Infosafe No™ 1CH4B Issue Date :October 2022 RE-ISSUED by CHEMSUPP

Product Name **MERCURY Metal**

Classified as hazardous

1. Identification

GHS Product Identifier	MERCURY Metal
Company Name	CHEMSUPPLY AUSTRALIA PTY LTD (ABN 19 008 264 211)
Address	38 - 50 Bedford Street GILLMAN SA 5013 Australia
Telephone/Fax Number	Tel: (08) 8440-2000
Emergency phone number	CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)
E-mail Address	www.chemsupply.com.au
Recommended use of the chemical and restrictions on use	Electrolytic production of chlorine and caustic soda from brine (chlor-alkali industry), household batteries, electric lamps, including fluorescent lamps and high intensity discharge (HID) lamps, electric light switches and thermostats, mercury vapour diffusion pumps for producing a high vacuum, industrial and medical equipment, such as thermometers, monometers, barometers and other pressure-sensing devices, gauges, valves, seals, boilers, and navigational devices, dental amalgams, pigments, as a catalyst in polymer-forming reactions, explosives, pharmaceuticals, and chemical applications, extractive metallurgy, coolant, neutron absorber in nuclear power plants, in photography as an intensifying agent and laboratory reagent. The use of mercury as a seed disinfectant, on food crops, as a biocide in paints and in antifouling paint formulations, as a coating for mirrors, for the manufacture of certain types of glass, the treatment of felt and as a fungicide in paper has been discontinued or banned.

Other Names

Name	Product Code
MERCURY Metal LR	ML059
MERCURY Metal TG	MT059
Quicksilver	
MERCURY Metal AR	MA059
New Product	

Other Information

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture	Hazardous to the Aquatic Environment - Acute Hazard: Category 1 Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1 Acute Toxicity - Inhalation: Category 2 Specific target organ toxicity - Repeated Exposure Category 1 Toxic to Reproduction: Category 1
Signal Word (s)	DANGER
Hazard Statement (s)	H330 Fatal if inhaled. H360 May damage fertility or the unborn child. H372 Causes damage to organs through prolonged or repeated exposure. H410 Very toxic to aquatic life with long lasting effects.
Pictogram (s)	Health hazard, Skull and crossbones, Environment

Classified as hazardous

Precautionary statement – Prevention

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe fumes or vapours.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P281 Use personal protective equipment as required.
P284 Wear respiratory protection.

Precautionary statement – Response

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310 Immediately call a POISON CENTER or doctor/physician.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.

Precautionary statement – Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Precautionary statement – Disposal

P501 Dispose of contents/container according to local, state and federal regulations.

Other Information

Toxicologically Synergistic Materials: In one animal study, the offspring of pregnant rats exposed to both methylmercury and elemental mercury had more pronounced behaviourial effects than rats exposed to elemental mercury alone. Similar effects were not observed in the offspring of rats exposed to methylmercury alone. Exposure to other metals at the same time, the use of penicillin-type antibiotics, and ingestion of ethanol in alcoholic beverages can influence the excretion of elemental mercury.

Potential for Accumulation: Elemental mercury is a heavy liquid. The vapour evaporates from the liquid and evaporation occurs more rapidly when the liquid is heated. The vapour is well absorbed following inhalation. It accumulates in the kidney and the brain. Elemental mercury is excreted from the body slowly. It has an elimination half-life of 40-60 days. Most elemental mercury is excreted in exhaled air, and small amounts in the faeces and urine. Very small amounts can be eliminated in sweat, saliva and milk. Following ingestion, elemental mercury is poorly absorbed and most of it is excreted in the faeces. Elemental mercury liquid and vapour can be absorbed through the skin in small amounts. Elemental mercury is transferred to the developing child in a pregnant women.

3. Composition/information on ingredients

Ingredients

Name	CAS	Proportion
Mercury	7439-97-6	100 %

4. First-aid measures

Inhalation

Remove from exposure, rest and keep warm. Give oxygen if available. Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Do NOT use mouth-to-mouth resuscitation. DO NOT allow victim to move about unnecessarily. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask. If heart has stopped, apply cardiopulmonary resuscitation. Seek immediate medical attention.
Supportive care: Give supplemental oxygen and observe closely for up to 48 hours for development of acute pneumonitis and pulmonary oedema.

