Mercury and mercury compounds – PROPOSED STANDARD

[For incorporation in] Industrial Chemicals Environmental Management (Register) Instrument 2022

Schedule 6 – Relevant industrial chemicals that are likely to cause serious or irreversible harm to the environment with essential uses

The risk management measures including prohibitions and restrictions apply to the relevant industrial chemical; and a product or article containing such a chemical.

The proposed standard is based on information from the Minamata Convention on Mercury - Text and Annexes, the Australian Industrial Chemicals Introduction Scheme Mercury: Environment tier II assessment and Industrial Chemicals Environmental Management (Register) Instrument 2022 decisions for Schedule 6 and 7 chemicals.

Please note that this proposed standard applies only to chemicals with industrial uses. Other chemical applications, such as for veterinary or medicinal uses, are outside the scope of the Industrial Chemicals Environmental Management Standard (IChEMS) and are managed under separate regulatory frameworks.

Definitions for terms contained in this proposed standard may be found in the *Industrial Chemicals Environmental Management (Register) Act 2021*, *the Industrial Chemicals Environmental Management (Register) Instrument 2022*, *the Industrial Chemicals Environmental Management (Register) Principles 2022*, or in the Glossary of IChEMS terms.

Relevant industrial chemical	**Intent and explanatory notes**
Chemical name: Mercury and mercury compounds. CAS number: 7439-97-6 and others (see non-exhaustive list). The following is included in the above chemical class: • mercury (CAS number 7439-97-6) and mercury alloys and amalgams • any chemical compound that contains at least one mercury atom in the molecular formula, such as:	The class of chemicals includes elemental mercury, mixtures of mercury (including amalgam and alloys of mercury), and any organic or inorganic substances consisting of atoms of mercury and one or more atoms of other chemical elements (1+ mercurous and 2+ mercuric compounds). The chemical class incorporates the Minamata Convention's definition of mercury and mercury compounds:

o inorganic compounds (monovalent and divalent ions, i.e. mercurous salts and mercuric salts); and o organomercury compounds (compounds in which mercury is bonded covalently to at least one carbon atom).	'…elemental mercury (Hg(0), CAS No. 7439-97-6);' '…any substance consisting of atoms of mercury and one or more atoms of other chemical elements that can be separated into different components only by chemical reactions.' Elemental mercury is the more commonly utilised form of mercury in industrial applications. Many of the inorganic and organic mercury compounds are not commercially active in Australia and are only used for research purposes in laboratories. Anthropogenic releases of all mercury and mercury compounds contribute to the total volume of mercury in the mercury cycle. Additional guidance on identity will be included in the IChEMS Online Register, including the chemical class name and description; and a non-exhaustive list of CAS numbers.
Risk management measures including prohibitions and restrictions	**Intent and explanatory notes**
(a) This entry comes into effect on 1 July 2026.	The date of effect of 1 July 2026 is proposed for the standard for mercury and mercury compounds. This will allow approximately 12 months before the standards to come into effect, assuming that these decisions are made in June 2025. The proposed date of effect aligns with the phase-out dates of certain mercury-added products listed in the Minamata Convention (Annex A, Part I) which prohibit the

	manufacture, import and export of certain listed products after 2025; and where mercury cell chlor-alkali facilities are required to be phased out by 2025 (Annex B). This is expected to allow sufficient time for all required entities to take measures to adapt to the standard where required.
(b) The class of chemicals has the following essential end uses: (i) products essential for civil protection and military uses; or (ii) If no feasible mercury free alternative for replacement is available—the following: (a) switches and relays; (b) cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for electronic displays; (c) measuring devices; (d) lamps used for purposes other than general lighting for the generation of non-visible radiation. (iii) If no feasible mercury free alternative for replacement is available - the following mercury-containing lamps (until 31 December 2027): (a) linear fluorescent lamps (LFLs) for general lighting purposes:	Parties to the Minamata Convention shall not allow the manufacture, import or export of mercury-added products listed in Part I of Annex A after the phase-out date specified for those products. Essential uses for this standard have been derived from items excluded from prohibition by the convention. The class of chemicals will only be permitted for essential uses (where no feasible mercury free alternative is available), research or laboratory purposes, or where the chemical is present in finished goods ('articles') that are already in use. *Military uses* Military use means equipment or articles necessary for the protection of Australia, includes arms, munitions and war material intended for specifically military purposes. Elemental mercury may be used in electronics (G-sensors (security system applications), oscillators, rectifiers, tilt switches), lighting, manometers or vacuum gauges and mechanical parts (e.g. rotary connectors or mercury slip ring connectors). Mercury compound use could include mercuric oxide batteries, mercury fulminate (ammunition primers and detonators), mercury cadmium telluride in infrared detectors and mercury iodide in

