SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Atrazine
Catalog Number : io-1767
CAS Number : 1912-24-9
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

>> H317 (100%): May cause an allergic skin reaction [Warning Sensitization, Skin]

>> H319 (19.6%): Causes serious eye irritation [Warning Serious eye damage/eye irritation]

>> H373 (99%): May causes damage to organs through prolonged or repeated exposure [Warning Specific target organ toxicity, repeated exposure]

>> H400 (99%): 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, P261, P264+P265, P272, P273, P280, P302+P352, P305+P351+P338, P319, P321, P333+P317, P337+P317, P362+P364, P391, and P501

NFPA 704 Diamond

NFPA Health Rating

>> 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA Fire Rating

>> 1 - Materials that must be preheated before ignition can occur. Materials require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur.

NFPA Instability Rating

>> 0 - Materials that in themselves are normally stable, even under fire conditions.

Health Hazards:

>> Irritates eyes and skin. If ingested, irritates mouth and stomach. (USCG, 1999)

>> Special Hazards of Combustion Products: Irritating hydrogen chloride and toxic oxides of nitrogen may be formed. (USCG, 1999)

>> Combustible under specific conditions. Liquid formulations containing organic solvents may be flammable. 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 : Atrazine
CAS Number : 1912-24-9
Molecular Formula : C8H14ClN5
Molecular Weight : 215.6800 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. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

>> INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. 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: DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. Be prepared to transport the victim to a hospital if advised by a physician. If the victim is convulsing or unconscious, do not give anything by mouth, ensure 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.

Skin First Aid

>> Rinse and then wash skin with water and soap.

Eye First Aid

>> Rinse with plenty of water (remove contact lenses if easily possible). Refer for medical attention.

Ingestion First Aid

>> Rinse mouth. Refer for medical attention .

5. Fire Fighting Measures

>> Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. (NTP, 1992)

>> Use water spray, 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 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: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered 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 food and feedstuffs. Store in an area without drain or sewer access.

Storage Conditions:

>> Keep container tightly closed in a dry and well-ventilated place.

8. Exposure Control/ Personal Protection

REL-TWA (Time Weighted Average)

>> 5 mg/m³

>> TWA 5 mg/m3

>> none See Appendix G

>> 2.0 [mg/m3], inhalable fraction

>> 2 mg/m

TLV-TWA (Time Weighted Average)

>> 2 mg/m³ (inhalable particulate matter) [2013]

MAK (Maximale Arbeitsplatz Konzentration)

>> 1 mg/m

Inhalation Risk:

>> A harmful concentration of airborne particles can be reached quickly when dispersed.

Effects of Short Term Exposure:

>> The substance is severely irritating to the eyes.

Effects of Long Term Exposure:

>> The substance may have effects on the liver. This may result in tissue lesions.

Fire Prevention

>> NO open flames.

Exposure Prevention

>> PREVENT DISPERSION OF DUST!

Inhalation Prevention

>> Use ventilation (not if powder).

Skin Prevention

>> Protective gloves.

Eye Prevention

>> Wear safety spectacles.

Ingestion Prevention

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

Exposure Control and Personal Protection

Maximum Allowable Concentration (MAK)

>> 1.0 [mg/m3], inhalable fraction[German Research Foundation (DFG)]

9. Physical And Chemical Properties

Molecular Weight:

>> 215.68

Exact Mass:

>> 215.0937732

Physical Description:

>> Atrazine is a white crystalline solid. Melting point 173-175 °C. Sinks in water. A selective herbicide used for season-long weed control in a variety of crops.

>> COLOURLESS CRYSTALS.

