SAFETY DATA SHEET

Updated on 08/02/2025

1. Material Identification

Product Name : Diazinon
Catalog Number : io-2116
CAS Number : 333-41-5
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)

GHS Hazard Statements

>> H302 (73.1%): Harmful if swallowed [Warning Acute toxicity, oral]

>> H312 (24.5%): Harmful in contact with skin [Warning Acute toxicity, dermal]

>> H341 (16.2%): Suspected of causing genetic defects [Warning Germ cell mutagenicity]

>> H350 (16.7%): May cause cancer [Danger Carcinogenicity]

>> H370 (16.7%): Causes damage to organs [Danger Specific target organ toxicity, single exposure]

>> H373 (16.7%): May causes damage to organs through prolonged or repeated exposure [Warning Specific target organ toxicity, repeated exposure]

>> H400 (99.5%): Very toxic to aquatic life [Warning Hazardous to the aquatic environment, acute hazard]

>> H410 (75.9%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P203, P260, P264, P270, P273, P280, P301+P317, P302+P352, P308+P316, P317, P318, P319, P321, P330, P362+P364, P391, P405, and P501

Health Hazards:

>> LIQUID: POISONOUS IF SWALLOWED. Irritating to skin and eyes. (USCG, 1999)

>> Not flammable. POISONOUS GASES ARE PRODUCED WHEN HEATED. Oxides of sulfur and of phosphorus are generated in fires. (USCG, 1999)

>> Combustible. Gives off irritating or toxic fumes (or gases) in a fire. Risk of fire and explosion if formulations contain flammable/explosive solvents.

3. Composition/Information On Ingredients

Chemical name : Diazinon
CAS Number : 333-41-5
Molecular Formula : C12H21N2O3PS
Molecular Weight : 304.3500 g/mol

4. First Aid Measures

First Aid:

>> EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

>> SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. IMMEDIATELY call a hospital or poison control center even if no symptoms (such as redness or irritation) develop. IMMEDIATELY transport the victim to a hospital for treatment after washing the affected areas.

>> INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. IMMEDIATELY call a physician and be prepared to transport the victim to a hospital even if no symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

>> INGESTION: CHOLINESTERASE INHIBITORS ARE EXTREMELY TOXIC AND FAST-ACTING POISONS. IMMEDIATELY call a hospital of poison control center and transport the victim to a hospital. Atropine is an antidote for cholinesterase inhibitors but should only be administered by properly trained personnel. In the absence of this option and if the victim is conscious and not convulsing, it may be worth considering the risk of inducing vomiting, even though the induction of vomiting is not usually recommended outside of a physician's care. Ipecac syrup or salt water may be used to induce vomiting in such an emergency. If the victim is convulsing or unconscious, do not give anything by mouth, assure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

First Aid Measures

Inhalation First Aid

>> Fresh air, rest. Artificial respiration may be needed. Refer immediately for medical attention.

Skin First Aid

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

5. Fire Fighting Measures

>> ... Vapors are heavier than air and will collect in low areas. Containers may explode in fire. ...

>> 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 water spray, powder, foam, 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: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in dry sand or inert absorbent. Then store and dispose of according to local regulations.

7. Handling And Storage

Safe Storage:

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

Storage Conditions:

>> Store in original container only in cool, dry, well-ventilated, secure area out of reach of children and animals.

8. Exposure Control/ Personal Protection

REL-TWA (Time Weighted Average)

>> 0.1 mg/m³

>> TWA 0.1 mg/m3 [skin]

>> none See Appendix G

>> 0.01 [mg/m3], inhalable fraction and vapor

>> 0.01 mg/m

TLV-TWA (Time Weighted Average)

>> 0.01 mg/m³ (inhalable fraction and vapor) [2000]

MAK (Maximale Arbeitsplatz Konzentration)

>> (inhalable fraction): 0.1 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 mildly irritating to the eyes and skin. The substance may cause effects on the nervous system. Cholinesterase inhibition. This may result in convulsions and respiratory depression. The effects may be delayed. Medical observation is indicated.

Effects of Long Term Exposure:

>> Cholinesterase inhibition. Cumulative effects are possible. See Acute Hazards/Symptoms. This substance is probably carcinogenic to humans.