i. triband phosphor < 60 watts with a mercury content not exceeding 5 mg/lamp. ii. triband phosphor ≥ 60 watts. (b) all wattages of triband phosphor non-linear fluorescent lamps (NFLs) (e.g., U-bend and circular) for general lighting purposes. (iv) If no feasible mercury free alternative for replacement is available - high pressure sodium vapour and metal halide lamps for general lighting purposes (until 1 June 2030).	radiation detectors. Older military capabilities may contain mercury added products which may be problematic or not possible to replace as the systems have been specifically designed to use the mercury containing items and upgrading this equipment may not be a viable option. *Civil protection uses* Civil protection or civil defence is the protection of people, the environment and property against all kinds of natural and human-induced disasters. This includes functions undertaken by police and National Emergency Management Agency (NEMA). There is limited information available on the full extent of mercury and mercury compounds used in this sector. Use could include emergency response search lights and navigation. The use of mercury may be essential to public safety in a small number of heritage-listed lighthouses which aids the Australian Maritime Safety Authority (AMSA) in navigation. *Other essential uses* Essential uses for switches, relays, CCFLs and EEFLs would apply where the mercury added product is a component of a larger product. Examples of switches and relays include mercury displacement relays, reed relays, seismic switches, tilt switches. Examples of measuring devices may include non-electronic measuring devices installed in large-scale equipment or those used for high precision measurement where no suitable mercury-free alternative is available.

	The Minamata Convention does not prohibit special purpose mercury containing lamps (specialty or niche market lamps not used for general lighting). These include UV lamps for a variety of purposes – polymer curing, disinfection, chemicals treatment and pest control. Please note that essential uses do not include mercury containing items and chemicals that are regulated under the *Therapeutic Goods Regulations 1990* or the *Agricultural and Veterinary Chemicals (Administration) Act 1992*. Examples include vaccines containing thiomersal and dental amalgam.
(c) The manufacture of the class of chemicals is prohibited except:	The manufacture of mercury and mercury compounds will be prohibited (with limited exceptions), in line with the requirements of the *Industrial Chemical Environmental Management (Register) Principles 2022* (ICEMR Principles, subsection 15(2)(a)). According to the AICIS IMAP Risk Assessment there is no evidence that mercury compounds are currently being manufactured in Australia from imported mercury. The organometallic mercury compound, (methoxyethyl)mercuric chloride (CAS RN 123-88-6), was previously manufactured in Australia from imported elemental mercury and mercuric oxide (CAS RN 21908-53-2) for use as a fungicide. This was phased out on 16 June 2020. Please note that the term *manufacture* refers to the synthesis, or extraction, of the chemical. In this context, *manufacture* does not include production of mercury-containing products or articles, which is defined as *use*.