Color/Form:

>> Colorless powder

Odor:

>> Odorless

Boiling Point:

>> Decomposes (NIOSH, 2024)

>> No boiling point at normal pressure; decomposes on heating

Melting Point:

>> 347 to 351 °F (NTP, 1992)

>> 173-177 °C

Solubility:

>> less than 1 mg/mL at 67.1 °F (NTP, 1992)

>> Solubility in water, g/100ml at 25 °C: (none)

Density:

>> 1.2 at 68 °F (est) (USCG, 1999) - Denser than water; will sink

>> Relative density (water = 1): 1.2

Vapor Pressure:

>> 3e-07 mmHg at 68 °F (NTP, 1992)

>> Vapor pressure, Pa at 20 °C: (negligible)

LogP:

>> log Kow = 2.61

>> 2.34

Stability/Shelf Life:

>> Stable under recommended storage conditions.

Decomposition:

>> Hazardous decomposition products formed under fire conditions - Carbon oxides, nitrogen oxides (NOx), hydrogen chloride gas.

Corrosivity:

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

>> Atrazine technical and formulated products are noncorrosive to equipment and metal surfaces.

Ionization Efficiency:

The ratio of the number of ions formed to the number of electrons or photons used in an ionization process.

Ionization mode

>> Positive

logIE

>> 3.61

pH

>> 2.7

Instrument

>> Agilent XCT

Ion source

>> Electrospray ionization

Additive

>> formic acid (5.3nM)

Organic modifier

>> MeCN (80%)

Reference

>> DOI:10.1038/s41598-020-62573-z

Dissociation Constants:

>> pKa = 1.60, very weak base

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.

>> 150.74 Å² [M+H]+ [CCS Type: DT; Method: stepped-field]

10. Stability And Reactivity

>> Insoluble in water.

11. Toxicological Information

Toxicity Summary:

>> IDENTIFICATION AND USE: Atrazine is a colorless powder. It is used for pre- and post-emergence control of annual broad-leaved weeds and annual grasses. It is also used in combinations with many other herbicides. HUMAN STUDIES: Potential symptoms of overexposure are irritation of eyes and skin, dermatitis, skin sensitization, dyspnea, weakness, incoordination, salivation, hypothermia, and liver injury. Two studies from northern Italy showed elevated risks of ovarian tumors among women exposed to triazine herbicides including atrazine. Small excess risks for cancer at a number of sites were associated with exposure either to unspecified triazine herbicides or specifically to atrazine. There was a positive association between atrazine exposure in drinking water and preterm birth. Atrazine failed to induce clastogenic and aneugenic damage in cultured human lymphocytes with metabolic activation. However, atrazine was found genotoxic in single-cell gel electrophoresis assay by using human peripheral blood lymphocytes with and without metabolic activation. Atrazine also induced unscheduled DNA synthesis in human EUE line cells. ANIMAL STUDIES: Atrazine is minimally irritating to skin and mildly irritating to eyes of rabbits. A 50% formulation was shown to be weakly irritating to the skin but did produce strong eye irritation including edema of the eyelid and conjuctivae of guinea pigs, rabbits, and cats. Cattle and sheep were killed by two daily doses of 250 mg/kg atrazine. Acutely poisoned sheep and cattle exhibited muscular spasms, fasciculations, stiff gait and increased respiratory rates. Adrenal degeneration and congestion of lung, liver and kidneys were observed. Rats fed diets that contained an equivalent of 10 or 50 mg/kg for 6 months showed growth retardation and slight leukopenia along with alterations of selective organ weights. Administration of atrazine by oral gavage at 100-600 mg/kg bw per day to rats for seven or 14 days induced both nephrotoxicity and hepatotoxicity. Atrazine disrupted the regular 4-day estrous cycles in rats. Short- and long-term studies performed with rats have shown that the mammary tumors induced in rats given high doses of atrazine in the diet are likely to be the result of an accelerating effect on normal, age-related perturbations of the estrous cycle, with resultant increase in exposure to endogenous estrogen and prolactin. The lack of effect of atrazine on the incidence of mammary tumors and other evidence of proliferative activity in ovariectomized rats fed the highest dose tested (400 ppm) suggests a non-genotoxic mechanism of action associated with hormonal imbalance. Atrazine was found to adversely affect the immune system in mice. Subcutaneous injection of atrazine at 800 mg/kg/day on days 3, 6, and 9 of gestation resulted in the death and resorption of some or all of the pups in each litter of rats. Dosages as high as 200 mg/kg by this route did not affect the number of pups per litter nor weight at weaning. Dietary levels up to 1000 ppm (about 50 mg/kg/day) also were harmless. Rats acutely treated with atrazine (100 mg/kg, bw) showed a significant decrease in spontaneous Purkinje cell firing rate. Atrazine also decreased the cerebellar potentials evoked by electrical stimulation of the ipsilateral radial nerve, affecting mostly the response to climbing fiber input. Neurobehavioral development of female and male mice daily exposed from Gestational Day 14 until Postnatal Day 21 to 1 or 100 ug/kg bw atrazine was investigated. Changes in exploratory profile and in affiliative/investigative behavior were observed, revealing a feminization of behavioral profile in atrazine-exposed males. Alteration in learning performance at adulthood was also evident. Atrazine alters steroidogenesis in male rats resulting in elevated serum corticosterone, progesterone, and estrogens. Atrazine is activated by plant enzymes to produce a mutagenic metabolite for Schizosaccharomyces pombe (forward mutation) and Chinese hamster cells (forward mutation). Atrazine is positive in the host mediated assay (mouse, yeast injected intrasanguineously) and induced chromosome aberrations in bone marrow cells of mice after single dose of 1 g/kg and 2 g/kg, respectively. ECOTOXICITY STUDIES: Weakness, tremors, ataxia, and weight loss occurred in mallards 1 hr after oral treatment with atrazine and persisted up to 11 days. In pheasants, remission had occurred by 5 days after treatment. In adult male Japanese quail, significantly longer comet tails of DNA damage in leukocytes and isolated hepatocytes were recorded with 500 mg/kg bw atrazine oral treatment. Atrazine did not mimic the effects of either estradiol or tamoxifen in male quail. Thus, atrazine did not exhibit overt estrogenic or anti-estrogenic activity. Conversely, atrazine augmented the effects of testosterone and estradiol on testis regression. It is concluded that atrazine up to 1000 ppm in the diet may exert some effects on reproductive development in sexually maturing male birds. Both endocrine and physiological effects of short-term, acute exposure to atrazine in juvenile barramundi (Lates calcarifer) was conducted in a controlled laboratory experiment. Expression of hepatic vitellogenin was not affected, supporting the notion that atrazine does not have a direct estrogenic effect via mediation of estrogen receptors. Atrazine exposure had profound influence on the oxidative stress markers and detoxifying enzyme of the exposed zebrafish. Sheepshead minnow embryo-juvenile exposure to atrazine found that a mean measured atrazine concentration of 3.4 mg/L had no effect on hatching success of embryos or growth of juveniles, but significantly reduced juvenile survival. The decrease in amphibian length and weight at metamorphosis may indicate a reduction in fitness in wild populations of anurans exposed to atrazine at 200 to 2,000 ug/L. Atrazine was found nontoxic to bees. Exposure and accumulation of atrazine caused oxidative toxicity and antioxidant response in maize.

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

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

Chemical

>> Atrazine

USGS Parameter Code

>> 65065

MCL (Maximum Contaminant Levels)[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: 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

>> Atrazine

IARC Carcinogenic Classes

>> Group 3: Not classifiable as to its carcinogenicity to humans

IARC Monographs

>> Volume 53: (1991) Occupational Exposures in Insecticide Application, and Some Pesticides

>> Volume 73: (1999) Some Chemicals that Cause Tumours of the Kidney or Urinary Bladder in Rodents and Some Other Substances

Additional information

>> NB Overall evaluation downgraded to Group 3 with supporting evidence from other relevant data

>> 3, not classifiable as to its carcinogenicity to humans. (L135)

Exposure Routes:

>> The substance can be absorbed into the body by ingestion.

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

Eye Exposure

>> Redness. Pain.

