

MAY 26 1995

ATTN: SAFETY DIRECTOR
 UNIV OF WISC-WHITEWATER
 PURCHASING OFFICE
 800 W MAIN ST
 WHITEWATER WI 53190-1705

EMERGENCY PHONE 1-314-771-5765

DATE: 05/17/95
 CUST#: 2-097-94816
 PO#: UNE53917

M A T E R I A L S A F E T Y D A T A S H E E T P A G E 1

SECTION 1. ----- CHEMICAL IDENTIFICATION -----

PRODUCT #: P3896 NAME: PIPERAZINE ANHYDROUS

SECTION 2. ----- COMPOSITION/INFORMATION ON INGREDIENTS -----

CAS #: 110-85-0
 MF: C4H10N2

SYNONYMS

ANTIREN * 1,4-DIETHYLENEDIAMINE * DISPERMINE * HEXAHYDRO-1,4-DIAZINE *
 HEXAHYDROPIRAZINE * LUMBRICAL * PIPERAZIDINE * PIPERAZIN (GERMAN) *
 PIPERAZINE, ANHYDROUS * PYRAZINE HEXAHYDRIDE * PYRAZINE, HEXAHYDRO- *
 UN2579 (DOT) *

SECTION 3. ----- HAZARDS IDENTIFICATION -----

LABEL PRECAUTIONARY STATEMENTS

CORROSIVE
 CAUSES BURNS.
 HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
 MAY CAUSE SENSITIZATION BY INHALATION AND SKIN CONTACT.
 POSSIBLE RISK OF IRREVERSIBLE EFFECTS.
 POSSIBLE MUTAGEN.
 IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF
 WATER AND SEEK MEDICAL ADVICE.
 TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING.
 WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE
 PROTECTION.

SECTION 4. ----- FIRST-AID MEASURES -----

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS
 AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED
 CLOTHING AND SHOES.
 ASSURE ADEQUATE FLUSHING OF THE EYES BY SEPARATING THE EYELIDS
 WITH FINGERS.
 IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL
 RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
 IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.
 CALL A PHYSICIAN.
 WASH CONTAMINATED CLOTHING BEFORE REUSE.
 DISCARD CONTAMINATED SHOES.

CONTINUED ON NEXT PAGE

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M A T E R I A L S A F E T Y D A T A S H E E T P A G E 2

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NAME: PIPERAZINE ANHYDROUS

SECTION 5. ----- FIRE FIGHTING MEASURES -----

EXTINGUISHING MEDIA
 WATER SPRAY.
 CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.
 SPECIAL FIREFIGHTING PROCEDURES
 WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO
 PREVENT CONTACT WITH SKIN AND EYES.

SECTION 6. ----- ACCIDENTAL RELEASE MEASURES -----

WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY
 RUBBER GLOVES.
 SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.
 AVOID RAISING DUST.
 VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

SECTION 7. ----- HANDLING AND STORAGE -----

REFER TO SECTION 8.

SECTION 8. ----- EXPOSURE CONTROLS/PERSONAL PROTECTION -----

WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT
 GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.
 SAFETY SHOWER AND EYE BATH.
 USE ONLY IN A CHEMICAL FUME HOOD.
 DO NOT BREATHE DUST.
 DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
 AVOID PROLONGED OR REPEATED EXPOSURE.
 WASH THOROUGHLY AFTER HANDLING.
 CORROSIVE.
 SENSITIZER.
 POSSIBLE MUTAGEN.
 KEEP TIGHTLY CLOSED.
 LIGHT SENSITIVE
 HYGROSCOPIC
 STORE UNDER NITROGEN.
 STORE IN A COOL DRY PLACE.

