SAFETY DATA SHEET

1. Material Identification

Product Name: 2,4-DinitrotolueneCatalog Number: io-2275CAS Number: 121-14-2Identified uses: Laboratory chemicals, manufacture of chemical compoundsCompany: lonz

>> 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+H331 (14.4%): Toxic if swallowed, in contact with skin or if inhaled [Danger Acute toxicity, oral; acute toxicity, dermal; acute toxicity, inhalation]
- >> H301+H311 (33.1%): 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 (98.5%): Toxic in contact with skin [Danger Acute toxicity, dermal]
- >> H330 (34.6%): Fatal if inhaled [Danger Acute toxicity, inhalation]
- >> H331 (65.4%): Toxic if inhaled [Danger Acute toxicity, inhalation]
- >> H341 (99.6%): Suspected of causing genetic defects [Warning Germ cell mutagenicity]
- >> H350 (99.2%): May cause cancer [Danger Carcinogenicity]
- >> H361 (66.9%): Suspected of damaging fertility or the unborn child [Warning Reproductive toxicity]
- >> H361f (33.1%): Suspected of damaging fertility [Warning Reproductive toxicity]
- >> H373 (99.6%): May causes damage to organs through prolonged or repeated exposure [Warning Specific target organ toxicity, repeated exposure]
- >> H400 (98.5%): Very toxic to aquatic life [Warning Hazardous to the aquatic environment, acute hazard]
- >> H410 (98.5%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P203, P260, P261, P262, P264, P270, P271, P273, P280, P284, P301+P316, P302+P352, P304+P340, P316, P318, P319, P320, P321, P330, P361+P364, P391, P403+P233, P405, and P501

NFPA 704 Diamond



NFPA Health Rating

>> 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

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

>> 3 – Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction but that require a strong initiating source or must be heated under confinement before initiation.

Health Hazards:

- >> Ingestion or overexposure to vapors from hot liquid can cause loss of color, nausea, headache, dizziness, drowsiness, collapse. Hot liquid can burn eyes and skin. Prolonged skin contact with solid can give same symptoms as after inhalation or ingestion. (USCG, 1999)
- >> Special Hazards of Combustion Products: Nitrogen oxides and dense black smoke are produced in a fire.
- >> Behavior in Fire: Decomposition is self- sustaining at 280 °C. Containers may explode in a fire. (USCG, 1999)
- >> Combustible. Gives off irritating or toxic fumes (or gases) in a fire. Finely dispersed particles form explosive mixtures in air. Risk of explosion on contact with many substances.

3. Composition/Information On Ingredients

Chemical name: 2,4-DinitrotolueneCAS Number: 121-14-2Molecular Formula: C7H6N2O4Molecular Weight: 182.13O0 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: 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.
- >> OTHER: Since this chemical is a known or suspected carcinogen you should contact a physician for advice regarding the possible long term health effects and potential recommendation for medical monitoring. Recommendations from the

physician will depend upon the specific compound, its chemical, physical and toxicity properties, the exposure level, length of exposure, and the route of exposure. (NTP, 1992)

First Aid Measures

Inhalation First Aid

>> Fresh air, rest. Artificial respiration may be needed. 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. Give one or two glasses of water to drink. Refer for medical attention .

5. Fire Fighting Measures

- >> DECOMP IS SELF-SUSTAINING @ 280 °C.
- >> 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. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

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.

>> Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. 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:

>> Fireproof. Separated from strong bases, food and feedstuffs, oxidants and strong reducing agents. Well closed. Keep in a well-ventilated room. Store in an area without drain or sewer access.

Storage Conditions:

>> PRECAUTIONS FOR "CARCINOGENS": Storage site should be as close as practical to lab in which carcinogens are to be used, so that only small quantities required for ... expt need to be carried. Carcinogens should be kept in only one section of cupboard, an explosion-proof refrigerator or freezer (depending on chemicophysical properties ...) that bears appropriate label. An inventory ... should be kept, showing quantity of carcinogen & date it was acquired ... Facilities for dispensing ... should be contiguous to storage area. /Chemical Carcinogens/

8. Exposure Control/ Personal Protection

>> 8 hr Time Weighted Avg (TWA): 0.2 mg/cu m, skin. /Dinitrotoluene/

Inhalation Risk:

>> A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

Effects of Short Term Exposure:

>> The substance may cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed. Medical observation is indicated.

