SAFETY DATA SHEET

Updated on 14/12/2024

1. Material Identification

Product Name : Sulprofos
Catalog Number : io-3040
CAS Number : 35400-43-2
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

>> H301+H311 (40.6%): Toxic if swallowed or in contact with skin [Danger Acute toxicity, oral; acute toxicity, dermal]

>> H301 (100%): Toxic if swallowed [Danger Acute toxicity, oral]

>> H311 (95.7%): Toxic in contact with skin [Danger Acute toxicity, dermal]

>> H330 (95.7%): Fatal if inhaled [Danger Acute toxicity, inhalation]

>> H400 (95.7%): Very toxic to aquatic life [Warning Hazardous to the aquatic environment, acute hazard]

>> H410 (95.7%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P260, P262, P264, P270, P271, P273, P280, P284, P301+P316, P302+P352, P304+P340, P316, P320, P321, P330, P361+P364, P391, P403+P233, P405, and P501

Health Hazards:

>> Excerpt from NIOSH Pocket Guide for Sulprofos:

>> Exposure Routes: Inhalation, ingestion

>> Symptoms: Nausea, vomiting, abdominal cramps, diarrhea, salivation; headache, dizziness, lassitude (weakness, exhaustion); rhinorrhea (discharge of thin nasal mucus), chest tightness; blurred vision, miosis; cardiac irreg; muscle fasciculation; dyspnea (breathing difficulty)

>> Target Organs: Respiratory system, central nervous system, cardiovascular system, blood cholinesterase (NIOSH, 2024)

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

>> Combustible material: may burn but does not ignite readily. Containers may explode when heated. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff may pollute waterways.

Substance may be transported in a molten form. (ERG, 2024)

>> 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 : Sulprofos
CAS Number : 35400-43-2
Molecular Formula : C12H19O2PS3
Molecular Weight : 322.5000 g/mol

4. First Aid Measures

First Aid:

>> Excerpt from NIOSH Pocket Guide for Sulprofos:

>> 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 immediately 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. Give a slurry of activated charcoal in water to drink. Refer immediately 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)

>> Use alcohol-resistant foam, powder, carbon dioxide.

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: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT wash away into sewer.

7. Handling And Storage

Safe Storage:

>> Separated from food and feedstuffs. Keep in a well-ventilated room. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing. Well closed.

8. Exposure Control/ Personal Protection

REL-TWA (Time Weighted Average)

>> 1 mg/m³

>> TWA 1 mg/m3

>> 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:

>> A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20 °C.

Effects of Short Term Exposure:

>> Cholinesterase inhibition. The substance may cause effects on the nervous system. This may result in convulsions and respiratory failure. The effects may be delayed. Medical observation is indicated. Exposure could cause death.

Effects of Long Term Exposure:

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

Exposure Prevention

>> AVOID ALL CONTACT! FIRST AID: USE PERSONAL PROTECTION. 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]

9. Physical And Chemical Properties

Molecular Weight:

>> 322.5

Exact Mass:

>> 322.02848036

Physical Description:

>> Sulprofos is a tan-colored liquid with a sulfide-like odor. (NIOSH, 2024)

>> COLOURLESS-TO-BROWN OILY LIQUID WITH CHARACTERISTIC ODOUR.

Color/Form:

>> Colorless oil; tan liquid /technical grade/

Odor:

>> Phosphorus odor

Boiling Point:

>> 155-158 °C at 0.1 mm Hg

>> 155 °C

Melting Point:

>> -15 °C /technical grade/

>> -15 °C

Solubility:

>> Low (NIOSH, 2024)

>> Solubility in water, mg/l at 20 °C: 0.31 (very poor)

Density:

>> 1.2 (NIOSH, 2024) - Denser than water; will sink

>> 1.2 g/cm³

Vapor Pressure:

>> less than 8 mmHg (NIOSH, 2024)

>> Vapor pressure, Pa at 20 °C:

LogP:

>> log Kow = 5.48

>> 5.48

Stability/Shelf Life:

>> ...Hydrolyzed in basic conditions and is stable in acid or neutral conditions.

Decomposition:

>> When heated to decomposition it emits very toxic fumes of /phosphorus oxide and sulfur oxides/

Refractive Index:

>> Index of refraction = 1.5859 at deg 20 C/D

Collision Cross Section:

Collision cross section (CCS) represents the effective area for the interaction between an individual ion and the neutral gas through which it is traveling (e.g., in ion mobility spectrometry (IMS) experiments). It quantifies the probability of a collision taking place between two or more particles.

