**ACRYLAMIDE**
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MATERIAL SAFETY DATA SHEET

FISHER-SCIENTIFIC
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SUBSTANCE IDENTIFICATION

SUBSTANCE: **ACRYLAMIDE**
CAS-NUMBER 79-06-1

TRADE NAMES/SYNONYMS:
- 2 PROPENOAMIDE, ACRYLIC AMIDE, ETHYLENECARBOXYLAMIDE, PROPENAMIDE, VINYL AMIDE
- RCRU 0077, UN 2074, UN 01065, UN 01066, BPT17, ACC00350

CHEMICAL FORMULA: C3H6N-O
MOLECULAR WEIGHT: 71.08

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

COMPONENTS AND CONTAINANTS

COMPONENT: ACRYLAMIDE PERCENT: 100
OTHER CONTAMINANTS: POLYMERIZATION INHIBITORS SUCH AS HYDROQUINONE, COPPER SULFATE.

EXPOSURE LIMITS:
- ACRYLAMIDE: 0.03 MG/M3 OSHA TWA (SKIN)
- ACIDI-M G3-MG/M3 ACIDI-TWA (SKIN)
- ACIDI-A2-SUSPECTED HUMAN CARCINOGEN
- ACIDI-A3-SUSPECTED HUMAN CARCINOGEN

MEASUREMENT METHOD: PARTICULATE FILTER/SILICA GEL TUBE, METHANOL, GAS CHROMATOGRAPHY WITH NITROGEN DETECTION (OSHA # 21).

1000/1000000 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY 50000 POUNDS SARA SECTION 304 REPORTABLE QUANTITY 50000 POUNDS SARA SECTION 103 REPORTABLE QUANTITY

SUBJECT TO SARA SECTION 113 ANNUAL TOXIC CHEMICAL RELEASE REPORTING REQUIREMENTS (JANUARY 1, 1990).


PHYSICAL DATA

DESCRIPTION: ODORLESS, COLORLESS TO WHITE LEAFLETS OR FLAKE-LIKE CRYSTALS
OR POWDER. BOILING POINT: 257 F (125 C) @ 25 MMHG
MELTING POINT: 184-185 F (85-85 C) SPECIFIC GRAVITY: 1.122
SOLUBILITY IN WATER: 216% @ 30 C VAPOR DENSITY: 2.4
SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, ACETONE, CHLOROFORM, ETHYL ACETATE, METHANOL, DIMETHYL SULFOXIDE. ETHER, SLIGHTLY SOLUBLE IN BENZENE, HEXANE.
PH: 6.0-7.0 (10% 0.1 N NACL SOLUTION)
VAPOR PRESSURE: 1.6 MMHG @ 84.5 C 0.007 MMHG @ 20 C

FIRE AND EXPLOSION HAZARD:

FIRE: USE WATER, FOAM OR ABC TYPE. NO GAS WIPERS.
EXPLOSION: USE WATE, FOAM OR ABC TYPE. NO GAS WIPERS.

SILT HIGHT FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.
FLASH POINT: 280 F (138 C) AUTOIGNITION TEMP: 795 F (424 C)
FLAMMABILITY CLASS (OSHA): III
FIREFIGHTING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
FOR LARGER FIRES, USE FM207, USERS OF THE INSTRUMENTS MUST RECEIVE TRAINING IN SURFACE FEEDER AND FIRE HOSE USAGE FOR LATER DISPOSAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 8600.5, GUIDE PAGE 312)

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

TRANSPORTATION DATA

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIONOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47518, 08/18/91)

