

Then: Protect persons downwind (miles)

Day 1.0

Night 1.8

Fire Extinguishing: Phenyl isocyanate may burn, but does not readily ignite. Poisonous gases are produced in fire, including oxides of nitrogen. Containers may explode in fire. Use dry chemical, CO₂, water spray; or foam extinguishers. Vapors are heavier than air and will collect in low areas. Vapors may travel long distances to ignition sources and flashback. Vapors in confined areas may explode when exposed to fire. Containers may explode in fire. Storage containers and parts of containers may rocket great distances, in many directions. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors, or shows any signs of deforming), withdraw immediately to a secure position. If employees are expected to fight fires, they must be trained and equipped in OSHA 1910.156. The only respirators recommended for fire fighting are self-contained breathing apparatuses that have full face-pieces and are operated in a pressure-demand or other positive-pressure mode.

References

New Jersey Department of Health and Senior Services, *Hazardous Substances Fact Sheet: Phenyl Isocyanate*, Trenton, NJ (November 2000)

Phenyl mercaptan

P:0440

Molecular Formula: C₆H₆S

Common Formula: C₆H₅SH

Synonyms: Benzenethiol; Mercaptobenzene; Phenol, thio-; Phenylmercaptan; Phenylthiol; Thiophenol

CAS Registry Number: 108-98-5

RTECS® Number: DC0525000

DOT ID: UN2337

Regulatory Authority and Advisory Bodies

Air Pollutant Standard Set. See below, "Permissible Exposure Limits in Air" section.

U.S. EPA Hazardous Waste Number (RCRA No.): P014

RCRA, 40CFR261, appendix 8 Hazardous Constituents Superfund/EPCRA 40CFR355, appendix B, Extremely Hazardous Substances: TPQ = 500 lb (227 kg)

Superfund/EPCRA 40CFR302.4 Reportable Quantity (RQ): CERCLA, 100 lb (454 kg)

US DOT 49CFR172.101, Inhalation Hazardous Chemical Canada, WHMIS, Ingredients Disclosure List Concentration 0.1%

Cited in U.S. State Regulations: Alaska (G), California (A,G), Connecticut (A), Florida (G), Illinois (G), Kansas (G), Louisiana (G), Maine (G), Massachusetts (G), Nevada (A), New Hampshire (G), New Jersey (G), North Dakota (A), Pennsylvania (G), Rhode Island (G), Vermont (G),

Virginia (A,G), Washington (G), West Virginia (G), Wisconsin (G).

Description: Phenyl mercaptan is a water white liquid with a repulsive, penetrating, garlic-like odor. The Odor Threshold is 0.0003 ppm. Molecular weight = 110.18; Specific gravity (water = 1) = 1.08; Boiling point = 170°C; Freezing/Melting point = -9.4°C; Vapor pressure = 1 mmHg @ 18°C; Flash point = 55.6°C. Explosive limits: LEL = 1.2%; UEL - unknown. Insoluble in water.

Potential Exposure: Compound Description (Toxicity evaluation)^[77]: Reproductive Effector; Primary Irritant. Phenyl mercaptan is used as a chemical intermediate in pesticide manufacture; as a mosquito larvicide. It is used in solvent formulations for the removal of polysulfide sealants.

Incompatibilities: Strong acids, strong bases; calcium hypochlorite; alkali metals. Oxidizes on exposure to air; supplied under nitrogen. At normal room temperature may vaporize forming explosive mixtures with air.

