Skin corrosion/irritation]

>> H319 (100%): Causes serious eye irritation [Warning Serious eye damage/eye irritation]

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

Precautionary Statement Codes

>> P264, P264+P265, P270, P273, P280, P301+P317, P302+P352, P305+P351+P338, P317, P321, P330, P332+P317, P337+P317, P362+P364, P391, and P501

Health Hazards:

>> INHALATION OR INGESTION: Symptoms secondary to cholinesterase inhibition are: headache, giddiness, nervousness, blurred vision, weakness, nausea, cramps, diarrhea, chest discomfort, sweating, miosis, tearing, salivation, and other excessive respiratory tract secretion, vomiting, cyanosis, muscle twitching, and convulsions. EYES: Irritating. SKIN: Irritating-can cause dermatitis. (USCG, 1999)

>> May be combustible. (NOAA, 2007)

>> 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 : Naled
CAS Number : 300-76-5
Molecular Formula : C4H7Br2Cl2O4P
Molecular Weight : 380.7800 g/mol

4. First Aid Measures

First Aid:

>> Excerpt from NIOSH Pocket Guide for Dimethyl-1,2-dibromo-2,2-dichlorethyl phosphate:

>> Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

>> Skin: SOAP WASH IMMEDIATELY - If this chemical contacts the skin, immediately wash the contaminated skin with soap and water. If this chemical penetrates the clothing, immediately remove the clothing, wash the skin with soap and water, and get medical attention promptly.

>> Breathing: RESPIRATORY SUPPORT - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

>> Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2024)

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

>> Rinse mouth. Rest. Refer for medical attention .

5. Fire Fighting Measures

>> Excerpt from ERG Guide 152 [Substances - Toxic (Combustible)]:

>> SMALL FIRE: Dry chemical, CO2 or water spray.

>> LARGE FIRE: Water spray, fog or regular foam. If it can be done safely, move undamaged containers away from the area around the fire. Dike runoff from fire control for later disposal. Avoid aiming straight or solid streams directly onto the product.

>> FIRE INVOLVING TANKS, RAIL TANK CARS OR HIGHWAY TANKS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks in direct contact with flames. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2024)

>> In case of fire in the surroundings, use appropriate extinguishing media.

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 152 [Substances - Toxic (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 let this chemical enter the environment. Sweep spilled substance into covered sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations. If liquid: collect leaking liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

7. Handling And Storage

Safe Storage:

>> Separated from strong oxidants, strong acids and food and feedstuffs. Dry. Well closed. Store in an area without drain or sewer access.

Storage Conditions:

>> Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature 2 - 8 °C. Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects.

8. Exposure Control/ Personal Protection

REL-TWA (Time Weighted Average)

>> 3 mg/m³

>> TWA 3 mg/m3 [skin]

>> 3.0 [mg/m3]

PEL-TWA (8-Hour Time Weighted Average)

>> 3 mg/m³

>> 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) [2002]

MAK (Maximale Arbeitsplatz Konzentration)

>> (inhalable fraction): 0.5 mg/m

Inhalation Risk:

>> A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20 °C; on spraying or dispersing, however, much faster.

Effects of Short Term Exposure:

>> The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the nervous system. This may result in convulsions and respiratory depression. Cholinesterase inhibition. Exposure far above the OEL could cause death. The effects may be delayed. Medical observation is indicated.

Effects of Long Term Exposure:

>> Cholinesterase inhibition. Cumulative effects are possible. See Acute Hazards/Symptoms.

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.

>> The theoretical maximum residue contribution (TMRC) is 1.1021 mg/kg as naled, assuming a 1.5 kg diet, based on the tolerances and food factors for all of the commodities for which US tolerances are established.