Fire Prevention

>> NO open flames.

Exposure Prevention

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

Inhalation Prevention

>> Use ventilation, local exhaust or breathing protection. Avoid inhalation of mist.

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)

>> 0.1 [mg/m3], inhalable fraction[German Research Foundation (DFG)]

9. Physical And Chemical Properties

Molecular Weight:

>> 304.35

Exact Mass:

>> 304.10105071

Physical Description:

>> Liquid; light to dark brown. Sinks in water. Commercial solutions can contain ethanol/xylene/acetone with a flash point in the range 82-105 °F.

>> OILY COLOURLESS LIQUID WITH CHARACTERISTIC ODOUR. TECHNICAL-GRADE PRODUCT: PALE YELLOW-TO-DARK BROWN.

Color/Form:

>> Colorless oil

Odor:

>> Faint ester-like odor

Boiling Point:

>> Decomposes >248 °F (NTP, 1992)

Melting Point:

>> < 25 °C

Flash Point:

>> 82 to 105 °F (commercial solutions) (NTP, 1992)

>> 104.4 °C c.c.

Solubility:

>> less than 1 mg/mL at 75 °F (NTP, 1992)

>> Solubility in water, mg/l at 20 °C: 60 (practically insoluble)

Density:

>> 1.117 at 68 °F (USCG, 1999) - Denser than water; will sink

>> Relative density (water = 1): 1.1

Vapor Pressure:

>> 0.0001 mmHg (NIOSH, 2024)

>> Vapor pressure at 20 °C: negligible

LogP:

>> log Kow = 3.81

>> 3.11

Stability/Shelf Life:

>> More stable in alkaline formulations, then when at neutral or acid pH.

Autoignition Temperature:

>> > 400 °C. /Diazinon 50W/

Decomposition:

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

>> 120 °C

Refractive Index:

>> Index of refraction: 1.4978-1.4981 at 20 °C/D

Dissociation Constants:

>> pKa = 2.6

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.

>> 173.38 Å² [M+H]+

10. Stability And Reactivity

>> The neat compound is susceptible to oxidation and should be protected from prolonged exposure to air (NTP, 1992). Insoluble in water.

11. Toxicological Information

Toxicity Summary:

>> IDENTIFICATION: Diazinon is a clear colorless liquid with a faint ester-like odor. Diazinon is soluble in most organic solvents. It is stable in neutral media, but is slowly hydrolyzed in alkaline media and more rapidly in acid media. Diazinon

is a contact organophosphorus insecticide with a wide range of insecticidal activity. It is also available in mixed formulations with other insecticides. Another major use is as a drug in veterinary medicine. HUMAN EXPOSURE: Environmental levels of diazinon are generally low. The routes of exposure for the general population are inhalational and dietary. Exposure through water is negligible. Occupational exposure is primarily dermal. Several cases of accidental or suicidal poisoning by diazinon hae been reported, some of which were fatal. In some of these the cholinergic syndrome may have been more severe than expected because of the presence of highly toxic impurities such as TEPP. In certain cases, acute reversible pancreatitis was associated with a severe cholinergic syndrome. Reported cases of poisoning after occupational exposure have always been associated with the presence of impurities. ANIMAL STUDIES: The acute oral, dermal and inhalational toxicity is low. Short-term and long-term studies in mice, rats, rabbits, dogs and monkeys have shown that the only effect of concern is dose-related inhibition of acetyl cholinesterase activity. Diazinon is slightly irritant to rabbit skin but not to the eye. Diazinon is not a dermal sensitizer. Reproductive and developmental studies have revealed no evidence of embryotoxic or teratogenic potential. There was no effect on reproductive performance at dose levels that were not toxic to the parent animals. Mutagenicity studies with various end-points in vivo and in vitro gave no evidence of a mutagenic potential. There is no evidence of carinogenicity in rats or mice. In the dog and guinea-pig, diazinon has been reported to cause acute pancreatitis; this is considered to be a species-specific effect. Diazinon may be absorbed from the gastrointestinal tract, through the intact skin and following inhalation. Diazinon is oxidized by microsomal enzymes to cholinesterase inhibiting metabolites such as diazoxon, hydroxydiazoxon and hydroxydiazinon.