(i) in circumstances where the chemical is present as unintentional or naturally occurring trace contamination; or	The prohibition does not apply to naturally occurring trace quantities of mercury or mercury compounds present as non-mercury metals, ores, or mineral products, including coal, or products derived from these materials, and unintentional trace quantities in chemical products.
(ii) for research or laboratory purposes; or	The ICEMR Principles (subsection 15(2)(a)(i) and the Minamata Convention (Article 3, and Annex A permissible uses) do not apply to quantities of mercury or mercury compounds to be used for laboratory-scale research or as a reference standard.
(iii) for the purpose of essential use.	Under the ICEMR Principles (subsection 15(2)(a)(iii)) manufacture is permitted for the purposes of a specified essential use of the chemical in Australia. The proposed essential uses are listed in paragraph (b) above.
(d) The import and export of the class of chemicals (whether on their own or in mixtures or in articles) are prohibited, except:	The import and export of elemental mercury and mercury compounds is prohibited (with limited exceptions) under the ICEMR Principles (subsection 15(2)(a)).
(i) in circumstances where the chemical is present as unintentional or naturally occurring trace contamination; or	The prohibition does not apply to naturally occurring trace quantities of mercury or mercury compounds present as non-mercury metals, ores, or mineral products, including coal, or products derived from these materials, and unintentional trace quantities in chemical products.
(ii) for research or laboratory purposes; or	The ICEMR Principles (subsection 15(2)(a)(i)) and the Minamata Convention (Article 3, and Annex A permissible uses) do not apply to quantities of mercury or mercury compounds to be used for laboratory-scale research or as a reference standard.

(iii) if a hazardous waste permit authorises the import or export of the class of chemicals; or	Import or export of mercury and mercury compounds is proposed to be permitted for the purposes of environmentally sound disposal in accordance with the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, subject to approval under the *Hazardous Waste (Regulation of Exports and Imports) Act 1989*.
(iv) for the purpose of an essential use.	Under the ICEMR Principles (subsection 15(2)(a)(iii)) import or export is permitted for the purposes of a specified essential use of the chemical in Australia. The proposed essential uses are listed in paragraph (b) above.
(e) The use of the class of chemicals (whether on their own or in mixtures, or in articles) is prohibited except:	The use of the class of chemicals, including in the production of articles, or the use of an article containing the chemical, is prohibited except for specified purposes. As part of the Minamata Convention ratification process in 2018, Australia conducted a national survey process with state and territory governments to identify manufacturing processes listed in Annex B. This process was repeated in 2024. Where limited use of mercury containing catalysts are still being used in the production of polyurethane, manufacturers have already been advised to transition away from mercury use in advance of the phase-out date of 31 December 2025. Note that the term use includes processing, handling, transporting and storing. The prohibition extends to the use of mercury in artisanal and small-scale gold mining and processing.

(i) in circumstances where the chemical is present as unintentional or naturally occurring trace contamination; or	The use of mercury and mercury compounds is permitted under the Minamata Convention if present unintentionally and unavoidably in non-mercury metals, ores, mineral products or in chemical mixtures and articles.
(ii) for research or laboratory purposes; or	Use of the chemical for research or laboratory purposes is permitted under the ICEMR Principles (subsection 15(2)((b)(i)).
(iii) for the purposes of environmentally sound disposal; or	Under the ICEMR Principles (subsection 15(2)(b)(ii)), use for the purposes of environmentally sound disposal is permitted.
(iv) for the purpose of an essential use; or	Under the ICEMR Principles (subsection 15(2)(b)(iii)), use is permitted for the purposes of a specified essential use of the chemical in Australia. The proposed essential uses are listed in paragraph (b) above.
(v) for articles in use before 1 January 2026.	The prohibition on use will not apply to articles already in use. The ongoing use of mercury containing products/devices, if they already exist in Australia, is permitted under the Minamata Convention. Existing stocks of articles imported to Australia prior to 1 January 2026 may continue to be sold, supplied or used domestically until the remaining stock is depleted.
(f) The import, export and manufacture of the class of chemicals (whether on their own or in mixtures or articles) must adhere to applicable laws of the Commonwealth for the control of industrial chemicals.	The roles of the Commonwealth and states and territories in achieving environment protection goals are driven by the Australian Constitution and further defined in the Intergovernmental Agreement on the Environment signed in May 1992.