Exposure Prevention

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

Inhalation Prevention

>> Use ventilation, 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

>> Biological Exposure Indices (BEI) [ACGIH] - Acetylcholinesterase activity in red blood cells = 70% of individual's baseline; Butylcholinesterase activity in serum or plasma = 60% of individual's baseline; Sample at end of shift; [TLVs and BEIs]

Maximum Allowable Concentration (MAK)

>> 0.5 [mg/m3], inhalable fraction[German Research Foundation (DFG)]

9. Physical And Chemical Properties

Molecular Weight:

>> 380.78

Exact Mass:

>> 379.78053

Physical Description:

>> Naled is a white solid that may be dissolved in a liquid organic carrier with a pungent odor. It is a water emulsifiable liquid. It is insoluble in water and sinks in water. It can cause illness by inhalation, skin absorption and/or ingestion. The primary hazard is the threat to the environment. Immediate steps should be taken to limit its spread to the environment. If it is in liquid form, it can easily penetrate the soil and contaminate groundwater and nearby streams. It is used as a pesticide.

>> COLOURLESS-TO-YELLOW LIQUID OR WHITE CRYSTALS WITH PUNGENT ODOUR.

Color/Form:

>> Pure compound is a solid; technical compound is moderately volatile

Odor:

>> Slightly pungent odor

Boiling Point:

>> 392 °F at 760 mmHg approx. (USCG, 1999)

>> at 0.066kPa: 110 °C

Melting Point:

>> 80.6 °F (USCG, 1999)

>> 26.5-27.5 °C

Solubility:

>> Insoluble (NIOSH, 2024)

>> Solubility in water: none

Density:

>> 1.97 at 68 °F (USCG, 1999) - Denser than water; will sink

>> Relative density (water = 1): 1.96 (25 °C)

Vapor Density:

>> Relative vapor density (air = 1): 13.2

Vapor Pressure:

>> 0.0002 mmHg (NIOSH, 2024)

>> Vapor pressure, Pa at 20 °C: 0.26

LogP:

>> log Kow = 1.38

>> 1.38

Stability/Shelf Life:

>> Stable under recommended storage conditions.

Decomposition:

>> Hazardous decomposition products formed under fire conditions - Carbon oxides, oxides of phosphorus, hydrogen chloride gas, hydrogen bromide gas.

Corrosivity:

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

>> Corrosive to metals

Refractive Index:

>> Index of refraction: 1.5108 at 28 °C/D

10. Stability And Reactivity

>> Practically insoluble in water [Farm Chemicals Handbook]. Hydrolyzed slowly in presence of water.

11. Toxicological Information

Toxicity Summary:

>> IDENTIFICATION AND USE: Naled is a white solid. It is insecticide and acaricide, which is used in cooling tower, paper and pulp mill systems, hide and leather processing and disinfection. It is also used on swimming pool surfaces, household sickroom equipment, food processing plants and equipment, food contact surfaces, hospital rooms, and bathrooms. Naled is also veterinary medication. HUMAN EXPOSURE AND TOXICITY: Acute symptoms following poisoning by naled include abdominal cramps, emesis, nausea, hypersecretion, cough, and perspiration that disappeared after 2 days, while anxiety, depression, vertigo, and spontaneous horizontal nystagmus persisted for 4 months. Potential symptoms of overexposure are miosis, lacrimation; headache; chest tightness, wheezing and laryngeal spasm; salivation; cyanosis;