>> irritation eyes, skin; dermatitis, sensitization skin; dyspnea (breathing difficulty), lassitude (weakness, exhaustion), incoordination, salivation; hypothermia; liver injury

Target Organs:

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

>> Body Weight, Cardiovascular (Heart and Blood Vessels), Developmental (effects during periods when organs are developing), Hepatic (Liver), Renal (Urinary System or Kidneys), Reproductive (Producing Children)

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.

>> Reproductive Toxin - A chemical that is toxic to the reproductive system, including defects in the progeny and injury to male or female reproductive function. Reproductive toxicity includes developmental effects. See Guidelines for

Reproductive Toxicity Risk Assessment.

>> ACGIH Carcinogen - Confirmed Animal.

Interactions:

>> ...Arsenic uptake in grapes treated with MSMA /monosodium salt of methanearsonic acid/ and atrazine to control johnsongrass /was studied/. Arsenic residues five times higher than controls (0.24-0.28 ug/g dry weight) in grapes treated with MSMA and atrazine were found. ...It is evident that atrazine ...facilitates uptake of arsenic by plant.

Antidote and Emergency Treatment:

>> Decontaminate skin promptly by washing with soap and water. Treat contamination of the eyes immediately by prolonged flushing with copious amounts of clean water. If dermal or ocular irritation persists, medical attention should be obtained without delay. /Other herbicides/

Human Toxicity Excerpts:

>> /SIGNS AND SYMPTOMS/ Potential symptoms of overexposure are irritation of eyes and skin; dermatitis, skin sensitization; dyspnea, weakness, incoordination, salivation; hypothermia; liver injury.

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ ... Atrazine administered to rats orally at a dose of 120 mg/kg caused an inhibition in the activity of glutathione-S-transferase and an increase in malondialdehyde formation in the liver, testis and epididymis. Superoxide dismutase decreased in the liver and testis but was increased in the epididymis. Furthermore, hepatic glutathione and lactate dehydrogenase activity increased while epididymal catalase, ascorbate content, hepatic aspartate aminotransferase and glutathione peroxidase activities in all the tissues decreased in the atrazine-treated animals. Hepatic, testicular and epididymal alanine aminotransferase activities were not affected by atrazine ($p>0.05$). Decreased epididymal and testicular sperm number, sperm motility, daily sperm production and increased number of dead and abnormal sperm were observed in atrazine-treated rats. Treatment of rats orally with selenium at a dose of 0.25 mg/kg did not prevent atrazine-induced changes in sperm characteristics and had no protective effects against atrazine-induced biochemical alterations in the testis and epididymis except testicular lactate dehydrogenase. Catalase activity and ascorbate contents were unchanged in these groups of animals. However, selenium effectively protected against atrazine-induced changes in biochemical indices in the liver. In rats treated with selenium alone, glutathione peroxidase in all the tissues, hepatic glutathione and superoxide dismutase, testicular lactate dehydrogenase activity and ascorbate content increased, while hepatic catalase activities decreased ($p<0.05$). ...

Non-Human Toxicity Values:

>> LC50 Rat inhalation >5800 mg/cu m 4hr

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.

>> ... The purpose of these range-finding studies was to determine the doses of atrazine to be used in the protocol to determine the potential effects of atrazine on the immune system. The range-finding studies were conducted in female B6C3F1 mice. The animals were administered atrazine daily for 14 days by oral gavage. ... In completing the range-finding protocol, three studies were conducted. In the first study, five dose levels of atrazine were used. The doses administered in the first study were 25, 50, 100, 250 and 500 mg/kg. In the second and third studies, doses of 25, 250 and 500 mg/kg were used. The results of the atrazine range-finding studies demonstrate that, in the female B6C3F1 mouse, exposure to atrazine, administered by oral gavage for 14 days at doses of 500 mg/kg or less, was not overly toxic in that all of the animals survived the exposure period. However, exposure to doses of atrazine of 250 mg/kg or greater produced marked excitement in the animals. Decreases in body weight and body weight gain were observed at the 500 mg/kg dose level. Furthermore, significant decreases in spleen cell number, spleen weight and thymus weight were observed at doses of 250 and 500 mg/kg. Additionally, animals treated with the 500 mg/kg dose of atrazine had significant decreases in virtually all of the erythroid elements of the hematological parameters. Effects on these toxicological parameters suggested that a near maximum tolerated dose had been reached. No effect was observed in the plaque-forming cell assay on the IgM response to the T-dependent antigen sheep erythrocytes at any of the atrazine dose levels tested. However, an increase in the mixed leukocyte response was observed in animals treated with the 500 mg/kg dose of atrazine. Based on the toxicological and immunological results of these range-finding studies, doses of 25, 250 and 500 mg/kg will be used in the atrazine protocol study.