	In relation to chemicals and contamination, the Australian Government is responsible for matters of foreign policy and engagement in international agreements, controlling the Australian border, and facilitating development of national standards and guidelines. This provision is included to ensure that introducers and exporters adhere to all other relevant Commonwealth legislation.
(g) The use of the class of chemicals (whether on their own or in mixtures or articles) must adhere to applicable laws of the Commonwealth or of the relevant State on the control of industrial chemicals.	This provision is included to ensure that users adhere to all other relevant Commonwealth, state and territory legislation, and that states and territories have control within their jurisdiction.
(h) Importers and manufacturers must determine and provide information on the concentration by weight, whether on their own, in a mixture, or in an article to the supply chain.	Importers should share information on what they are putting on the market. This provides public awareness, transparency and can help to ensure the proper separation and consequently the environmentally sound disposal of mercury added products at the end of their useful life. This provision also applies to introduction for research purposes.
(i) Importers, manufacturers and users must keep the following information up-to-date and must produce this information if requested by a relevant agency responsible for environmental protection:	Introducers and users should provide information on introduction or use to their relevant state and territory Environment Authority as required, e.g. as part of a permit application, demonstration of compliance with a licence condition, or other consultation. These reporting requirements will help Australia to narrow data gaps around mercury supply, trade, use and storage, meet the Minamata Convention obligations tied to the articles 3 (trade), 5 (manufacturing processes), 10 (environmentally sound interim storage of mercury) and 21 (national reporting).

(i) information on the identity of the chemical, the concentration by weight, and the mixtures and articles it is used in; and (ii) quantity of the class of chemicals used or placed on the Australian market; and (iii) a justification for the use; and (iv) details on the conditions of use and safe disposal.	Note, information on the storage conditions of the class of chemicals is required to be kept by importers, exporters and users under this measure. Storage is an activity related to use, as per its definition in the *Industrial Chemicals Act 2019*.
(j) Producers and holders of waste must undertake all reasonably practicable measures to avoid contamination of waste not already containing this class of chemicals; and must not dilute waste containing the class of chemicals to lower the concentration below relevant waste handling and disposal thresholds.	Under the Basel Convention Technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds, industrial mercury wastes should be managed as hazardous wastes separate from other wastes generated at industrial facilities. Separate management of such wastes allows for appropriate treatment to either extract the mercury from them or to stabilize the wastes for proper disposal without diluting their mercury content. Dilution of the mercury by mixing it with other wastes could make treatment less effective, or could inappropriately reduce the mercury concentration, hindering the proper management of such wastes.
(k) Waste consisting of, containing, or contaminated with the class of chemicals at a total concentration that is equal to, or greater than, 15 mg total mercury/kg must be either:	Article 11 of the Minamata Convention defines “mercury wastes” as substances or objects (a) consisting of mercury or mercury compounds (e.g., pure substances); (b) containing mercury or mercury compounds (e.g., lamps, batteries, dental amalgam, electrical and electronic switches, scientific instruments, etc); or (c) contaminated with mercury or mercury compounds (e.g., ash, sludge, oil and gas refining catalysts, etc).

	There is a threshold value of 15 mg/kg (total concentration) for defining “waste contaminated with mercury or mercury compounds”. This threshold is not intended to be applicable to the following scenarios: • biosolids applied to agricultural lands, • contaminated site assessments, • waste released to freshwater and marine environments (e.g., oil and gas activities, dredging programs, etc).
(i) managed or disposed of in a manner consistent with the technical guidelines on the environmentally sound management of mercury or mercury compound waste developed under the Basel Convention; or (ii) managed or disposed of in an environmentally sound manner as authorised under a law of the Commonwealth or a law of a State, where treatment in accordance with subparagraph (i) is not the environmentally preferable option.	The Basel Convention Technical Guidelines encourages treatment of mercury waste so that it meets the acceptance criteria of disposal facilities. Wastes consisting of mercury or mercury compounds should be stabilized and/or solidified before final disposal and final disposal should be carried out in accordance with national and local laws and regulations. Article 4, paragraph 8, of the Basel Convention requires that “hazardous wastes or other wastes, to be exported, be managed in an environmentally sound manner in the State of import or elsewhere”. Article 11 of the Minamata Convention requires appropriate measures to manage mercury waste in an environmentally sound manner. Any disposal must not involve recovering the class of chemicals and using it elsewhere unless it is for an allowed essential use.
(l) Waste consisting of, containing, or contaminated with the class of chemicals at a total concentration that is less than, 15 mg total mercury/kg must be managed in an environmentally	This measure allows for decisions on waste management to be made by jurisdictions.