anorexia, nausea, vomiting, abdominal cramps and diarrhea; weakness, twitching and paralysis; giddiness, ataxia and convulsions; low blood pressure; cardiac irregularities; irritation of skin and eyes. Dermal exposures to naled caused residual papular dermatitis on the arm, glazing on the skin of the cheek, mild irritation of the neck skin, and a maculopapular eruption of the abdomen that caused a contact sensitization type dermatitis. Dermatitis was also caused by picking flowers sprayed with naled. In another case, contact dermatitis was reported in an aerial applicator exposed to naled. ANIMAL STUDIES: Naled (5 mg/kg) was administered to rats via i.m. injection. Within 15 minutes, cholinergic signs appeared, and plasma and brain cholinesterases were inhibited by 79% and 80%, respectively. Naled caused severe eye and dermal irritation in rabbits and was weakly positive in a skin sensitization test in guinea pigs. In rats given a single oral dose of 25, 100, or 400 mg/kg naled, the 400-mg/kg dose produced mortality and transient decreases in body weight gain. Rats of both sexes given 100 or 400 mg/kg and females given 25 mg/kg showed marked cholinergic effects. No treatment-related neurological effects were observed 7 or 14 days after treatment at any dose level. In a lifetime study, male and female rats were administered doses of 0, 0.2, 2, or 10 mg/kg/day naled via gavage for 2 years. There was a dose-related reduction in plasma, brain, and to a lesser degree, red blood cell (RBC) cholinesterase activity among rats treated with 2 or 10 mg/kg/day. Slight tremors were noted on isolated occasions after dosing four females given 10 mg/kg/day. The incidence of neoplastic lesions in the treated animals was similar to that of controls. Pregnant rabbits were given doses of 0, 0.2, 2, or 8 mg/kg/day naled by gavage on gestational days 7 through 19. Does were sacrificed on day 29 of gestation. No maternal or developmental toxicity was related to treatment. Naled exhibited no potential to induce mutations in an in vivo mouse spot test that used mice given 3, 20, or 150 mg/kg/day naled by gavage on gestation days 8 to 12. Naled was positive for gene mutation in the S. typhimurium reverse mutation assay but did not induce DNA damage in a rec-type repair test with Proteus mirabilis strains PG713 (rec-, hcr-) and PG273 (wild-type). ECOTOXICITY STUDIES: Naled is highly toxic to bees.

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

>> Naled

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

>> 0.0032

Acute or One Day HHBPs [ppb]

>> 21

Acute HHBP Sensitive Lifestage/Population

>> Children

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

>> 0.0006

Chronic or One Day HHBPs [ppb]

>> 3

Chronic HHBP Sensitive Lifestage/Population

>> Females 13-49 yrs

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

>> Naled

USGS Parameter Code

>> 68654

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

>> 3

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: Group E Evidence of Non-carcinogenicity for Humans

Carcinogen Classification:

This section provides the International Agency for Research on Cancer (IARC) Carcinogenic Classification and related monograph links. In the IARC Carcinogenic classification, chemicals are categorized into four groups: Group 1 (carcinogenic to humans), Group 2A (probably carcinogenic to humans), Group 2B (possibly carcinogenic to humans), and Group 3 (not classifiable as to its carcinogenicity to humans).

>> No indication of carcinogenicity to humans (not listed by IARC).

Health Effects:

>> Acute exposure to cholinesterase inhibitors can cause a cholinergic crisis characterized by severe nausea/vomiting, salivation, sweating, bradycardia, hypotension, collapse, and convulsions. Increasing muscle weakness is a possibility and may result in death if respiratory muscles are involved. Accumulation of ACh at motor nerves causes overstimulation of nicotinic expression at the neuromuscular junction. When this occurs symptoms such as muscle weakness, fatigue, muscle cramps, fasciculation, and paralysis can be seen. When there is an accumulation of ACh at autonomic ganglia this causes overstimulation of nicotinic expression in the sympathetic system. Symptoms associated with this are hypertension, and hypoglycemia. Overstimulation of nicotinic acetylcholine receptors in the central nervous system, due to accumulation of ACh, results in anxiety, headache, convulsions, ataxia, depression of respiration and circulation, tremor, general weakness, and potentially coma. When there is expression of muscarinic overstimulation due to excess acetylcholine at muscarinic acetylcholine receptors symptoms of visual disturbances, tightness in chest, wheezing due to bronchoconstriction, increased bronchial secretions, increased salivation, lacrimation, sweating, peristalsis, and urination can occur. Certain reproductive effects in fertility, growth, and development for males and females have been linked specifically to organophosphate pesticide exposure. Most of the research on reproductive effects has been conducted on farmers working with pesticides and insecticdes in rural areas. In females menstrual cycle disturbances, longer pregnancies, spontaneous abortions, stillbirths, and some developmental effects in offspring have been linked to organophosphate pesticide exposure. Prenatal exposure has been linked to impaired fetal growth and development. Neurotoxic effects have also been linked to poisoning with OP pesticides causing four neurotoxic effects in humans: cholinergic syndrome, intermediate syndrome, organophosphate-induced delayed polyneuropathy (OPIDP), and chronic organophosphate-induced neuropsychiatric disorder (COPIND). These syndromes result after acute and chronic exposure to OP pesticides.