Ingestion

Wash out mouth thoroughly with water and give plenty of water to drink. NEVER give anything by mouth if the victim is rapidly losing consciousness, is unconscious or is convulsing. Do NOT induce vomiting. Obtain medical attention immediately.

Skin	Quickly and gently blot or brush away excess chemical. Wash gently and thoroughly with water and non-abrasive soap for 15 minutes or until the chemical is removed, while removing contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Dispose or decontaminate clothing before reuse - do not wash clothes in washing machine. Properly discard contaminated clothing, shoes and leather goods. See Section 6. for Disposal methods. Serious Skin Contact: Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention immediately.
Eye contact	Quickly and gently blot or brush away excess chemical. Check for and remove any contact lenses if easily possible. Immediately flush the eye(s) with lukewarm, gently flowing water for 30 minutes or until the chemical is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. Do NOT allow victim to rub eyes or keep eyes closed. Get medical aid immediately.
First Aid Facilities	Eye wash, safety showers and normal washroom facilities.
Advice to Doctor	Treat symptomatically and supportively. Ingestion: Because liquid mercury usually passes through the gastrointestinal tract system without being absorbed gut decontamination is not required. Following a very large intentional ingestion, particularly in a patient with multiple blind loops of bowel or intestinal perforation, there is a risk of chronic intoxication. Whole gut lavage, or even surgical removal may be necessary depending on X-ray evidence of large pockets of mercury. Monitoring: With acute mercury vapour inhalation symptoms of pneumonitis may be delayed for several hours; a chest X-ray and arterial blood gases may show early signs of toxicity. Monitor electrolytes, fluid balance and renal function. Obtain blood and urine mercury levels. Collection of 24 hour urine mercury is useful in determining body burden. Antidote: Chelation therapy should not be started until the gut has been emptied of mercury or it may enhance mercury absorption. For serious systemic intoxication DMPS (dimercaptopropanesulphonic acid) is the treatment of choice. It should be given IV in seriously ill patients and orally in those with less severe effects or in those with chronic mercury toxicity. DMSA (succimer, 2-3 dimercaptosuccinic acid) has been used successfully as an oral chelating agent in a limited number of patients with mercury poisoning and could be used in patients sensitive to DMPS. Dimercaprol (BAL) is another alternative. Penicillamine has also been used. Management controversies: The use of dimercaprol (BAL) has been questioned in recent years with the advent of the less toxic hydrophilic BAL analogues DMSA and DMPS.
Indication of immediate medical attention and special treatment needed if necessary	Mercury can accumulate in the body and cause significant long-term health effects. Medical advice should be sought following any exposure.
Protection for First Aiders	Avoid direct contact. Wear chemical protective clothing, if necessary.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products	Irritating or highly toxic fumes (or gases), very toxic mercury vapour and mercuric oxide.
Specific Methods	Use extinguishing agent suitable for type of surrounding fire. Do not direct water at heated material.
Specific hazards arising from the chemical	Does not burn but may produce corrosive and/or poisonous fumes upon heating. Fire will produce irritating, poisonous and/or corrosive gases. Runoff will pollute waterways.
Hazchem Code	2X
Precautions in connection with Fire	Wear SCBA and chemical splash suit. Structural firefighter's uniform will provide limited protection.

6. Accidental release measures

Methods and materials for containment and cleaning up

A method involving the use of a wash consisting of equal parts of lime and sulphur, Mercury Decontaminant MT056, which is applied to the contaminated area for 24 hours and then washed off with clean water has been recommended.

Spills & Disposal

Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Do not use steel or aluminium tools or equipment. Cover with earth, sand or other non-combustible material followed by plastic sheet to minimize spreading or contact with rain. Seek expert advice before handling mercury - Use a mercury spill kit if available. Clean up bulk of spill using mechanical means - Residual mercury may be reacted with calcium sulphide (mercury spill kit). SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.

Other Information

Do not vacuum with home vacuum cleaner; this may disperse liquid mercury, increasing its airborne concentration.