>> 170.03 Å² [M+H]+

>> 180.27 Å² [M+Na]+

10. Stability And Reactivity

>> No rapid reaction with air. No rapid reaction with water.

11. Toxicological Information

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

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

Chemical

>> Sulprofos

USGS Parameter Code

>> 38716

Noncancer HBSL (Health-Based Screening Level)[µg/L]

>> 20

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

Exposure Routes:

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

>> inhalation, ingestion

Inhalation Exposure

>> Pupillary constriction, muscle cramp, excessive salivation. Headache. Sweating. Dizziness. Nausea. Diarrhoea. Vomiting. Laboured breathing. Unconsciousness. Symptoms may be delayed.

Skin Exposure

>> MAY BE ABSORBED! Further see Inhalation.

Eye Exposure

>> Blurred vision.

Ingestion Exposure

>> See Inhalation.

>> nausea, vomiting, abdominal cramps, diarrhea, salivation; headache, dizziness, lassitude (weakness, exhaustion); rhinorrhea (discharge of thin nasal mucus), chest tightness; blurred vision, miosis; cardiac irreg; muscle fasciculation; dyspnea (breathing difficulty)

Target Organs:

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

>> 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

>> ACGIH Carcinogen - Not Classifiable.

Interactions:

>> A combination of sulprofos and malathion caused a fivefold potentiation of acute oral toxicity in rats, based on oral LD50s. Similarly, a simultaneous dosing of sulprofos and azinphos-ethyl yielded a threefold potentiation of toxicity.

Antidote and Emergency Treatment:

>> Airway protection. Insure that a clear airway exists. Intubate the patients and aspirate the secretions with a large-bore suction device if necessary. Administer oxygen by mechanically assisted pulmonary ventilation if respiration is depressed. Improve tissue oxygenation as much as possible before administering atropine, so as to minimize the risk of ventricular fibrillation. In severe poisonings, it may be necessary to support pulmonary ventilation mechanically for several days. /Organophosphate pesticides/

Human Toxicity Excerpts:

>> /HUMAN EXPOSURE STUDIES/ A follow-up study of 232 people three years after a history of organophosphorus pesticide poisoning disclosed only one person with slight residual blurring of vision that might have been related to the earlier poisoning, though at the time of poisoning over one third of the people had blurring, which lasted only a day or two after exposure was discontinued. The possible exceptional case had findings suggestive of basilar artery insufficiency, rather than effects of poisoning. /Organophosphorus pesticides/

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ Five 4 hr exposures of rats to 37, 94, or 259 mg/cu m sulprofos caused cholinergic signs and inhibition of /red blood cell/ and plasma cholinesterase activities.

Non-Human Toxicity Values:

>> LD50 Rat (male) oral 304 mg/kg

12. Ecological Information

ICSC Environmental Data:

>> The substance is very toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment. This substance may be hazardous to the environment. Special attention should be given to fish and wildlife. 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.

13. Disposal Considerations

Spillage Disposal

>> Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT wash away into sewer.

Disposal Methods

>> SRP: The most favorable course of action is to use an alternative chemical product with less inherent propensity for occupational exposure or environmental contamination. 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 soil or water; effects on animal, aquatic, and plant life; and conformance with environmental and public health regulations.

14. Transport Information

DOT

Sulprofos
6.1
UN Pack Group: III

IATA

Sulprofos
6.1,
UN Pack Group: III

15. Regulatory Information

Regulatory Information

California Safe Cosmetics Program (CSCP) Reportable Ingredient

>> Hazard Traits - Environmental tox

>> Authoritative List - CWA 303(d)

>> Report - if used as a fragrance or flavor ingredient

Status Regulation (EC)

>> 2002/2076

16. Other Information

Toxic Combustion Products:

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

>> Gives off irritating or toxic fumes (or gases) in a fire. ...The substance decomposes on heating producing very toxic fumes of phosphorous oxides and sulfur oxides.

Other Safety Information

Chemical Assessment

>> IMAP assessments - Phosphorodithioic acid, O-ethyl O-[4-(methylthio)phenyl] S-propyl ester: Environment tier I assessment

>> IMAP assessments - Phosphorodithioic acid, O-ethyl O-[4-(methylthio)phenyl] S-propyl ester: Human health tier I assessment

"The information provided is believed to be accurate but is not comprehensive and should be used as a reference. It reflects our current knowledge and is intended for safety guidance related to the product. This document does not constitute a warranty of the product's properties. Ionz is not responsible for any damages resulting from handling or contact with the product incorrectly."