Exposure Routes:

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

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

Inhalation Exposure

>> Pupillary constriction, muscle cramp, excessive salivation. Sweating. Nausea. Vomiting. Dizziness. Convulsions. Unconsciousness.

Skin Exposure

>> MAY BE ABSORBED! Redness. Pain. Further see Inhalation.

Eye Exposure

>> Redness. Pain. Blurred vision.

Ingestion Exposure

>> Abdominal cramps. Vomiting. Diarrhoea. See Inhalation.

>> irritation eyes, skin; miosis, lacrimation (discharge of tears); headache; chest tightness, wheezing, laryngeal spasm; salivation; cyanosis; anorexia, nausea, vomiting, abdominal cramp, diarrhea; lassitude (weakness, exhaustion), twitching, paralysis; dizziness, ataxia, convulsions; low blood pressure; cardiac irreg

Target Organs:

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

>> Nervous

>> Eyes, skin, respiratory system, central nervous system, cardiovascular system, blood cholinesterase

Adverse Effects:

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

>> Other Poison - Organophosphate

>> Skin Sensitizer - An agent that can induce an allergic reaction in the skin.

>> ACGIH Carcinogen - Not Classifiable.

Toxicity Data:

>> LC (mice) > 1,500 mg/m3/6h

Treatment:

Treatment when exposed to toxin

>> If the compound has been ingested, rapid gastric lavage should be performed using 5% sodium bicarbonate. For skin contact, the skin should be washed with soap and water. If the compound has entered the eyes, they should be washed with large quantities of isotonic saline or water. In serious cases, atropine and/or pralidoxime should be administered. Anti-cholinergic drugs work to counteract the effects of excess acetylcholine and reactivate AChE. Atropine can be used as an antidote in conjunction with pralidoxime or other pyridinium oximes (such as trimedoxime or obidoxime), though the use of '-oximes' has been found to be of no benefit, or possibly harmful, in at least two meta-analyses. Atropine is a muscarinic antagonist, and thus blocks the action of acetylcholine peripherally.

Interactions:

>> Pesticides are applied seasonally in the Florida Keys to control nuisance populations of mosquitoes that pose a health threat to humans. There is, however, a need to investigate the effects of these pesticides on non-target marine organisms. We tested naled and permethrin, two mosquito adulticides used in the Keys, on a critical early life-history stage of queen conch (Strombus gigas). We conducted 12-hr exposure experiments on competent (i.e., capable of undergoing metamorphosis) queen conch larvae using environmentally relevant pesticide concentrations. We found that there was little to no mortality and that the pesticides did not induce or interfere with metamorphosis. However, after introduction of a natural metamorphic cue (extract of the red alga Laurencia potei), a significantly greater proportion of larvae underwent metamorphosis in the pesticide treatments than in those with the alga alone. In addition to the morphogenetic pathway that induces metamorphosis when stimulated, there thus appears to be a regulatory pathway that enhances the response to metamorphic triggers, as suggested by the increased sensitivity of the queen conch larvae to the algal cue after pesticide exposure (i.e., the pesticides stimulated the regulatory pathway). The regulatory pathway probably plays a role in the identification of high-quality habitat for metamorphosis, as the increased response to the algal cue suggests. Aerial drift and runoff can carry these pesticides into nearshore waters, where they may act as a false signal of favorable conditions and facilitate metamorphosis in suboptimal habitat, thus adversely affecting recruitment in nearshore queen conch populations.

Antidote and Emergency Treatment:

>> If this chemical gets into the eyes, remove any contact lenses at once and irrigate immediately for at least 15 min, occasionally lifting upper and lower lids. Seek medical attention immediately. If this chemical contacts the skin, remove contaminated clothing and wash immediately with soap and water. Speed in removing material from skin is of extreme importance. Shampoo hair promptly if contaminated. Seek medical attention immediately. If this chemical has been inhaled, remove from exposure, begin rescue breathing (using universal precautions, including resuscitation mask) if breathing has stopped and CPR if heart action has stopped. Transfer promptly to a medical facility. When this chemical has been swallowed, get medical attention. Give large quantities of water and induce vomiting. Do not make an unconscious person vomit. Effects may be delayed. Medical observation is recommended.