7. Handling and storage

Precautions for Safe Handling

AVOID EXPOSURE TO (PREGNANT) WOMEN! AVOID EXPOSURE TO ADOLESCENTS AND CHILDREN! Avoid ingestion and inhalation of fumes/vapour. Avoid contact with skin, eyes and clothing. Avoid prolonged or repeated exposure. Keep container locked up and tightly closed when not in use. Do not use in the open laboratory. Use only in a chemical fume hood. Use smallest possible amounts in designated areas with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Wear appropriate protective equipment. Mercury forms amalgams with many metals. All metallic jewellery must be removed. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Discard contaminated shoes. Ensure a high level of personal hygiene is maintained when using this product. That is, always wash hands before eating, drinking, smoking or using the toilet. Do not eat, drink, or smoke during work. Keep away from foodstuffs, and empty foodstuff receptacles. Keep away from incompatibles such as oxidizing agents, metals, ammonia, amines, and acetylene. Avoid use of metal tools. Keep container dry. Never add water to this product. Keep material away from heat, sparks, flames and other ignition sources. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Depending on the degree of exposure, periodic medical examination is indicated.

Conditions for safe storage, including any incompatibilities

Keep storage separate from populated work areas. Accessible only for authorized persons. Store in tightly closed, suitable, labelled containers, in a cool, dry, well-ventilated area away from incompatible substances, such as materials that support combustion (oxidizing materials). Protect against physical damage, direct sunlight and moisture. Store protected from azides. Keep away from metals. Do not store in metallic containers as corrosion by formation of metallic amalgams can result. Limit quantity of material in storage. Inspect periodically for deficiencies such as damage or leaks. Have appropriate fire extinguishers available in and near the storage area. Make provision to contain effluent from fire extinguishing. Separate from food, feedstuffs and empty foodstuff receptacles. Isolate from any source of heat or ignition. Do not use or store on porous work surfaces (wood, unsealed concrete, etc.). Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product.

Corrosiveness

Many metals, such as copper and its alloys, brass, bronze and nickel- copper, zinc, lead, tin, aluminium, silver, gold and alkali metals, dissolve readily in mercury to form amalgams. Metals that have good or excellent resistance to corrosion by amalgamation include, iron, steel, stainless steel, nickel and molybdenum.
Special Remarks on Corrosivity: The high mobility and tendency to dispersion exhibited by mercury, and the ease with which it forms alloys (amalga) with many laboratory and electrical contact metals, can cause severe corrosion problems in laboratories.

Storage Regulations	Refer Australian Standard AS 3780-1994 'The storage and handling of corrosive substances'.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended). Do not store above 25 °C.
Recommended Materials	Iron, steel, stainless steel, nickel and molybdenum.
Unsuitable Materials	Many metals, such as copper and its alloys, brass, bronze and nickel- copper, zinc, lead, tin, aluminium, silver, gold and alkali metals.
Additional information on precautions for use	In areas in which mercury is constantly in use, i.e. dropping mercury electrodes, the vapour level of mercury contamination should be checked regularly.

8. Exposure controls/personal protection

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Mercury			0.025	0.003	Mercury, elemental vapour (as Hg)

Other Exposure Information	A time weighted average (TWA) has been established for Mercury, elemental vapour (as Hg) (Worksafe Aust) of 0.025 mg/m³, (0.003 ppm). The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.
Appropriate engineering controls	Provide sufficient ventilation to ensure that the working environment is below the TWA (time weighted average). Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940-The storage and handling of flammable and combustible liquids and AS 2430-Explosive gas atmospheres for further information concerning ventilation requirements.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: NR latex, vinyl, nitrile, neoprene gloves.
Footwear	Rubber boots.
Body Protection	Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Liquid
Appearance	Silvery or silver-white, heavy, mobile, liquid metal.
Odour	Odourless.
Melting Point	-38.9 °C.