TOXICITY

ACRYLAMIDE
IRRITATION DATA: 50 MG/3 DAYS SKIN RABBIT MILD; 500 MG/24 HOURS EYE RABBIT MODERATE
THROAT: 3000 MG/KG SKIN-RABBIT LD50; 1000 MG/KG SKIN-RABBIT LD50; 124 MG/KG ORAL-RAT LD50; 107 MG/KG ORAL-MOUSE LD50; 150 MG/KG ORAL-RABBIT LD50; 150 MG/KG ORAL-GUINEA PIG LD50; 100 MG/KG ORAL-MAN LD50: 1800 MG/KG RD50: 90 MG/KG 90 DAYS CONTINUOUS ORAL-RAT TOLO: 56 MG/KG/WEEKS INTERMITTENT ORAL-MOUSE TOLO; 771 MG/KG/1 YEAR INTERMITTENT ORAL-CAT TOLO; 170 MG/KG SUBCUTANEOUS-GUINEA PIG LD50; 190 MG/KG INTRAVENOUS-GUINEA PIG LD50; 90 MG/KG INTRAPERITONEAL-GUINEA PIG LD50; 170 MG/KG INTRAPERITONEAL-MOUSE LD50; 100 MG/KG UNREPORTED-MOUSE LD50; 173 MG/KG UNREPORTED-GUINEA PIG LD50; 208 MG/KG UNREPORTED-RAT LD50; 170 MG/KG UNREPORTED-RABBIT LD50; MUTAGENIC EFFECTS (RTCS), TUMORGENIC DATA (RTCS), CARCINOGENIC STATUS: ANTIHUMAN CARCINOGEN (NTF); ANIMAL SUFFICIENT EVIDENCE (IARC GROUP 2B), INTRAESTRUS OR INTRAPERITONEAL ADMINISTRATION TO MICE INCREASED INCIDENCE OF LUNG ADENOMAS; ORAL ADMINISTRATION TO RATS INCREASED THE INCIDENCES OF NEOPLASMS AT SEVERAL SITES INCLUDING THE ADRENAL GLAND, CHORIOPTOMY, MAMMARY GLAND, ORAL CAVITY, UTERUS, AND THE ADRENAL, GLAND AND PITUITARY GLAND. ACYRILAMIDE SHOWED INCREASED ACTIVITY TO THE SKIN OF FEMALE MICE AFTER ORAL, TOPICAL OR INTRAPERITONEAL ADMINISTRATION FOLLOWED BY CHRONIC TOXIC TREATMENT WITH 12-O-TETRADECANOLYLPHORANS, 13-ACETATE.
LOCAL EFFECTS: IRRITANT SKIN EYE
ACUTE TOXICITY LEVEL: TOXIC BY ORAL ABSORPTION AND INGESTION.
TARGET EFFECTS: NEUTROTOXIN.
AT INCREASED RISK FROM EXPOSURE PERSONS WITH PRE-EXISTING SKIN DISORDERS, EYE PROBLEMS, AND/OR CENTRAL ON PERIPHERAL NERVOUS SYSTEM CONDITIONS.
ADDITIONAL DATA: ALCOHOL MAY ENHANCE THE TOXIC EFFECTS.
DATE: 08/14/93              ACCT: 886235-01
INDEX: 09912870140        CAT NO: B1705000        PO BBR: N/A

Health Effects and First Aid

Inhalation:
Acrylamide: Neurotoxin.
Acute Exposure: May cause irritation to the respiratory tract, if sufficient amounts of acrylamide are inhaled, systemic toxicity, as detailed in acute skin contact, may occur. Seizures were reported in animals exposed to acrylamide.
Chronic Exposure: Prolonged or repeated exposure to low concentrations may cause symptoms detailed in chronic skin contact. Histopathologic studies of animals have reported degeneration of the axon and myelin sheaths.

Skin Contact: Acrylamide.
Irritant/Neurotoxin/Toxic.
Acute Exposure: The lethal dose reported in rats was 400 mg/kg. Direct contact may cause irritation with redness and blisters. Acrylamide may be toxic to the skin causing injury to the connective tissue and autonomic nervous systems. Effects may include encephalopathy with confusion, disorientation, memory disturbances, hallucinations, ataxia, and mild peripheral neuropathy. Neurologic effects may be recalled with chronic exposure to lesser amounts of acrylamide. Permanent neurologic sequelae may occur after severe poisoning.
Chronic Exposure: Repeated and prolonged exposure may cause dermatitis as well as the symptoms detailed in acute exposure. Polyneuropathy with sensory changes in the limbs, numbness of the extremities, muscle pain, incoordination, tremors, positive Romberg sign, absence of tendon reflexes, secondary muscle atrophy may occur. Slurred speech, nystagmus, changes in the visual fields, diaphoresis, cold, and peeling hands and feet. Blind-red skin discoloration, weight loss, and difficulties with urination and defecation may also result. Symptoms may be delayed for months to years following exposure. Skin sensitization has been reported in guinea pigs. Dermatologic studies using mice showed a significant increase in the number of dead embryos in females mated with males exposed to 125, 100, 75, and 50 mg/kg/day for 5 consecutive days followed by the number of living embryos per female in those mated with males exposed to 75 mg/kg/day.