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.

>> Atrazine (CAS# 1912-24-9) was evaluated for repeated-dose toxicity in juvenile Tif: RAIf (SPF) rats (15/sex/group) at dose levels of 0, 25, 100, or 400 mg/kg body weight, administered by gavage, for 14 consecutive days. Five animals/sex/group were selected for a 14 day recovery period to determine the reversibility of any effects. No treatment-related signs or symptoms were noted during the course of the study. There were 2 moralities from group 4 (400 mg/kg): a female was found dead on day 2 of treatment, and a male was found dead on day 4. Body weight gain was significantly reduced in males and females from groups 3 and 4 (100 and 400 mg/kg). After the 14 day recovery period, males of both groups and females from group 3 still showed depressed mean body weights, but were not significantly different from controls. Females in the high dose group had significantly reduced mean body weights at the end of 14 days recovery period. Males exhibited a dose-dependent decrease in thymus and spleen weights, while males in group 4 (400 mg/kg), had reduced brain, liver, adrenal, and testis weights compared to all other groups. At the end of the recovery period, there were no significant differences in organ weights between treated males and controls. Group 4 (400 mg/kg) females showed marked dose-dependent decreases in the weights of brain, liver, thymus, ovary and spleen, and a moderate decrease in adrenal weight, compared to other treatment groups. At the end of the recovery period, mean ovary and adrenal weights were still moderately reduced compared to controls. Gross examination at necropsy revealed no treatment-related effects. All macroscopic changes and lesions were considered incidental to treatment. Microscopic examination revealed slight to moderate fatty atrophy in the bone marrow of some (6/10) males and (6/10) females from group 4 (400 mg/kg). The ovaries of 1/10 group 2 (25 mg/kg), 3/10 group 3 (100 mg/kg), and all of group 4 (400 mg/kg) females were seen to contain mature tertiary follicles, but no corpora lutea. Extramedullary hematopoiesis of the spleen was suppressed slightly to moderately in group 4 (400 mg/kg) males and females, compared to other treatment groups. Recovery group males and females (400 mg/kg group) showed a moderate to marked increase in extramedullary hematopoiesis in the spleen compared to controls. No other histological changes were seen in any treatment groups that was considered an effect of treatment.

12. Ecological Information

Resident Soil (mg/kg)

>> 2.40e+00

Industrial Soil (mg/kg)

>> 1.00e+01

Tapwater (ug/L)

>> 3.00e-01

MCL (ug/L)

>> 3.00e+00

Risk-based SSL (mg/kg)

>> 2.00e-04

MCL-based SSL (mg/kg)

>> 1.90e-03

Oral Slope Factor (mg/kg-day)-1

>> 2.30e-01

Chronic Oral Reference Dose (mg/kg-day)

>> 3.00e-03

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 toxic to aquatic organisms. 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: The concentration of atrazine in the sediment of the German Wadden Sea ranged from not detected to 50 ng/kg(1). Atrazine concentrations in sediments collected from the Danube and Traun Rivers in Austria were 0.44-0.64 ug/kg(2). The concentration of atrazine was determined in sediments of 5 salt marsh sites on the Essex, UK coast at <0.1-43.3 ng/g(3). Atrazine was detected 11 times in a monitoring study of sediment samples collected from 27 stations in south Florida canals between Nov 1991 and June 1995, the highest concentration was 50 ug/kg(4). The concentration of atrazine in sediments collected from the Ebro delta, Spain, the Thermaikos Gulf, Greece, the Amvrakikos Gulf, Greece and the Nile delta, Egypt were reported as 0.015-0.070, <0.02-4.9, 0.8-2.4, and <0.001 ug/g dry weight, respectively(5).