Boiling Point	356.9 °C.
Solubility in Water	Insoluble (56 mcg/L at 25 °C).
Solubility in Organic Solvents	Soluble in dilute and concentrated nitric acid, aqua regia (mixture of nitric and hydrochloric acids), warm concentrated hydrochloric acid and sulfuric acid (reacts). It is sparingly soluble in dilute hydrochloric acid and cold sulfuric acid.
Specific Gravity	13.55
Solubility in Fat	Soluble in lipids.
Vapour Pressure	1.70 x 10(-4) kPa (0.0013 mm Hg) at 20 °C; 2.7 x 10(-4) kPa (0.002 mm Hg) at 25 °C.
Vapour Density (Air=1)	6.93.
Evaporation Rate	(BuAc=1): 4.
Coefficient Water/Oil Distr.	Log P(oct) = 5.95.
Odour Threshold	Mercury is odourless. Warning Properties: POOR - mercury is odourless and nonirritating.
Volatile Component	100 %vol @ 21 °C
Surface Tension	480.3 mN/m (480.3 dynes/cm) (water = 75.6 mN/m) at 0 °C; 484 mN/m (484 dynes/cm) at 25 °C.
Flammability	Non combustible material.
Explosion Properties	Forms explosive compounds with ammonia, amines and acetylene. A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. Explodes violently when mixed with chlorine dioxide. A mixture of the dry carbonyl and oxygen will explode on vigorous shaking with mercury. Methyl azide in the presence of mercury was shown to be potentially explosive.
Molecular Weight	200.59
Dynamic Viscosity	1.55 mPa.s (1.55 centipoise) at 20 °C.
Saturated Vapour Concentration	1.7 ppm (14 mg/m³) (0.00017%) at 20 °C; 2.6 ppm (21.5 mg/m³) (0.00026%) at 25 °C (calculated).
Other Information	Relative density of the vapour/air-mixture at 20 °C (air = 1): 1.009. Conversion Factor: 1 ppm = 8.19 mg/m³; 1 mg/m³ = 0.122 ppm at 25 °C (calculated). Critical Temperature: 1450 °C; 1462 °C; 1677 °C. Critical Pressure: 1.677 x 10(6) kPa (16604 atm.). Triple Point: -38.84 °C. Amalgamates with some metals.

10. Stability and reactivity

Chemical Stability	Stable under normal temperatures, pressures and conditions of use and storage. Mercury reacts with hydrogen sulfide in the air to form mercuric sulfide.
Conditions to Avoid	High temperatures, heat, flames, ignition sources, dust and vapour generation, improper handling, storage and disposal, metal surfaces, and incompatible materials.
Incompatible Materials	Ammonia in the presence of traces of water, ammonium hydroxide, amines, halogens, dry bromine, chlorine at 200-300 °C, strong oxidizing agents (e.g. halogen oxides, chlorine dioxide, strong acids, nitric acid / hydrohalic acids, peroxyformic acid, chlorates or nitrates, nitromethane, silver perchlorate), acetylenic compounds (e.g. acetylene, 3-bromopropyne or acetylidene), ethylene oxide, methyl silane or tetracarbonylnickel (in the presence of oxygen), azides, methyl azide or hot sulfuric acid, carbides, sodium carbide (ground), boron diiodophosphide, sulfur, sodium thiosulfate, active and alkali metals (aluminium, potassium, lithium, sodium, rubidium, calcium, lead, iron, copper, copper alloys, tin, zinc, zinc alloys), metal oxides and metal carbonyls.