sound manner as authorised under a law of the Commonwealth or a law of a State.	'Environmentally sound manner' can include state and territory regulations/policies, for example end of waste codes, clean fill codes, or nationally agreed guidance. Information regarding the disposal of low mercury content waste is available in the Basel Convention Technical Guidelines.
(m) Waste disposed according to provision (k) must be reported to the relevant agency for environmental protection with the following information: (i) the identity and amount of the waste containing the class of chemicals; and (ii) the origin of this waste and the concentration by weight; and (iii) the name and contact details of the facility accepting this waste; and (iv) details of the treatment and disposal method.	The Basel Convention technical guidelines encourages Parties to identify the sources of mercury waste generation and quantify the amount of mercury wastes generated and the mercury concentrations in such wastes. This enables effective action to prevent, minimise and manage mercury wastes.
(n) Disposal must not lead to recovery, recycling, reclamation, or re-use of the class of chemicals, unless for the purposes of an essential end use, and subject to paragraph (o).	The Minamata Convention (Article 11 3(b)) allows for the recovery, recycling, reclamation of mercury from waste or to directly re-use the mercury waste for a use, provided the use is an allowed us or for environmentally sound disposal (ref Basel technical guidelines).
(o) In carrying out disposal, the class of chemicals may be isolated from the waste, provided that it is subsequently disposed of in accordance with paragraphs (k) and (l)	The class of chemicals may be removed/recovered/isolated from contaminated waste so that the waste may, for example, be reused for an essential use. The removed chemicals,

	however, must then be treated and/or disposed of appropriately (e.g. disposed of in specially engineered landfills).
(p) If an activity in relation to the class of chemicals (whether on their own or in mixtures or in articles) is not permitted under paragraph (c), (d) or (e), a holder of a stockpile of the class of chemicals must: (i) notify the relevant agency responsible for environmental protection of the nature and size of the stockpile; and (ii) manage that stockpile as waste in accordance with paragraphs (k) and (l); and (iii) comply with all relevant laws that apply in the relevant jurisdiction.	This measure ensures that residual mercury stocks from processes not permitted after the commencement of this standard are managed appropriately and relevant environmental agencies are notified of the stockpile.
(q) The class of chemicals (whether on their own or in mixtures or articles) must be managed according to the IChEMS Minimum Standards.	Available online. As agreed on 4 November 2022 by Commonwealth, State and Territory environmental regulators. STANDARD 1 – INFORMATION AND AWARENESS Obtain, share, and use information on the environmental risks of industrial chemicals to ensure that any persons handling the chemical throughout the supply chain are aware of these risks, and enabled to undertake activities using industrial chemicals in an environmentally safe manner. For introducers (importers and manufacturers) and reformulators, this includes a requirement to develop and provide information to the supply chain about the

	environmental risks of the industrial chemical, when used for the purpose for which it was manufactured. STANDARD 2 – RISK MANAGEMENT PLANNING Identify risks and develop, assess, evaluate and monitor control measures. STANDARD 3 – HARM MINIMISATION CONTROLS Apply practicable control measures to eliminate risks, then reduce risks that cannot be eliminated, then manage residual risks using best available techniques and best environmental practices. STANDARD 4 – ENVIRONMENTALLY SAFE STORAGE Store and contain industrial chemicals in an environmentally safe manner. STANDARD 5 – EFFECTIVE RESPONSES TO INCIDENTS Plan for and respond effectively and promptly to industrial chemical incidents. STANDARD 6 – ENVIRONMENTALLY RESPONSIBLE WASTE MANAGEMENT Implement waste management for industrial chemicals in an environmentally safe manner in line with the waste hierarchy and local requirements.