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: Acrylamide: Conditions to Avoid.
Irritant.
Acute Exposure: Direct contact may cause irritation and possibly burns. A 10% aqueous solution applied in rabbit eyes caused slight pain and corneal irritation; a 40% solution for 20 seconds caused more pain, and a 40% solution applied and not rinsed caused superficial corneal opacity in 24 hours. Both the 10% area was clear in 24 hours. Chronic Exposure: Prolonged or repeated contact with irritants may cause corneal opacity. Application of 0.1 ml of a 50% aqueous solution in rabbits developing the characteristic signs of corneal damage and opacification into the eye.

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: Acrylamide: Neurotoxin.
Acute Exposure: The reported lethal dose in rats was 124 mg/kg. Ingestion may cause systemic toxicity as detailed in acute skin contact, given in single doses of 20-252 mg/kg caused severe pain, tremors, and pupil constriction. Reproductive effects have been reported in animals exposed to acrylamide.
Chronic Exposure: Ingestion by humans results in symptoms detailed in chronic skin contact. Rhinorhrea, coughing, diaphoresis, nervousness, and irritability behavior also occurred. Reproductive effects including testicular atrophy, reduced fertility and pre-and postnatal mortality have been reported in animals. Repetitive ingestion of acrylamide in drinking water mated female rats induced a significant increase in mammary cancer and malignant neoplasms at several sites, including thyroid gland, mammary gland, adrenal, testis, brain, and nasal cavity. Reproductive studies in male mice caused an increased incidence of lung adenomas.

First Aid: Remove by gastric lavage or emesis. Maintain blood pressure and artificial respiration if respiratory depression is depressed. Do not perform gastric lavage or emesis if victim is unconscious. Get medical attention immediately. Ref: Diersbach, Handbook of Poisoning, 13th Ed. Administration of gastric lavage or oxygen should be performed by qualified medical personnel.

Personnel

Antidote: No specific antidote. Treat symptomatically and supportively.

Reactivity

Acrylamide: Reactivity: May polymerize violently above the melting point or when exposed to ultraviolet light.


Decomposition: Thermal decomposition products may include corrosive fumes of ammonia, and phosphorus and nitrogen and carbon.

Polymerization: Readily polymerizes at the melting point (84-85°C) or under ultraviolet light.

Storage and Disposal

Observe all federal, state and local regulations when storing or disposing of this substance.

**Storage**

Store away from incompatible substances.

Threshold Planning Quantity (TPQ): The superfund amendments and reauthorization act of 1986 section 102 requires that each facility where an extremely hazardous substance is present in a quantity or concentration equal to or greater than the TPQ established for that substance. Notify the state emergency response commission for the state in which it is located. Section 303 of SARA requires these facilities to participate in local emergency response planning (40 CFR 355.30).

May burn but does not ignite readily. Containers may explode in heat of fire.

Spill and Leak Procedures

Water Spill: The California safe drinking water and toxic enforcement act of 1986 (Proposition 65) prohibits contaminating any known source of drinking water with substances known to cause cancer and/or reproductive toxicity.

Occupational Spill: Do not touch spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapor. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For small spills, take up with a clean shovel and place into clean, dry containers and cover. Move containers from spill area for larger spills. Dry far enough. For large spills, keep unnecessary people away. Isolate hazardous area and deny entry. Ventilate closed spaces before entering.

Reportable Quantity (RQ): 5000 pounds

The California safe drinking water and toxic enforcement act of 1986 (Proposition 65) prohibits contaminating any known source of drinking water with substances known to cause cancer and/or reproductive toxicity.

Protective Equipment

Ventilation: Provide local exhaust or process enclosure ventilation to meet the published exposure limits. Ventilation equipment must be explosion proof.

Respirator:


ACRYLAMIDE:

AT ANY DETECTABLE CONCENTRATION:

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 MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ESCAPE-ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.

ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

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.

AUTHORIZED - FISHER SCIENTIFIC, INC.
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ADDITIONAL INFORMATION:

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