Effects of Long Term Exposure:

>> The substance may have effects on the blood. This may result in the formation of methaemoglobin. This substance is possibly carcinogenic to humans.

Fire Prevention

>> NO open flames. Closed system, dust explosion-proof electrical equipment and lighting. Prevent deposition of dust.

Exposure Prevention

>> PREVENT DISPERSION OF DUST! STRICT HYGIENE!

Inhalation Prevention

>> Use local exhaust or breathing protection.

Skin Prevention

>> Protective gloves. Protective clothing.

Eye Prevention

>> Wear safety goggles.

Ingestion Prevention

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

9. Physical And Chemical Properties

Molecular Weight:

>> 182.13

Exact Mass:

>> 182.03275668

Physical Description:

- >> Heated yellow liquid. Solidifies if allowed to cool. Insoluble in water and more dense than water. Toxic by skin absorption, inhalation and ingestion. Easily absorbed through the skin. Produces toxic oxides of nitrogen during combustion. Used to make dyes and other chemicals.
- >> YELLOW CRYSTALS WITH CHARACTERISTIC ODOUR.

Color/Form:

>> Yellow needles or monoclinic prisms

Odor:

>> SLIGHT ODOR

Boiling Point:

>> 572 °F at 760 mmHg (Decomposes) (NTP, 1992)

Melting Point:

>> 153 to 158 °F (NTP, 1992)

>> 71 °C

Flash Point:

>> 405 °F (NTP, 1992)

>> 169 °C c.c.

Solubility:

>> less than 0.1 mg/mL at 63 °F (NTP, 1992)

>> Solubility in water: very poor

Density:

>> 1.379 at 68 °F (USCG, 1999) - Denser than water; will sink

>> 1.52 g/cm³

Vapor Density:

>> 6.27 (NTP, 1992) - Heavier than air; will sink (Relative to Air)

>> Relative vapor density (air = 1): 6.28

Vapor Pressure:

>> 1 mmHg at 68 °F (NTP, 1992)

>> Vapor pressure, Pa at 25 °C: 0.02

LogP:

>> log Kow = 1.98

>> 1.98

Decomposition:

>> Spontaneously decomposes above 536 °F (280 °C) and will cause an explosive if confined. ... Air or oxygen is not required for decomposition or oxidation.

>> >250 °C

Viscosity:

>> 0.0034553 Pa.s at 342.65 deg K

Corrosivity:

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

Heat of Combustion:

>> 3.568 MJ/Mol

Heat of Vaporization:

>> 94.2 kJ/mol

Surface Tension:

>> 0.050041 N/m at 342.65 deg K

Refractive Index:

>> Index of refraction: 1.442

10. Stability And Reactivity

- >> Insoluble in water.
- >> Explosive
- >> Strong Oxidizing Agent

11. Toxicological Information

Toxicity Summary:

>> 2,4-DNT may cause conversion of oxyhemoglobin to methemoglobin via oxidation of iron(II) to iron(III) by its metabolites. High levels of methemoglobin are removed by catabolism, leading to the development of anemia. Some metabolites of 2,4-DNT are also transported back from the bile to the liver, where the amine group is N-hydroxylated by cytochrome P-450 to form an unstable sulfate conjugate. The sulfate conjugate is degraded into carbonium or nitrenium ions. These ions covalently bind to hepatic macromolecules (DNA, RNA), leading to mutations and subsequently liver tumors. They also bind to DNA of the lung and the intestine. (L276, T45, A171, L280)

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

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

Chemical

>> 2,4-Dinitrotoluene

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

>> 10

Cancer HBSL [µg/L]

>> 0.04-4

Benchmark Remarks

>> Data are for 2,4/2,6-Dinitrotoluene mixture

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).

>> Evaluation: There is inadequate evidence in humans for the carcinogenicity of 2,4-dinitrotoluene. ... There is sufficient evidence in experimental animals for the carcinogenicity of 2,4-dinitrotoluene. ... Overall evaluation: 2,4-Dinitrotoluene ... /is/ possibly carcinogenic to humans (Group 2B).