Hazardous Decomposition Products	Extremely toxic and/or irritating fumes or gases of mercury, mercury oxides and mercuric sulfide.
Possibility of hazardous reactions	Attacks aluminium, potassium, sodium, calcium, copper, copper alloys and many other metals, except iron, forming amalgams. A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. Can react with ammonia to form explosive compounds in the presence of traces of water. Reacts with amines and oxalic acids to form compounds that are sensitive to mechanical shock. Reacts violently with dry bromine. Ignites at 200-300 °C in a stream of chlorine. Risk of ignition or exothermic reaction with chlorine, silanes and oxygen. Can explode with strong oxidizing agents (e.g. chlorine dioxide, peroxyformic acid, chlorates or nitrates). May explode with acetylenic compounds (e.g. acetylene, acetylidene or 3-bromopropyne), due to formation of explosive acetylides. May form unstable, explosive acetylide with traces of acetylene present in ethylene oxide. Can explode with methyl silane or tetracarbonylnickel (in the presence of oxygen), methyl azide or hot sulfuric acid. Ground mixtures of sodium carbide and mercury can react vigorously. Boron diiodophosphide immediately ignites in mercury vapour. Dangerous gases or fumes in contact with nitric acid.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Acute Toxicity - Oral	Oral Lowest Lethal Dose (human): 1429 mg/kg.
Acute Toxicity - Inhalation	Inhalation Lowest Toxic Concentration (human) = 29 mg/kg for 40 years, leading to CNS effects. TCLO (man): 150 mcg/m³/ 46d: CNS, GIT. LC50 (rat): Approximately 19.1 mg/m³ /4 hr; cited as approximately 27 mg/m³ /2 hr (20/32 animals died) (undefined vapour or liquid/vapour mixture).
Ingestion	Absorption from the gastrointestinal tract is limited. Ingestion of elemental mercury usually does not produce acute toxicity unless a gastrointestinal fistula or other gastrointestinal inflammatory disease is present, or the mercury is retained for a prolonged period in the gastrointestinal tract. Ingestion of large quantities may cause only mild effects, such as tremor, irritability, forgetfulness and fatigue and possible delayed liver effects. If complications occur, ingestion may give rise to effects similar to those for inhalation.
Inhalation	Corrosive. Highly toxic by inhalation of mercury vapours formed upon heating mercury. Inhalation of the vapour, which is well absorbed, chiefly causes the adverse effects. Acute mercury vapour inhalation is reported to have a higher mortality rate in children than in adults. Central nervous system effects, gingivitis, and stomatitis, damage to the kidneys, liver, blood, heart, lungs and colon can develop. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract, and severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Mercury vapour causes chemical burns and severe damage to the respiratory tract, erosive bronchitis and bronchiolitis with interstitial pneumonitis. Effects include sore throat, coughing, pain, breathing difficulties, shortness of breath, tightness and burning pains in the chest, coughing up blood, impaired lung function, inflammation of the lungs, haemoptysis and evidence of interstitial pneumonitis, often followed by atelectasis, emphysema, haemorrhage and pneumothorax, and occasionally, pulmonary oedema. The cause of death is progressive respiratory failure. The mortality rate is higher in children than adults. May cause respiratory sensitization. Aspiration of metallic mercury may result in severe pulmonary toxicity or death. In some cases only mild symptoms have developed. Initial exposure to high concentrations of fumes may cause symptoms similar to metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever or elevated body temperature, chills, cough, dyspnoea, weakness, fatigue, chest pain, muscle weakness and pain, tremor, nausea, vomiting, abdominal pain, diarrhoea, headache, visual disturbances and increased white blood cell count. The principal signs manifest themselves in the CNS (headache, vertigo, muscle weakness and incoordination, tremors (initially

