

DATE: 08/14/93

ACCT: 888235-01

INDEX: N/A

CAT NO: 02611500

PO NBR: N/A

DIPHENYLAMINE
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MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
 CHEMICAL DIVISION
 1 REAGENT LANE
 FAIR LAWN NJ 07410
 (201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
 CHEMTREC ASSISTANCE: (800) 424-9300

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **DIPHENYLAMINE**
 CAS-NUMBER 122-39-4

TRADE NAMES/SYNONYMS:
 N-DIPHENYLANILINE; ANILINO BENZENE; PHENYLANILINE; BENZENAMINE, N-PHENYL-;
 N,N-DIPHENYLAMINE; N-PHENYLBENZAMINE; (PHENYLAMINO)BENZENE; DPA; O2611;
 C12H11N; ACC08100

CHEMICAL FAMILY:
 AMINE, AROMATIC

MOLECULAR FORMULA: (C6-H5)-N-H

MOLECULAR WEIGHT: 169.23

CERCLA RATINGS (SCALE 0-3): HEALTH=2 FIRE=1 REACTIVITY=0 PERSISTENCE=2
 NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=1 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: DIPHENYLAMINE PERCENT: 100.0
 CAS# 122-39-4

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
 DIPHENYLAMINE:
 10 MG/M3 OSHA TWA
 10 MG/M3 ACGIH TWA
 10 MG/M3 NIOSH RECOMMENDED TWA

OSHA REVOKED THE FINAL RULE LIMITS OF JANUARY 19, 1989 IN RESPONSE TO THE 11TH CIRCUIT COURT OF APPEALS DECISION (AFL-CIO V. OSHA) EFFECTIVE JUNE 30, 1993. SEE 29 CFR 1910.1000 (58 FR 35338)

PHYSICAL DATA

DESCRIPTION: COLORLESS TO GRAYISH, MONOCLINIC LEAFLETS WITH A FLORAL ODOR.

BOILING POINT: 576 F (302 C) MELTING POINT: 129-131 F (54-55 C)

SPECIFIC GRAVITY: 1.160 VAPOR PRESSURE: 1 MM @ 108 C

SOLUBILITY IN WATER: INSOLUBLE ODOR THRESHOLD: 0.05 PPM

VAPOR DENSITY: 5.82

SOLVENT SOLUBILITY: SOLUBLE IN ALCOHOL, ETHER, ACETONE, BENZENE, CARBON DISULFIDE, GLACIAL ACETIC ACID, ETHYL ACETATE, CARBON TETRACHLORIDE, PYRIDINE.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
 SLIGHT FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FLASH POINT: 307 F (153 C) (CC) AUTOIGNITION TEMP.: 1173 F (634 C)

FIREFIGHTING MEDIA:
 DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
 (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
 (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:

DATE: 08/14/93

ACCT: 888235-01

INDEX: N/A

CAT NO: 02611500

PO NBR: N/A

MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT SCATTER SPILLED MATERIAL WITH HIGH-PRESSURE WATER STREAMS. DIKE FIRE-CONTROL WATER FOR LATER DISPOSAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 31).

USE AGENTS SUITABLE FOR TYPE OF SURROUNDING FIRE. AVOID BREATHING HAZARDOUS VAPORS, KEEP UPWIND.

WATER OR FOAM MAY CAUSE FROTHING (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991)

TOXICITY

DIPHENYLAMINE:
 TOXICITY DATA: 2000 MG/KG ORAL-RAT LD50 (HAZARDOUS CHEMICAL DATA BOOK);
 3000 MG/KG ORAL-RAT LDLO; 3200 MG/KG ORAL-MAMMAL LD50; 300 ORAL-GUINEA PIG
 LD50; REPRODUCTIVE EFFECTS DATA (RTECS).
 CARCINOGEN STATUS: NONE.
 LOCAL EFFECTS: IRRITANT- INHALATION, SKIN, EYE.
 ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION.
 TARGET EFFECTS: POISONING MAY AFFECT THE BLADDER, LIVER, KIDNEYS, HEART,
 AND SPLEEN.
 ADDITIONAL DATA: TRANSIENT METHEMOGLOBINEMIA HAS BEEN INDUCED IN CATS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
 DIPHENYLAMINE:
 IRRITANT.
 ACUTE EXPOSURE- EXPOSURE TO DUST MAY CAUSE IRRITATION OF THE RESPIRATORY TRACT AND SHALLOW RESPIRATION. SYSTEMIC EFFECTS MAY OCCUR AS DESCRIBED IN ACUTE INGESTION.
 CHRONIC EXPOSURE- INDUSTRIAL POISONING RESULTED IN BLADDER SYMPTOMS, TACHYCARDIA, AND HYPERTENSION. IN ADDITION, CHRONIC EXPOSURE MAY CAUSE WEIGHT LOSS, ANEMIA, WEAKNESS, IRRITABILITY, AND DAMAGE TO THE NERVOUS SYSTEM AND BONE MARROW. CHANGES IN THE LIVER, SPLEEN, AND KIDNEYS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
 DIPHENYLAMINE:
 IRRITANT.
 ACUTE EXPOSURE- MAY CAUSE IRRITATION WITH ECZEMA. MAY BE ABSORBED THROUGH THE SKIN AND RESULT IN SYSTEMIC TOXICITY AS DETAILED IN ACUTE INGESTION.
 CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE TO IRRITANTS MAY CAUSE DERMATITIS. SYSTEMIC EFFECTS MAY OCCUR AS DESCRIBED IN CHRONIC INHALATION.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
 DIPHENYLAMINE:
 IRRITANT.
 ACUTE EXPOSURE- CONTACT WITH DUST MAY PRODUCE IRRITATION AND POSSIBLY CORNEAL DAMAGE.
 CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE CONJUNCTIVITIS AND POSSIBLY CORNEAL DAMAGE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
 DIPHENYLAMINE:
 ACUTE EXPOSURE- MAY CAUSE NAUSEA, VOMITING, SHALLOW RESPIRATION, DIZZINESS, HEADACHE, TACHYCARDIA, HYPERTENSION, BLADDER SYMPTOMS, AND CENTRAL NERVOUS SYSTEM DEPRESSION. ORAL ADMINISTRATION TO ANIMALS RESULTED IN PERSISTENT ANOREXIA, HYPOTHERMIA, DIARRHEA, EMACIATION, GENERAL DEBILITY, PRESUMABLY FROM PROTRACTED GASTROENTERITIS, AND RENAL CHANGES. DEATHS FROM A SINGLE LETHAL DOSE WERE DELAYED TWO TO THREE WEEKS.
 CHRONIC EXPOSURE- REPEATED INGESTION MAY CAUSE EFFECTS AS DESCRIBED IN ACUTE INGESTION. ANEMIA AND EFFECTS ON THE LIVER, KIDNEYS, HEART, AND SPLEEN HAVE BEEN REPORTED IN ANIMALS. ADMINISTRATION TO PREGNANT RATS PRODUCED A POLYCYSTIC KIDNEY IN OFFSPRING. THERE IS EVIDENCE THAT PURIFIED DIPHENYLAMINE IS NOT THE NEPHROTOXIC COMPONENT OF COMMERCIAL DIPHENYLAMINE, BUT RATHER THAT A CONTAMINANT IS THE CHEMICAL RESPONSIBLE FOR THESE EFFECTS. AN INCREASE IN HEINZ BODY FORMATION HAS RESULTED FROM FEEDING RATS AND MICE HIGH DOSES OF DIPHENYLAMINE.