Human Toxicity Excerpts:

>> /SIGNS AND SYMPTOMS/ Acute symptoms following accidental or intentional poisoning by naled include abdominal cramps, emesis, nausea, hypersecretion, cough, and perspiration that disappeared after 2 days, while anxiety, depression, vertigo, and spontaneous horizontal nystagmus persisted for 4 months.

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ ... 5 mg/kg naled was administered to rats via intramuscular injection. Within 15 minutes, cholinergic signs appeared, and plasma and brain cholinesterases were inhibited by 79% and 80%, respectively.

Non-Human Toxicity Values:

>> LD50 Rabbit (female) dermal 360 mg/kg

Populations at Special Risk:

>> Persons with ... reduced pulmonary function, convulsive disorders, or recent exposure to acetylcholinesterase agents would be expected to be at an increased risk.

12. Ecological Information

Resident Soil (mg/kg)

>> 1.60e+02

Industrial Soil (mg/kg)

>> 2.30e+03

Tapwater (ug/L)

>> 4.00e+01

MCL (ug/L)

>> 4.0E+03(G)

Risk-based SSL (mg/kg)

>> 1.80e-02

Chronic Oral Reference Dose (mg/kg-day)

>> 2.00e-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 bees. This substance does enter the environment under normal use. Great care, however, should be taken to avoid any additional release, for example through inappropriate disposal.

Sediment/Soil Concentrations:

Concentrations of this compound in sediment/soil.

>> SEDIMENT: Naled was not detected in 50 300-g sediment samples collected from 32 sites during two sampling times of July-August 1993, dry season, and November-December 1993, end of rainy season, in the Atoya River basin, Chinandega, Nicaragua, a main cotton producing region(1).

13. Disposal Considerations

Spillage Disposal

>> Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into covered sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations. If liquid: collect leaking liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Disposal Methods

>> SRP: Recycle any unused portion of the material for its approved use or return it to the manufacturer or supplier. Ultimate disposal of the chemical must consider: the material's impact on air quality; potential migration in air, soil or water; effects on animal, aquatic and plant life; and conformance with environmental and public health regulations. If it is possible or reasonable use an alternative chemical product with less inherent propensity for occupational harm/injury/toxicity or environmental contamination.

>> SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a permitted wastewater treatment facility is acceptable only after review by the governing authority and assurance that "pass through" violations will not occur. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the

chemical in this fashion, it must be evaluated in accordance with EPA 40 CFR Part 261, specifically Subpart B, in order to determine the appropriate local, state and federal requirements for disposal.

>> Product: Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company; Contaminated packaging: Dispose of as unused product.

>> This pesticide is more stable to hydrolysis than dichlorvos (50% hydrolysis at pH 9 at 37.5 °C in 301 min). It is unstable in alkaline conditions, in presence of iron, and is degraded by sunlight. About 10% hydrolysis per day is obtained in ambient water. Incineration is recommended for large amounts. In accordance with 40CFR165 follow recommendations for the disposal of pesticides and pesticide containers. Must be disposed properly by following package label directions or by contacting your local or federal environmental control agency or by contacting your regional EPA office.

>> For more Disposal Methods (Complete) data for NALED (10 total), please visit the HSDB record page.

14. Transport Information

DOT

Naled
6.1
UN Pack Group: III
Reportable Quantity of 10 lb or 4

IATA

Naled
6.1,
UN Pack Group: III

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.

>> Naled 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

New Zealand EPA Inventory of Chemical Status

>> Naled: Does not have an individual approval but may be used under an appropriate group standard

16. Other Information

Toxic Combustion Products:

Toxic products (e.g., gases and vapors) produced from the combustion of this chemical.

>> Poisonous gases, including hydrogen chloride, hydrogen bromide, phosphorous oxides, are produced in fire.

Other Safety Information

Chemical Assessment

>> IMAP assessments - Phosphoric acid, 1,2-dibromo-2,2-dichloroethyl dimethyl ester: Environment tier I assessment

>> IMAP assessments - Phosphoric acid, 1,2-dibromo-2,2-dichloroethyl dimethyl ester: Human health tier I assessment

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