RAIS Toxicity Values:

This section provides the Chemical toxicity information from the Risk Assessment Information System.

Inhalation Subchronic Reference Concentration (RfCs) (mg/m^3)

>> 0.01

Inhalation Subchronic Reference Concentration Reference

>> ATSDR Final

Inhalation Short-term Reference Concentration (RfCt) (mg/m^3)

>> 0.01

Inhalation Short-term Reference Concentration Reference

>> ATSDR Final

Oral Acute Reference Dose (RfDoa)(mg/kg-day)

>> 0.006

Oral Acute Reference Dose Reference

>> ATSDR Final

Oral Chronic Reference Dose (RfDoc) (mg/kg-day)

>> 0.0007

Oral Chronic Reference Dose Reference

>> ATSDR Final

Oral Subchronic Chronic Reference Dose (RfDos) (mg/kg-day)

>> 0.002

Oral Subchronic Chronic Reference Dose Reference

>> ATSDR Final

Short-term Oral Reference Dose (RfDot) (mg/kg-day)

>> 0.002

Short-term Oral Reference Dose Reference

>> ATSDR Final

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

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

Chemical

>> Diazinon

USGS Parameter Code

>> 65078

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

>> 2

Benchmark Remarks

>> steady-state dietary, adults

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

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).

IARC Carcinogenic Agent

>> Diazinon

IARC Carcinogenic Classes

>> Group 2A: Probably carcinogenic to humans

IARC Monographs

>> Volume 112: (2017) Some Organophosphate Insecticides and Herbicides

Additional information

>> NB Overall evaluation upgraded to Group 2A based on mechanistic evidence

Substance

>> Diazinon

NTP Technical Report

>> TR-137: Bioassay of Diazinon for Possible Carcinogenicity (CASRN 333-41-5) (1979)

Peer Review Date

>> 12/13/78

Conclusion for Male Rat

>> No Evidence

Conclusion for Female Rat

>> No Evidence

Conclusion for Male Mice

>> No Evidence

Conclusion for Female Mice

>> No Evidence

Summary

>> It is concluded that under the conditions of this bioassay, diazinon was not carcinogenic for F344 rats or B6C3F1 mice of either sex.

>> Spraying and application of nonarsenical insecticides entail exposures that are probably carcinogenic to humans (Group 2A). (L135)

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

>> Muscle twitching. Pupillary constriction, muscle cramp, excessive salivation. Sweating. Nausea. Dizziness. Convulsions. Unconsciousness. Laboured breathing.

Skin Exposure

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

Eye Exposure

>> Redness. Pain.

Ingestion Exposure

>> Abdominal cramps. Diarrhoea. Further see Inhalation.

>> irritation eyes; miosis, blurred vision; dizziness, confusion, lassitude (weakness, exhaustion), convulsions; dyspnea (breathing difficulty); salivation, abdominal cramps, nausea, vomiting

Target Organs:

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

>> Neurological (Nervous System)

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 - Organophosphate

>> IARC Carcinogen - Class 2: International Agency for Research on Cancer classifies chemicals as probable (2a), or possible (2b) human carcinogens.

>> ACGIH Carcinogen - Not Classifiable.

Toxicity Data:

>> LD50: 66 mg/kg (Oral, Rat) (T14) LD50: 180 mg/kg (Dermal, Rat) (T14) LD50: 65 mg/kg (Intraperitoneal, Rat) (T14) LD50: 58 mg/kg (Subcutaneous, Mouse) (T14) LD50: 180 mg/kg (Intravenous, Mouse) (T14)

Minimum Risk Level:

The minimal risk level (MRL) is an estimate of the amount of a chemical a person can eat, drink, or breathe each day without a detectable risk to health

>> Intermediate Inhalation: 0.01 mg/m3 (L134) Acute Oral: 0.006 mg/kg/day (L134) Intermediate Oral: 0.002 mg/kg/day (L134) Chronic Oral: 0.0007 mg/kg/day (L134)

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:

>> To investigate possible joint toxic effects of diazinon, propoxur and bisphenol A (BPA) on proliferation of /mouse/ RAW264.7 cells in vitro. Cytotoxicity was assessed by MTT assay. The median inhibiting concentration values (IC50) and 95% confidence interval (CI) of diazinon, propoxur and BPA individually and in mixture (mixed according to ratio of IC50) were established by weighted probit method. The types of toxic interaction of diazinon and BPA and propoxur and BPA were assessed by three methods commonly used for binary mixtures, which were Additional Index Method, Equivalent Effect Curve Method and Logistic Regression Method. After 24-hr expoxure, the IC50 and 95% CI of diazinon, propoxur and BPA to RAW264.7 cells were 194.1 microg/mL (173.4 microg/mL-217.4 microg/mL), 448.4 mg/L (358.2 microg/mL-573.2 microg/mL), and 37.5 microg/mL (35.3 microg/mL-39.9 microg/mL), respectively. Those of mixtures of diazinon and BPA and propoxur and BPA were 168.8 microg/mL (160.1 microg/mL-178.2 microg/mL) and 253.4 microg/mL (236.0-273.0 microg/mL). In the interaction assessment, three methods all demonstrated an antagonistic action of diazinon and BPA and an addition action of propoxur and BPA. ...

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/ Extensive use of organophosphorous pesticides (OP) by young men represents a public health problem. Toxicity of OP mainly results in neurotoxicity due to their oxygen analogues (oxons), formed during the OP oxidative activation. OP alter semen quality and sperm chromatin and DNA at different stages of spermatogenesis. Oxons are more toxic than the parent compounds; however, their toxicity to spermatogenic cells has not been reported. We evaluated sperm DNA damage by several OP compounds and their oxons in human spermatozoa from healthy volunteers incubated with 50-750 microM of methyl-parathion (MePA), methyl-paraoxon (MePO), chlorpyrifos (CPF), chlorpyrifos-oxon (CPO), diazinon (DZN) or diazoxon (DZO). All concentrations were not cytotoxic (evaluated by eosin-Y exclusion), except 750 microM MePO. Oxons were 15% to 10 times more toxic to sperm DNA (evaluated by the SCSA parameter, %DFI) than their corresponding parent compounds, at the following order: MePO>CPO=MePA>CPF>DZO>DZN, suggesting that oxon metabolites participate in OP sperm genotoxicity.

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ ... /Investigators/ gave diazinon (DZN) to newborn rats on postnatal days 1-4, using doses (0.5 or 2 mg/kg) spanning the threshold for barely detectable cholinesterase inhibition. We then evaluated the lasting effects on indices of neural cell number and size, and on functional markers of acetylcholine (ACh) synapses (choline acetyltransferase, presynaptic high-affinity choline transporter, nicotinic cholinergic receptors) in a variety of brain regions. DZN exposure produced a significant overall increase in cell-packing density in adolescence and adulthood, suggestive of neuronal loss and reactive gliosis; however, some regions (temporal/occipital cortex, striatum) showed evidence of net cell loss, reflecting a greater sensitivity to neurotoxic effects of DZN. Deficits were seen in ACh markers in cerebrocortical areas and the hippocampus, regions enriched in ACh projections. In contrast, there were no significant effects in the midbrain, the major locus for ACh cell bodies. The striatum showed a unique pattern, with robust initial elevations in the ACh markers that regressed in adulthood to normal or subnormal values.

Human Toxicity Values:

Quantitative human toxicity values (e.g., lethal dose) for this compound.

>> 0.02 MG/KG/DAY IS A NO-EFFECT LEVEL IN MAN.

Non-Human Toxicity Values:

>> LD50 Rat male oral 1340 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 diazinon for possible carcinogenicity was conducted by admin the test chemical in feed to F344 rats and B6C3F1 mice. Groups of 50 rats and 50 mice of each sex were administered diazinon at one of two doses, either 400 or 800 ppm for the rats and either 100 or 200 ppm for the mice, for 103 wk and were then observed for an additional 1 or 2 wk. Matched controls consisted of 25 untreated rats and 25 untreated mice of each sex. All surviving animals were killed at the end of 104 or 105 wk. ... Under the conditions of this bioassay, diazinon was not carcinogenic for F344 rats or B6C3F1 mice of either sex. Levels of Evidence of Carcinogenicity: Male Rats: Negative; Female Rats: Negative; Male Mice: Negative; Female Mice: Negative.