FIRST AID- IF THE PERSON IS CONSCIOUS AND NOT CONVULSING, INDUCE EMESIS BY GIVING SYRUP OF IPECAC FOLLOWED BY WATER. (IF VOMITING OCCURS KEEP THE HEAD BELOW THE HIPS TO PREVENT ASPIRATION). REPEAT IN 20 MINUTES IF NOT EFFECTIVE

DATE: 08/14/93
INDEX: N/A

ACCT: 888235-01
CAT NO: 02611500

PAGE: 3
PO NBR: N/A

INITIALLY, GIVE ACTIVATED CHARCOAL. IN PATIENTS WITH DEPRESSED RESPIRATION OR IF EMESIS IS NOT PRODUCED, PERFORM GASTRIC LAVAGE CAUTIOUSLY (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GASTRIC LAVAGE SHOULD BE PERFORMED BY QUALIFIED MEDICAL PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
DIPHENYLAMINE:
HEXACHLOROMELAMINE: VIOLENT REACTION WITH POSSIBLE IGNITION.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
TRICHLOROMELAMINE: VIOLENT REACTION WITH POSSIBLE IGNITION.
SEE ALSO AMINES.

AMINES:
ACROLEIN: EXOTHERMIC POLYMERIZATION.
CALCIUM HYPOCHLORITE: FORMATION OF EXPLOSIVE CHLOROAMINE.
MALEIC ANHYDRIDE: EXPLOSIVE DECOMPOSITION.
NITROSYL PERCHLORATE: EXPLOSIVE REACTION.
SODIUM HYPOCHLORITE: FORMATION OF EXPLOSIVE CHLOROAMINE.
TRI-ISO-BUTYL ALUMINUM: VIOLENT REACTION.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON AND NITROGEN.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

STORAGE

STORE IN A COOL, DRY PLACE PROTECTED AGAINST LIGHT.
STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

CONDITIONS TO AVOID

MAY BURN BUT DOES NOT IGNITE READILY. AVOID CONTACT WITH STRONG OXIDIZERS, EXCESSIVE HEAT, SPARKS, OR OPEN FLAME.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CLEAN, DRY CONTAINERS FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION AND/OR GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE. MUST BE BASED ON THE SPECIFIC OPERATION. MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ANY CHEMICAL CARTRIDGE RESPIRATOR WITH FULL FACEPIECE AND ORGANIC VAPOR CARTRIDGE(S) IN COMBINATION WITH A DUST AND MIST FILTER.

ANY CHEMICAL CARTRIDGE RESPIRATOR WITH FULL FACEPIECE AND ORGANIC VAPOR CARTRIDGE(S) IN COMBINATION WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

ANY GAS MASK WITH ORGANIC VAPOR CANISTER (CHIN-STYLE OR FRONT- OR

DATE: 08/14/93
INDEX: N/A

ACCT: 888235-01
CAT NO: 02611500

PAGE: 4
PO NBR: N/A

BACK-MOUNTED CANISTER) WITH A FULL FACEPIECE AND A HIGH-EFFICIENCY PARTICULATE FILTER.

ANY POWERED AIR-PURIFYING RESPIRATOR WITH TIGHT-FITTING FACEPIECE AND ORGANIC VAPOR CARTRIDGE(S) IN COMBINATION WITH A HIGH-EFFICIENCY PARTICULATE FILTER.

ANY TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.

ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

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