Fish/Seafood Concentrations:

Concentrations of this compound in fish or seafood.

>> Atrazine was analyzed for but not detected in carp (Cyprinus carpio) and white bass (Morone chrysops) collected April, July and August 1985 from Tuttle Creek Lake, Kansas(1). Atrazine was analyzed for but not detected in carp (Cyprinus carpio) from the Llobregat River near Barcelona, Spain(2). Atrazine was not detected (detection limit not reported) in common carp (Cyprinus carpio), largemouth bass (Micropterus salmoides), smallmouth buffalo (Ictiobus bubalus), spotted sucker (Minytrema melanops), channel catfish (Ictalurus punctatus), freshwater drum (Aplodinotus grunniens), bowfin (Amia calva), bluegill (Lepomis machrochirus) and yellow bullhead catfish (Ameriurus natalis) collected in 2003 from lakes and one creek in the Sparta National Guard Armory, IL(3).

Average Daily Intake:

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

>> The average daily intake of atrazine in the diet of Belgians from a study conducted between 1991 and 1993 was determined to be 0.0007 mg/kg/day(1). Average daily intake of atrazine in Minnesota Children's Pesticide Exposure Survey (MNCPES) could not be calculated because measurements were below detection or quantitation limits in air, food, beverage, drinking water, surface dust, and soil(2).

13. Disposal Considerations

Spillage Disposal

>> Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. 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.

>> Product: Offer surplus and non-recyclable solutions to a licensed disposal company; Contaminated packaging: Dispose of as unused product.

>> The following wastewater treatment technologies have been investigated for atrazine: Resin adsorption, reverse osmosis.

>> 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.

>> For more Disposal Methods (Complete) data for Atrazine (6 total), please visit the HSDB record page.

14. Transport Information

DOT

Atrazine

IATA

Atrazine

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15. Regulatory Information

Federal Drinking Water Standards:

Federal drinking water standards (e.g. maximum containment level (MCL)) for this chemical. These standards are legally enforceable.

>> Maximum contaminant levels (MCL) for synthetic organic contaminants apply to community water systems and non-transient, non-community water systems: Contaminant: atrazine, MCL: 0.003 mg/L.

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.

>> Maximum contaminant level goal (MCLG) for organic contaminants: Atrazine, MCLG 0.003 mg/L.

State Drinking Water Standards:

State drinking water standards (e.g. maximum containment level (MCL)) for this chemical. These standards are legally enforceable.

>> (CA) CALIFORNIA 1 ug/L

TSCA Requirements:

This section provides information on requirements concerning this chemical under the Toxic Substances Control Act (TSCA) of 1976. TSCA provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.

>> Section 8(a) of TSCA requires manufacturers of this chemical substance to report preliminary assessment information concerned with production, exposure, and use to EPA as cited in the preamble in 51 FR 41329. Effective date 9/29/2006; Reporting date: 11/28/2006.

Regulatory Information

REACH Registered Substance

>> Status: Active Update: 07-04-2011 https://echa.europa.eu/registration-dossier/-/registered-dossier/10766

New Zealand EPA Inventory of Chemical Status

>> Atrazine: HSNO Approval: HSR002902 Approved with controls

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.

Other Safety Information

Chemical Assessment

>> IMAP assessments - 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-: Environment tier I assessment

>> IMAP assessments - 1,3,5-Triazine-2,4-diamine, 6-chloro-N-ethyl-N'-(1-methylethyl)-: 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."