	affecting the hands and sometimes spreading to other parts of the body), impaired speech, vision, hearing, and sensitivity, ringing in the ear, loss of memory, emotional instability (including irritability, increased excitability, a loss of confidence, excessive shyness, anxiety, nervousness and depression) hallucinations, delirium inter alia), sleeplessness, slow reflexes and a loss of feeling or numbness. The effects may be delayed. Stomatitis, swelling of the salivary glands, excessive salivation, difficulty swallowing and gingivitis may develop within a few days of acute exposure to mercury. Other effects include anorexia. Kidney injury is common following exposure to high concentrations of mercury. Reported effects range from increased protein in the urine to kidney failure. Exposure to high concentrations of mercury has also caused increased blood pressure and heart rate. Inhalation of dusts may cause drop in blood pressure, cardiac dysrhythmia, tachycardia with dull heart sounds and a gallop rhythm and circulatory collapse. Hepatotoxicity following acute exposure to elemental mercury is rare.
Skin	Corrosive and harmful. May cause irritaton and possible burns. Symptoms include redness, pain, inflammation, itching, scaling, blistering and skin rash (in milder cases), and cold and clammy skin with cyanosis or pale colour. Continued skin contact with mercury may cause dermatitis. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Liquid and vapour can be absorbed through the skin, particularly if skin is broken or damaged and may contribute to the overall absorption and toxicity, with symptoms to parallel inhalation.
Eye	Corrosive and harmful. May cause severe irritation, possible burns and severe lesions. May cause ulceration of the conjunctiva and cornea. Symptoms include redness, watering, itching, pain, blurred vision; may cause serious and permanent eye damage. High concentrations of mercury vapour can cause redness, burning and inflammation of the eyes. Elemental mercury droplets may be absorbed after eye contact. Exposure can cause discolouration on the front surface of the lens, which does not interfere with vision.
Skin Sensitisation	May cause sensitisation by skin contact.
Carcinogenicity	Mercury [7439-97-6] and inorganic mercury compounds are evaluated in the IARC Monographs (Vol. 58; 1993) as Group 3: Not classifiable as to carcinogenicity to humans.
Reproductive Toxicity	Developmental Toxicant Mercury and mercury compounds: developmental toxin - 'Chemicals Known to the State of California to cause Cancer or Reproductive Toxicity September 29, 2006. Mercury [resp/oral/skin]: human-mutagen, teratogen, neurotoxin, increased rate of spontaneous abortion, embryolethal, menstrual irregularities - ôReproductive Hazards of the Workplace” by Linda M. Frazier, MD, MPH & Marvin L. Hage, MD.
Chronic Effects	Chronic exposure may be fatal. Danger of cumulative effects. May cause damage to the blood, heart, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS) and lungs by inhalation exposure and limited absorption through the skin. Effects may be delayed. A fine tremor is common, usually a fine static tremor of the fingers, eyelids, lips, tongue and jaw, which may progress to the head, arms and legs and may cause deterioration of the handwriting and the ability to perform other manipulative tasks and slurred speech. Tremors are thought to be a sensitive indicator for long-term low-level exposure to mercury vapour. High exposure may cause a fine trembling of the muscles, interrupted by coarse shaking movements every few minutes, beginning peripherally in the fingers, eyelids, and lips and with the characteristics of intentional tremor. It may develop into generalised tremor involving the entire body, with intermittent violent chronic spasms of the extremities. Neurological effects include headache, behaviour and personality changes such as irritability, confusion, exaggerated response to stimulation, excitation, emotional instability, excessive shyness, nervousness, and/or impatience, vague fears, depression, anger, aggressiveness, weakness, fatigue, insomnia, short-term memory loss, constriction of visual fields, difficulties in counting objects at a low illumination and poor depth and colour perception, speech disorders, altered sense of taste and smell, decreased appetite, weight loss, anorexia, paresthesias, diaphoresis, blushing, muscle cramps, polyneuropathy, sensory and motor nerve conduction delays. Some

effects may be irreversible. In advanced cases there may be loss of memory, seizures, psychotic reactions such as delirium and hallucinations or intellectual deterioration, suicidal melancholia, or even manic-depressive psychoses and possible permanent central nervous system damage. In severe cases, spontaneous degeneration of the brain cortex can occur as a late sequela to past exposure. Moderate to high exposure can cause damage to the kidneys, with early indicators including proteinuria and nephrotic syndrome, less often, changes to the structure of the kidneys have been shown. Acute tubular necrosis and renal failure may develop. Repeated skin contact can cause the skin to turn grey in colour and rashes are common. Allergic skin sensitization to mercury liquid or vapour may occur, with symptoms such as redness (erythema), dry, itchy skin, rash and swelling (contact dermatitis), which can spread from the hands or arms to other parts of the body. Long-term exposure to presumably high concentrations of mercury vapour can cause nausea, vomiting, diarrhoea, abdominal pain, metallic taste, anorexia, stomatitis, swelling of the salivary glands and gingivitis and other digestive system effects. Excessive salivation with loosening of the teeth and discolouration of the gums, due to gum inflammation, is a sign of advanced poisoning, as is a blue line along the gum margin. Mercury may affect the heart producing increased blood pressure and/or heart rate and abnormal ECG results. Rarely, thrombocytopenia, leucopenia, eosinophilia, anaemia and lymphopenia have occurred. Aplastic anaemia and death from bone marrow suppression may occur. Altered immune response has been suggested in a few studies. Mercury vapour, spray mist or dust inhalation may produce respiratory tract irritation. Extreme exposures may result in pulmonary oedema, bronchitis, necrotic bronchiolitis, pneumonitis, or ARDS. Repeated or prolonged contact with spray mist may produce chronic eye irritation. Mercurialentis is the name given to an unusual appearance of the anterior surface of the lens seen in people with long-term occupational exposure. The change in the lens consists of greyish or light-to-coffee brown granular discolouration. The change is bilateral and symmetrical, and the visual activity is thought to be unaffected. A gray band through the cornea (band keratopathy) has also been reported in a few people. Poor colour vision was observed with moderately high to high occupational mercury exposure. An idiosyncratic hypersensitivity reaction, called acrodynia or pinks disease, more common in children, is characterised by generalised erythematous body rash. Other symptoms are chills, swelling and irritation of the hands, feet, cheeks and nose, usually followed by severe leg cramps, loss of hair and ulceration, hyperplasia and hyperkeratosis, irritability, sleeplessness and profuse perspiration, accompanied by dilated and enlarged sweat glands and desquamation of the sole and palms, which may lead to dehydration.