Permissible Exposure Limit in Air

OSHA PEL: None

NIOSH REL: 0.1 ppm/0.5 mg/m³ [15-minute] Ceiling Concentration

ACGIH TLV^{®[11]}: 0.1 ppm [skin]

Australia: TWA 0.5 ppm (2 mg/m³), 1993; Belgium: TWA 0.5 ppm (2.3 mg/m³), 1993; Denmark: TWA 0.5 ppm (2.3 mg/m³), 1999; Finland: STEL 0.5 ppm (2.6 mg/m³), 1993; France: VME 0.5 ppm (2 mg/m³), 1999; Norway: TWA 0.5 ppm (2 mg/m³), 1999; Switzerland: MAK-W 0.5 ppm (2.3 mg/m³), 1999; the Netherlands: MAC-TGG 2 mg/m³, 2003; Argentina, Bulgaria, Columbia, Jordan, South Korea, New Zealand, Singapore, Vietnam: ACGIH TLV[®]: TWA 0.5 ppm

Several states have set guidelines or standards for benzenethiol in ambient air^[60] ranging from 20 μ/m³ (North Dakota) to 35 μ/m³ (Virginia) to 40 μ/m³ (Connecticut) to 48 μ/m³ (Nevada).

Determination in Air: Use OSHA Analytical Method PV-2075

Determination in Water: Ecotoxicity: Log K_{ow} = 2.52

Routes of Entry: Inhalation, ingestion; skin and/or eye contact. Absorbed through the skin.

Harmful Effects and Symptoms

Short Term Exposure: Benzenethiol can affect you when breathed in and by passing through your skin. Irritates the eyes, skin, and respiratory tract. Benzenethiol can severely burn the eyes, causing permanent damage. Higher exposures can cause pulmonary edema, a medical emergency that can be delayed for several hours. This can cause death. Exposure can cause weakness, dizziness, cough, wheezing, dyspnea (breathing difficulty). Higher levels can cause restlessness and irritability followed by paralysis and death. High or repeated exposure can cause liver, kidney or lung damage. Acute exposure to thiophenol may result in cough, troubled breathing; irritation of the lungs; and pneumonitis. Nausea, vomiting, and diarrhea are often seen. May affect the nervous system.

Long Term Exposure: Repeated or prolonged contact with skin may cause dermatitis. May cause lung, kidney, liver, spleen damage.

Points of Attack: Eyes, skin, respiratory system; central nervous system; kidneys, liver, spleen

Medical Surveillance: If symptoms develop or overexposure is suspected, tests of the following may be helpful: Kidney and liver function. Lung function tests.

First Aid: If this chemical gets into the eyes, remove any contact lenses at once and irrigate immediately for at least 30 minutes, occasionally lifting upper and lower lids. If available, flush eyes with large amounts of 0.5% silver nitrate, followed immediately by very large amounts of water. Continue water for 15 minutes. Seek medical attention immediately. If this chemical contacts the skin, remove contaminated clothing and wash immediately with soap and water. Speed in removing material from skin is of extreme importance. Seek medical attention immediately. If this chemical has been inhaled, remove from exposure, begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped. Transfer promptly to a medical facility. When this chemical has been swallowed, get medical attention. Give large quantities of water and induce vomiting. Do not make an unconscious person vomit. Medical observation is recommended for 24 to 48 hours after breathing overexposure, as pulmonary edema may be delayed. As first aid for pneumonitis or pulmonary edema, a doctor or authorized paramedic may consider administering a corticosteroid spray.

Personal Protective Methods: Wear protective gloves and clothing to prevent any reasonable probability of skin contact. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation. All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work. Contact lenses should not be worn when working with this chemical. Wear dust-proof chemical goggles and face shield unless full face-piece respiratory protection is worn. Employees should wash immediately with soap when skin is wet or contaminated. Provide emergency showers and eyewash.