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

>> 2,4-Dinitrotoluene

IARC Carcinogenic Classes

>> Group 2B: Possibly carcinogenic to humans

IARC Monographs

>> Volume 65: (1996) Printing Processes and Printing Inks, Carbon Black and Some Nitro Compounds

>> 2B, possibly carcinogenic to humans. (L135)

Health Effects:

>> 2,4-Dinitrotoluene poisoning may cause methemoglobinemia, anemia, leukopenia, and liver necrosis. Liver injury may be more common than cyanosis. (T48, L276)

Exposure Routes:

- >> The substance can be absorbed into the body by inhalation, through the skin and by ingestion.
- >> Dermal (T44); eye contact (T44); inhalation (T44); oral (T44)

Inhalation Exposure

>> Blue lips, fingernails and skin. Headache. Dizziness. Nausea. Confusion. Convulsions. Unconsciousness.

Skin Exposure

>> MAY BE ABSORBED! See Inhalation.

Ingestion Exposure

- >> See Inhalation.
- >> Symptoms of 2,4-dinitrotoluene poisoning include blue lips or finger nails, blue skin, vertigo, fatigue, dizziness, weakness, nausea, vomiting, dyspnea, arthralgia, insomnia, tremor, paralysis, unconsciousness, chest pain, shortness of breath, palpitation, anorexia, and loss of weight. (T45, L272)

Target Organs:

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

- >> Hematologic
- >> Hepatic
- >> Nervous

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.
- >> Methemoglobinemia The presence of increased methemoglobin in the blood; the compound is classified as secondary toxic effect
- >> Skin Sensitizer An agent that can induce an allergic reaction in the skin.
- >> IARC Carcinogen Class 3: Chemicals are not classifiable by the International Agency for Research on Cancer.
- >> ACGIH Carcinogen Confirmed Animal.

Toxicity Data:

>> LD50: 268 mg/kg (Oral, Rat) (T14) LD50: 790 mg/kg (Oral, Mouse) (T14) LD50: 1300 mg/kg (Oral, Guinea pig) (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

>> Acute Oral: 0.05 mg/kg/day (L134) Chronic Oral: 0.002 mg/kg/day (L134)

Treatment:

Treatment when exposed to toxin

>> Following oral exposure, immediately dilute with 4 to 8 ounces (120 to 240 mL) of water or milk (not to exceed 4 ounces/120 mL in a child). Administer charcoal as a slurry. Gastric lavage and oxygen administration is recommended. Following inhalation exposure, move patient to fresh air. Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist ventilation as required. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Following eyes exposure, irrigate exposed eyes with copious amounts of room temperature water for at least 15 minutes. Following dermal exposure, remove contaminated clothing and wash exposed area thoroughly with soap and water, and administer a benzodiazepine IV in case of irritation. In all those cases, a physician may need to examine the area if irritation or pain persists. (T36)

Interactions:

>> Ingestion of alcohol has a synergistic effect on the toxicity of 2,4-DNT.

Antidote and Emergency Treatment:

>> In case of ingestion, induction of emesis is not recommended because of the potential for central nervous system depression. Gastric lavage and administration of activated charcoal may be considered soon after ingestion, provided airways are protected. /Dinitrotoluene/

Human Toxicity Excerpts:

>> /SIGNS AND SYMPTOMS/ The following symptoms have been reported as a result of varying doses of 2,4-DNT: vertigo, fatigue, dizziness, weakness, nausea, vomiting, dyspnea, arthralgia, insomnia, tremor, paralysis, unconsciousness, chest pain, shortness of breath, palpitation, anorexia, and loss of weight.

Non-Human Toxicity Excerpts:

>>/LABORATORY ANIMALS: Acute Exposure/ 2,6-Dinitrotoluene (2,6-DNT) is potent hepatocarcinogen in Fischer-344 rats, whereas 2,4-dinitrotoluene is believed to be noncarcinogenic. Neither 2,6-DNT nor 2,4-dinitrotoluene is carcinogenic in the strain A mouse lung bioassay. The ip administration of 2,6-DNT or 2,4-dinitrotoluene (150 mg/kg each) to Fischer-344 rats resulted, after 24 hr, in covalent binding to DNA of the liver (131.1 to 259.9 pmol 2,6-DNT/mg DNA; 215.4 to 226.8 pmol 2,4-dinitrotoluene/mg DNA), and lower binding to DNA of the lung and the intestine (14.9 to 22.7 pmol 2,6-DNT/mg DNA; 45.0 to 75.0 pmol 2,6-DNT/mg DNA). Similar treatment of A/J mice resulted in lower binding in the liver (25.9 to 31.9 pmol 2,6-DNT/mg DNA; 42.6 to 58.9 pmol 2,4-dinitrotoluene/mg DNA), no detectable binding of 2,6-DNT in extrahepatic tissues and low amounts of binding of 2,4-dinitrotoluene to lung and intestinal DNA (9.7 to 39.0 pmol/mg DNA). Covalent binding of the noncarcinogenic isomeric 2,4-dinitrotoluene to DNA of various tissues of both species suggests that factors other than binding to DNA determine the ultimate carcinogenic effect of these cmpd.

Non-Human Toxicity Values:

>> LD50 Mouse ip 500 mg/kg bw

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 practical-grade 2,4-dinitrotoluene for possible carcinogenicity was conducted using Fischer 344 rats and B6C3F1 mice. 2,4-Dinitrotoluene was administered in the feed /for 78 weeks/ at either of two concentrations, to groups of 50 male and 50 female animals of each species. For male and female rats, the high and low time-weighted average dietary concentrations of 2,4-dinitrotoluene were 0.02 and 0.008 percent, respectively. For male and female mice, the high and low time-weighted average concentrations were 0.04 and 0.008 percent, respectively. In the male rats, a significantly increased incidence of fibroma of the skin and subcutaneous tissue occurred in both the high and the low dose groups when compared to their respective controls. A statistically significant incidence of fibroadenoma of the mammary gland occurred in the high dose female rats. Among the mice a variety of tumors was observed but none were considered to be associated with the dietary administration of 2,4-dinitrotoluene.

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.

>> 2,4-Dinitrotoluene (CAS # 121-14-2) was evaluated for chronic toxicity and carcinogenicity in CD rats (38/sex/group) exposed to concentrations of 0, 15 (0.0015%), 100 (0.1%), and 700 ppm (0.7%) in the diet for up to 2 years. Dietary inclusion of 2,4-DNT at 700 ppm (0.7%) was associated with an average 2,4-DNT uptake of 34 mg/kg/day in males and 45 mg/kg/day in females, and with clinical toxicity including decreased weight gain and increased mortality (100% by Month 23). Death was attributed primarily to pituitary tumors, ulcerated subcutaneous tumors, and inanition. Behavior disturbances and motor dysfunction relative to dose were pathognostic and often attributable to pituitary dysfunction, including hyperexcitability, one-sided ataxia, and/or paralysis of the hindquarters or entire body. Histopathological assessment also revealed hepatocellular carcinoma and increased incidence of common background tumors in this strain of rat, with fibromas in the males and mammary fibroadenomas in the females. Pituitary chromophobe adenomas in both males and females were significantly decreased. An apparent hemolytic anemia, as evidenced by increased reticulocyte counts, also accompanied treatment, although evidence of methemoglobin, Heintz bodies, and lesions of the erythropoietic system was inconsistent. In males, 2,4-DNT also induced atrophy of seminiferous tubules with near complete lack of spermatogenesis in some cases. Mid-level animals (average intake 3.9 mg/kg/day males and 5.1 mg/kg/day females) exhibited similar if milder responses in susceptible individuals, while rats of a low level exposure were apparently free of toxic effects.

Populations at Special Risk:

>> Those individuals with blood or liver disorders may be at increased risk from exposure to 2,4-DNT.

12. Ecological Information
Resident Soil (mg/kg)
>> 1.70e+00
Industrial Soil (mg/kg)
>> 7.40e+00
Resident Air (ug/m3)
>> 3.20e-02
Industrial Air (ug/m3)
>> 1.40e-01
Tapwater (ug/L)
>> 2.40e-01
MCL (ug/L)
>> 5.00e+00
Risk-based SSL (mg/kg)
>> 3.20e-04
Oral Slope Factor (mg/kg-day)-1
>> 3.10e-01
Inhalation Unit Risk (ug/m3)-1
>> 8.9e-05
Chronic Oral Reference Dose (mg/kg-day)
>> 2.00e-03
Volatile
>> Volatile
Mutagen
>> Mutagen
Fraction of Contaminant Absorbed in Gastrointestinal Tract
>>1
Fraction of Contaminant Absorbed Dermally from Soil
>> 0.10199999999999999
ICSC Environmental Data:

>> The substance is harmful to aquatic organisms.