Serious eye damage/irritation

Inflammation was not observed in rabbits when mercury came into contact with the eyelids. The only reports of direct contact of mercury with the eye involve injection. The results of these tests are not relevant for assessing irritancy.

Mutagenicity

No conclusions about the mutagenicity of elemental mercury compounds in humans can be drawn from the available studies. Several studies of people with occupational exposure to mercury compounds have shown no increases in genetic damage, while other studies have reported effects. However, the available studies have all had design limitations such as small sample size, inadequate controls, other hazardous exposures (e.g. X-rays) and incomplete reporting.

12. Ecological information

Ecotoxicity

Highly toxic for aquatic organisms. May cause long-term adverse effects in the aquatic environment. This material is expected to be toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l. In the food chain important to humans, bioaccumulation takes place, specifically in fish.

Persistence and degradability

Half-life in water, soil and vegetation:
Water: The half-life of mercury can vary considerably, depending on whether biological and non-biological mechanisms are involved.
Artificial decontamination of bottom sediments has cleaned up Minimata Bay and the nearby Yatsushiro Sea, to a large extent accelerating the natural process by an estimated 31.5 years. The natural decontamination of the Yatsushiro Sea is estimated to have a half-life of 9.5 years. The decontamination of the

	Ottawa River, where only natural processes were involved, was found to have a half-life of 1.5 years. Air: The atmospheric residence time for mercury vapour is up to 3 years, where soluble forms have a residence time of only a few weeks.
Environmental Fate	Much of the mercury deposited on land, appears to revaporize within a day or two, at least in areas substantially heated by sunlight. Metallic mercury is rather volatile. A saturated atmosphere of mercuric vapour contains approximately 18 mg Hg/m^3 at 24 °C. Mercury vapour is converted to soluble forms and deposited by rain into soil and water. The change in specification of mercury from inorganic to methylated forms is the first step in the aquatic biotransformation process. This can occur non-enzymatically or through microbial action. Elemental mercury is almost insoluble in water. Solubility: approximately 60 mg Hg/l at 24 °C. In aquatic systems, mercury appears to bind to dissolved matter or fine particulates, while the transport of mercury bound to dust particles in the atmosphere or bed sediment particles in rivers and lakes is generally less substantial. The conversion, in aquatic environments, of inorganic mercury compounds to methyl mercury implies that recycling of mercury from sediment to water to air and back could be a rapid process.
Bioaccumulative Potential	This material has an experimentally-determined bioconcentration factor (BCF) of greater than 100. Bioconcentration factors of 63,000 for freshwater fish and 10,000 for salt water fish have been found. Mercury bioaccumulates and concentrates in the food chain (concentration may be as much as 10,000 times that of water). This material is expected to significantly bioaccumulate.
Biological Properties	Aquatic life: Fish take up metallic mercury and retain it in the tissues, principally as methylmercury, although most of the environmental mercury to which they are exposed is inorganic. The source of methylation is uncertain, but there is strong indication that bacterial action leads to methylation in aquatic systems. Elimination time is slow in fish (with half lives in the order of months or years) and from other aquatic organisms. Bioconcentration factors of 63,000 for freshwater fish and 10,000 for salt water fish have been found. Species of fish that are high on the food chain, such as shark, swordfish, king mackerel, albacore tuna, and tilefish contain higher concentrations of mercury than others. Species with characteristically low levels of mercury include shrimp, tilapia, salmon, pollock, and catfish. Birds: Sea birds and those feeding in estuaries are most at risk of mercury poisoning. The form of retained mercury is variable and depends on the species, organ and geographical site. Mammals: An experimental study was carried out with six sheep which were given 4 mg inorganic mercury in their feed for 28 days. The results suggest that the long term ingestion of mercury leads to a chronic effect on the production of farm animals. High tissues concentrations of mercury have been found in a number of wild animals. Microbial: About 37 consortia were isolated in the presence of mercury chloride. These strains retained between 82 and 90% of the total mercury influent in fixed bed experiments. The retention mechanism was the reduction in ionic mercury to metallic mercury. Vegetation: Low levels of uptake of inorganic mercury from the soil by plants have been reported. Plants: Barley was used to assess plant-availability, tissue concentration and genotoxicity of mercury from the solid waste deposited of a chloralkali plant. Roots were found to take up most of the mercury, bioconcentration in the straw was minimal and accumulation of mercury in the grain did not increase with increased mercury in the soil, indicating a restriction of transport function. Protected species: Inorganic mercury is toxic to micro-organisms, aquatic life, insects, birds and mammals, therefore, a number of protected species would be at risk if exposed to toxic doses. High tissues concentrations of mercury have been found in a number of wild animals.
Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	The LC50 varies between 33 and 400 mg/l / 96 h for freshwater fish and are higher for seawater fish. Gambusia affinis: LC50 = 0.9 mg/l/ 96 h; Rainbow trout: LC50 = 0.16-0.90 mg/l / 96 h; Bluegill/Sunfish: LC50 = 0.16-0.90 mg/l / 96 h;