Respirator Selection: NIOSH: *Up to 1 ppm:* CcrOv (APF = 10) [any chemical cartridge respirator with organic vapor cartridge(s)]; or Sa (APF = 10) (any supplied-air respirator). *Up to 2.5 ppm:* Sa:Cf (APF = 25) (any supplied-air respirator operated in a continuous-flow mode); or PaprOv (APF = 25) [any powered, air-purifying respirator with organic vapor cartridge(s)]. *Up to 5 ppm:* CcrFOv (APF = 50) [any chemical cartridge respirator with a full face-piece and organic vapor cartridge(s)]; GmFOv (APF = 50) [any air-purifying, full-face-piece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister]; PaprTOv (APF = 50) [any powered, air-purifying respirator with a tight-fitting face-piece and organic vapor cartridge(s)]; or ScbaF (APF = 50) (any self-contained breathing apparatus with a full

face-piece); or SaF (APF = 50) (any supplied-air respirator with a full face-piece). *Emergency or planned entry into unknown concentrations or IDLH conditions:* ScbaF: Pd,Pp (APF = 10,000) (any NIOSH/MSHA approved self-contained breathing apparatus that has a full face-piece and is operated in a pressure-demand or other positive-pressure mode); or SaF: Pd,Pp: AScba (APF = 10,000) (any supplied-air respirator that has a full face-piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive pressure mode). *Escape:* GmFOv (APF = 50) [any air-purifying, full-face-piece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister]; or ScbaE (any appropriate escape-type, self-contained breathing apparatus).

Storage: Prior to working with this chemical you should be trained on its proper handling and storage. Store in airtight containers in a cool, well-ventilated area. Sources of ignition, such as smoking and open flames should be prohibited where benzenethiol is handled, used, or stored. Use only non-sparking tools and equipment, especially when opening and closing containers of benzenethiol.

Shipping: This compound requires a shipping label of "POISONOUS/TOXIC MATERIALS, FLAMMABLE LIQUID." Quantity limitations: Passenger aircraft/rail: FORBIDDEN; Cargo aircraft only: FORBIDDEN. It falls in DOT Hazard Class 6.1 and Packing Group I.

Spill Handling: Evacuate and restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Ventilate area of spill or leak. Absorb liquids in vermiculite, dry sand, earth, peat, carbon, or a similar material and deposit in sealed containers. Keep this chemical out of a confined space, such as a sewer, because of the possibility of an explosion, unless the sewer is designed to prevent the build-up of explosive concentrations. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.

Initial isolation and protective action distances

Distances shown are likely to be affected during the first 30 minutes after materials are spilled and could increase with time. If more than one tank car, cargo tank, portable tank, or large cylinder is involved in the incident is leaking, the protective action distance may need to be increased. You may need to seek emergency information from CHEMTREC at (800) 424-9300 or seek professional environmental engineering assistance from the U.S. EPA Environmental Response Team at (908) 548-8730 (24-hour response line).

Small spills (From a small package or a small leak from a large package)

First: Isolate in all directions (feet) 100

Then: Protect persons downwind (miles)

Day 0.1

Night 0.1

Large spills (From a large package or from many small packages)

First: Isolate in all directions (feet) 200

Then: Protect persons downwind (miles)

Day 0.2

Night 0.4

Fire Extinguishing: This chemical is a flammable liquid. Poisonous gases, including sulfur dioxide, are produced in fire. Use dry chemical, carbon dioxide; or alcohol foam extinguishers. Vapors are heavier than air and will collect in low areas. Vapors may travel long distances to ignition sources and flashback. Vapors in confined areas may explode when exposed to fire. Containers may explode in fire. Storage containers and parts of containers may rocket great distances, in many directions. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors, or shows any signs of deforming), withdraw immediately to a secure position. If employees are expected to fight fires, they must be trained and equipped in OSHA 1910.156. The only respirators recommended for fire fighting are self-contained breathing apparatuses that have full face-pieces and are operated in a pressure-demand or other positive-pressure mode.