Sediment/Soil Concentrations:

Concentrations of this compound in sediment/soil.

>> The concentration of 2,4-dinitrotoluene in the soil in a waste lagoon abandoned 20 years earlier on the lowa Army ammunitions plant was 3.0 mg/kg(1). The concentration of 2,4-dinitrotoluene in soil samples collected (at a 0-20 cm depth) from an abandoned World War I munitions production facility in Belgium ranged from <0.10 to 1.71 mg/kg(2). 2,4-Dinitrotoluene was detected in 0.6% of 519 streambed sediment samples collected from 20 major river basins across the US between 1992-1995 at levels of <50 to 170 ug/kg dry wt(3).

Animal Concentrations:

Concentrations of this compound in animals.

>> 2,4-Dinitrotoluene concentrations of <5 to 502.7 ug/kg dry wt were detected in the birds eggs collected from the Lake Baikal region (Selenga River estuary, Russia)(1).[Table#2870]

13. Disposal Considerations

Spillage Disposal

>> Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. 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: 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.
- >> Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste number U105 and D030, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.[
- >> A potential candidate for rotary kiln incineration at a temperature range of 820 to 1600 °C and residence times of seconds for liquids and gases, and hours for solids. A potential candidate for fluidized bed incineration at a temperature range of 450 to 980 °C and residence times of seconds for liquids and gases, and longer for solids.
- >> 1) BY MAKING PACKAGES OF DINITROTOLUENE IN PAPER OR OTHER FLAMMABLE MATERIAL & BURNING IN SUITABLE COMBUSTION CHAMBER WHICH ALLOWS BURNING IN UNCONFINED CONDITION & IS EQUIPPED WITH APPROPRIATE EFFLUENT GAS CLEANING DEVICE. 2) BY DISSOLVING IN FUEL OIL & ATOMIZING IN SUITABLE COMBUSTION CHAMBER EQUIPPED WITH APPROPRIATE EFFLUENT GAS CLEANING DEVICE. /DINITROTOLUENE/
- >> For more Disposal Methods (Complete) data for 2,4-DINITROTOLUENE (13 total), please visit the HSDB record page.

14. Transport Information DOT 2,4-Dinitrotoluene 6.1 UN Pack Group: II Reportable Quantity of 10 lb or 4 IATA 2,4-Dinitrotoluene 6.1, UN Pack Group: II

15. Regulatory Information

Clean Water Act Requirements:

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

>> 2,4-Dinitrotoluene 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.

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: 3-11-94; Reporting date: 5-10-94.

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: Benzene, 1-methyl-2,4-dinitro-

The Australian Inventory of Industrial Chemicals

>> Chemical: C.I. Sulfur Brown 8

California Safe Cosmetics Program (CSCP) Reportable Ingredient

- >> Hazard Traits Carcinogenicity; Hematotoxicity; Hepatotoxicity and Digestive System Toxicity; Nephrotoxicity and Other Toxicity to the Urinary System; Neurotoxicity; Reproductive Toxicity
- >> Authoritative List CA TACs; CWA 303(c); CWA 303(d); EC Annex VI CMRs Cat. 1B; IARC Carcinogens 2A; IRIS Neurotoxicants; Prop 65
- >> Report regardless of intended function of ingredient in the product

REACH Substances of Very High Concern (SVHC)

- >> Substance: 2,4-dinitrotoluene
- >> EC: 204-450-0
- >> Date of inclusion: >13-Jan-2010
- >> Reason for inclusion: Carcinogenic (Article 57a)

New Zealand EPA Inventory of Chemical Status

>> 2,4-Dinitrotoluene: Does not have an individual approval but may be used as a component in a product covered by a group standard. It is not approved for use as a chemical in its own right.

16. Other Information

Toxic Combustion Products:

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

>> Comubstion by-products include oxides of nitrogen.

Other Safety Information

Chemical Assessment

>> IMAP assessments - Benzene, 1-methyl-2,4-dinitro-: Human health tier II 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."