	Channel catfish: LC50 = 0.35 mg/l / 96 h; Ictalurus punctatus LC50: 0.35 mg/l /96 h. The following applies to the water-soluble matter contained in inorganic Hg compounds in general (tested with mercury(II) chloride): Leuciscus idus LC50: 0.5 mg/l /48 h.
Acute Toxicity - Daphnia	Daphnia EC50: 0.01 mg/l /48 h; Daphnia EC50: 0.0052 mg/l /48 h. The following applies to the water-soluble matter contained in inorganic Hg compounds in general (tested with mercury(II) chloride): Daphnia magna EC50: 0.005-3,6 mg/l /48 h.
Acute Toxicity - Algae	The following applies to the water-soluble matter contained in inorganic Hg compounds in general (tested with mercury(II) chloride): Chlorella pyrenoidosa EC50: 0.3 mg/l /5h.
Acute Toxicity - Bacteria	The following applies to the water-soluble matter contained in inorganic Hg compounds in general (tested with mercury(II) chloride): Pseudomonas fluorescens IC50: 0.005 mg/l. The toxicity of mercury(II) ions for water organisms depends on the water hardness.

13. Disposal considerations

Disposal Considerations	Dispose of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information	Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following: Class 1, Class 4.3, Class 5, Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids, Class 7; and are incompatible with food and food packaging in any quantity.
U.N. Number	2809
UN proper shipping name	MERCURY
Transport hazard class(es)	8
Sub.Risk	6.1
Hazchem Code	2X
Packing Group	III
EPG Number	8A1
IERG Number	30
Environmental Hazards	Highly toxic for aquatic organisms. May cause long-term adverse effects in the aquatic environment. Danger of bioaccumulation.

15. Regulatory information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS).
Poisons Schedule	S7
Packaging & Labelling	Special material. Do not transport with food and feedstuffs.
Other Information	NICNAS - Human Health Tier II Assessment for Mercury https://www.nicnas.gov.au/chemical-information/imap-assessments/imap-assessment-details?assessment_id=1819#cas-A_7439-97-6

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'. Safe Work Australia, 'National Code of Practice for the Preparation of Safety

	Data Sheets for Hazardous Chemicals'. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand. Safe Work Australia, 'Hazardous Chemical Information System'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. ChemSupply Australia Pty Ltd accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.
Empirical Formula & Structural Formula	Hg

...End Of MSDS...