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PRODUCT #: P3896
 MF: C4H10N2

NAME: PIPERAZINE ANHYDROUS

SECTION 9. ----- PHYSICAL AND CHEMICAL PROPERTIES -----

APPEARANCE AND ODOR

MOIST WHITE CRYSTALS
 BOILING POINT: 145 C TO 146 C
 MELTING POINT: 108 C TO 110 C
 FLASHPOINT 229 F
 109C
 UPPER EXPLOSION LEVEL: 14%
 LOWER EXPLOSION LEVEL: 4%
 VAPOR PRESSURE: 0.8MM 20 C



SECTION 10. ----- STABILITY AND REACTIVITY -----

INCOMPATIBILITIES

STRONG OXIDIZING AGENTS
 STRONG ACIDS
 ACID CHLORIDES
 ACID ANHYDRIDES
 MAY DISCOLOR ON EXPOSURE TO LIGHT.
 PROTECT FROM MOISTURE.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS

TOXIC FUMES OF:
 CARBON MONOXIDE, CARBON DIOXIDE
 NITROGEN OXIDES

SECTION 11. ----- TOXICOLOGICAL INFORMATION -----

ACUTE EFFECTS

HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN.
 MATERIAL IS EXTREMELY DESTRUCTIVE TO TISSUE OF THE MUCOUS MEMBRANES
 AND UPPER RESPIRATORY TRACT, EYES AND SKIN.
 INHALATION MAY BE FATAL AS A RESULT OF SPASM, INFLAMMATION AND EDEMA
 OF THE LARYNX AND BRONCHI, CHEMICAL PNEUMONITIS AND PULMONARY EDEMA.
 SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING,
 WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND
 VOMITING.
 MAY CAUSE ALLERGIC RESPIRATORY AND SKIN REACTIONS.
 REPEATED EXPOSURE MAY CAUSE ASTHMA.

CHRONIC EFFECTS

LABORATORY EXPERIMENTS HAVE SHOWN MUTAGENIC EFFECTS.

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PRODUCT #: P 3896
 MF: C4H10N2

NAME: PIPERAZINE ANHYDROUS

RTECS NO: TK7800000
 PIPERAZINE (DOT)

IRRITATION DATA

SKN-RBT 500 MG OPEN MLD
 EYE-RBT 250 UG SEV
 EYE-RBT 250 UG/24H SEV

UCDS** 7/16/67
 AJOPAA 29,1363,46
 85JCAE -,862,86

TOXICITY DATA

ORL-RAT LD50:1900 MG/KG
 SCU-RAT LD50:3700 MG/KG
 IVN-RAT LD50:1340 MG/KG
 IMS-RAT LD50:>2500 MG/KG
 ORL-MUS LD50:600 MG/KG
 IHL-MUS LC50:5400 MG/M3/2H
 IPR-MUS LD50:1900 MG/KG
 IVN-MUS LD50:1180 MG/KG
 SKN-RBT LD50:4 ML/KG

TPKVAL 15,116,79
 NIIRDN 6,635,82
 NIIRDN 6,635,82
 NIIRDN 6,635,82
 BCFAAL 103,414,64
 TPKVAL 15,116,79
 PBPHAW 1,542,65
 NIIRDN 6,635,82
 UCDS** 7/16/65

TARGET ORGAN DATA

BEHAVIORAL (SLEEP)
 BEHAVIORAL (EXCITEMENT)
 BEHAVIORAL (CHANGE IN MOTOR ACTIVITY)
 BEHAVIORAL (MUSCLE CONTRACTION OR SPASTICITY)
 GASTROINTESTINAL (NAUSEA OR VOMITING)

ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES
 (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR
 COMPLETE INFORMATION.

SECTION 12. ----- ECOLOGICAL INFORMATION -----
 DATA NOT YET AVAILABLE.

SECTION 13. ----- DISPOSAL CONSIDERATIONS -----

DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A
 CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
 OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. ----- TRANSPORT INFORMATION -----

CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. ----- REGULATORY INFORMATION -----

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NAME: PIPERAZINE ANHYDROUS

REVIEWS, STANDARDS, AND REGULATIONS

OEL-FINLAND: TWA 1 MG/M3; STEL 5 MG/M3; SKIN JAN93
 OEL-SWEDEN: TWA 0.1 PPM (0.3 MG/M3); STEL 0.3 PPM (1 MG/M3) JAN93
 OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV
 OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGIH TLV
 NOHS 1974: HZD 84705; NIS 4; TNF 132; NOS 11; TNE 2512
 NOES 1983: HZD 84705; NIS 8; TNF 396; NOS 24; TNE 8483; TFE 2318
 EPA TSCA CHEMICAL INVENTORY, JUNE 1993
 EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JULY 1994

SECTION 16. - - - - - OTHER INFORMATION - - - - -

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