12. Ecological Information

Resident Soil (mg/kg)

>> 4.40e+01

Industrial Soil (mg/kg)

>> 5.70e+02

Tapwater (ug/L)

>> 1.00e+01

MCL (ug/L)

>> 4.00e+02

Risk-based SSL (mg/kg)

>> 6.50e-02

Chronic Oral Reference Dose (mg/kg-day)

>> 7.00e-04

Volatile

>> Volatile

Mutagen

>> Mutagen

Fraction of Contaminant Absorbed in Gastrointestinal Tract

>> 1

Fraction of Contaminant Absorbed Dermally from Soil

>> 0.1

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 birds and 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: Between 1976 to 1980, diazinon was detected in 0.5% of sediment samples from the National surface water monitoring program, with a max concentration of 7.1 ppb(1). Diazinon was detected in the Scioto River (Highby, OH) at a concentration of 0.07 ppb(2). The concentration of diazinon in San Joaquin River sediment (in 1992) was <0.5 ng/L(3).

Fish/Seafood Concentrations:

Concentrations of this compound in fish or seafood.

>> As part of the US Market basket surveys for 1969-76, the mean level of diazinon found in fish/seafood was measured as follows(1): fish, domestic (0.0008 ppm, 1.1% of 2901 samples); fish imported (1% of 361 samples, 0.0001 ppm); shellfish, domestic (0.8% of 291 samples, 0.0001 ppm); shellfish, imported (1.4% of 152 samples, 0.0002 ppm).

Average Daily Intake:

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

>> FOOD INTAKE: 1969-82 (estimate): 0.0082 ug/kg body wt/day(1-7).

13. Disposal Considerations

Spillage Disposal

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

Disposal Methods

>> SRP: The most favorable course of action is to use an alternative chemical product with less inherent propensity for occupational harm/injury/toxicity 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 and plant life; and conformance with environmental and public health regulations.

>> 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.

>> Pesticide Disposal: Pesticide wastes are toxic. Improper disposal is a violation of Federal law. To avoid harming aquatic organisms in rivers and other surface waters, do not pour spray mixture or rinse water into sanitary drains (for example; toilets, floor drains, and sinks) or into storm water sewers (for example; street drains). If pesticide, spray mixture, or rinsate cannot be disposed of by use according to the label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative of the nearest EPA Regional Office for guidance. /Diazinon 50W/

>> Container Handling: Nonrefillable Container (flexible-bag-all weights): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Once all water-soluble packets are used according to label instructions, dispose of empty outer bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.. /Diazinon 50W/

>> For more Disposal Methods (Complete) data for DIAZINON (9 total), please visit the HSDB record page.

14. Transport Information

DOT

Diazinon
6.1
UN Pack Group: III
Reportable Quantity of 1 lb or 0

IATA

Diazinon
6.1,
UN Pack Group: III

15. Regulatory Information

Federal Drinking Water Guidelines:

Federal drinking water guidelines (e.g. maximum containment level (MCL)) for this chemical. In general, these guidelines are recommendations and not legally enforceable.

>> EPA 1 ug/L

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.

>> Diazinon 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

California Safe Cosmetics Program (CSCP) Reportable Ingredient

>> Hazard Traits - Carcinogenicity; Developmental Toxicity; Environmental tox; Neurotoxicity

>> Authoritative List - ATSDR Neurotoxicants; CA NLs; CECBP - Priority Chemicals; CWA 303(d); IARC Carcinogens - 2A

>> Report - regardless of intended function of ingredient in the product

Status Regulation (EC)

>> 2007/393

New Zealand EPA Inventory of Chemical Status

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

16. Other Information

Other Safety Information

Chemical Assessment

>> IMAP assessments - Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester: Human health tier I assessment

>> IMAP assessments - Phosphorothioic acid, O,O-diethyl O-[6-methyl-2-(1-methylethyl)-4-pyrimidinyl] ester: Environment 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."