Disposal Method Suggested: Consult with environmental regulatory agencies for guidance on acceptable disposal practices. Generators of waste containing this contaminant (≥ 100 kg/mo) must conform with EPA regulations governing storage, transportation, treatment, and waste disposal. Dissolve in flammable solvent and burn in furnace equipped with afterburner and alkaline scrubber.^[22]

References

U.S. Environmental Protection Agency, *Chemical Hazard Information Profile*: Thiophenol, Washington, DC, Chemical Emergency Preparedness Program (Nov. 30, 1987)

New Jersey Department of Health and Senior Services, *Hazardous Substances Fact Sheet*: Benzenethiol, Trenton, NJ (July 2004)

Phenylmercury acetate P:0450

Molecular Formula: C₈H₈HgO₂

Common Formula: C₆H₅HgOOCCH₃

Synonyms: Acetate phenylmercurique (French); (Aceato)phenylmercury; Acetato fenilmercurio (Spanish); Acetic acid, phenylmercury derivative; Agrosan; Agrosand;

Agrosan GN 5; Algimycin; Antimucin WDR; Benzene, (acetoxymercuri)-; Benzene, (acetoxymercurio); Bufen; Cekusil; Celmer; Ceresan; Ceresan universal; Ceresol; Contra creme; Dynacide; Femma; FMA; Fungitox OR; Gallotox; HL-331; Hong kien; Hostaquick; Kwiksian; Leytosan; Liquiphene; Mercuriphenyl acetate; Mercury(II) acetate, phenyl; Mercury (acetoxo)phenyl-; Mergamma; Mersolite; Mersolite 8; Metasol 30; Norforms; Nymerate; Pamisan; Phenmad; Phenomercury acetate; Phenylmurcuriacetate; Phenylmercuric acetate; Phenylquecksilberacetat (German); Phix; PMA; PMAC; PM acetate; PMAL; PMAS; Purasan-SC-10; Puraturf 10; Quicksan; Sanitized SPG; SC-110; Scutl; Seedtox; Shimmerex; Spor-kil; Tag; Tag 331; Tag HL 331; Tag fungicide; Trigosan; Ziarnik

CAS Registry Number: 62-38-4; (*alt.*) 1337-06-0; 61840-45-7; 64684-45-3

RTECS® Number: OV6475000

DOT ID: UN1674

EC Number: 200-532-5

Regulatory Authority and Advisory Bodies

Carcinogenicity: IARC: Human Inadequate Evidence, *possibly carcinogenic to humans*, Group 2B, 1993

U.S. EPA Gene-Tox Program, Positive: D melanogaster-whole sex chrom. loss; Positive: D melanogaster-nondisjunction; B subtilis rec assay

U.S. EPA, FIFRA 1998 Status of Pesticides: Canceled Banned or Severely Restricted (several countries) (UN)[13]

Air Pollutant Standard Set. See below, "Permissible Exposure Limits in Air" section.

U.S. EPA Hazardous Waste Number (RCRA No.): P092 RCRA, 40CFR261, appendix 8 Hazardous Constituents Superfund/EPCRA 40CFR355, appendix B, Extremely Hazardous Substances: TPQ = 500/10,000 lb (227/4540 kg)

Superfund/EPCRA 40CFR302.4 Reportable Quantity (RQ): CERCLA, 100 lb (45.4 kg)

US DOT Regulated Marine Pollutant (49CFR172.101, appendix B), severe pollutant

California Proposition 65 Chemical: Reproductive toxin
Canada, WHMIS, Ingredients Disclosure List Concentration 0.1%

Cited in U.S. State Regulations: California (A,G), Florida (G), Massachusetts (G), New Hampshire (G), New Jersey (G), Pennsylvania (G), Rhode Island (G).

Description: Phenylmercury acetate is a white or yellow crystalline solid. Molecular weight = 336.75; Freezing/Melting point = 152°C; Flash point = > 38°C. Hazard Identification (based on NFPA-704 M Rating System): Health 3, Flammability 1, Reactivity 0. Slightly soluble in water.

Potential Exposure: Compound Description (Toxicity evaluation)^[77]; Agricultural Chemical; Tumorigen, Organometallic, Mutagen; Reproductive Effector; Primary Irritant. Phenylmercury acetate is used as an antiseptic, fungicide; for fungal and bacterial control; herbicide and control of crabgrass; mildewcide for paints; slimicide in