

STANDARD GUIDANCE

(COP 23) Hazardous Substances

A. Definitions and applicability

A **Hazardous Substance** is any material that poses a threat to human Health and/or the Environment.

In the Jewellery supply chain hazardous substances may consist of input or raw materials (e.g. organic solvents, acids or welding fluxes), or waste streams and by-products (discharges to air, water or land, empty hazardous substance packaging, residues, acid sulphate soil, etc).

The Hazardous Substances section of the COP is applicable to all Members that use Hazardous Substances. Note that the use or presence of mercury or cyanide in the Mining Sector is addressed under separate [Mercury](#) and [Cyanide](#) provisions.

The Hazardous Substances section of the COP should be read and implemented in conjunction with the [Health and Safety](#), [Environmental Management](#), and [Wastes and Emissions](#) sections of the COP.

B. Issue background

As industrial processes grew and expanded during the twentieth century, governments started to adopt measures to regulate the use and management of chemicals with the aim of protecting people and the environment. Today there are numerous rules and regulations introduced in many industrialised countries to assess and manage the workplace health and safety and environmental risks in relation to hazardous substances.

The use of hazardous substances and dangerous goods is widespread at most workplaces. Often it may only include cleaning products and substances used in controlled environments such as laboratories, but can of course include complex and extremely hazardous chemicals. Typical hazardous substances may include but are not limited to:

- Asbestos
- Carbon monoxide
- Cyanide
- Dust and fumes
- Fibreglass
- Flammable liquids
- Inorganic lead
- Isocyanate in paints
- Mercury
- Ozone Depleting Substances (ODSs)
- Poly chlorinated biphenyls (PCBs)
- Soldering fluxes
- Synthetic Mineral Fibres

Hazardous materials may be used or generated as waste at many points during the jewellery supply chain. Though definitions vary across jurisdictions, materials are often designated as hazardous if they are flammable, oxidising, corrosive, toxic, radioactive or explosive and pose threats to public health or the environment. Examples relevant to the sector may include mining overburden, gold beneficiation and refining wastes, electroplating residues, degreasing wastes, mercury, paints and solvents, used oils, electronics, batteries, refrigerants, and many industrial chemicals and cleaning agents. These materials, and others, all attract different regulatory conditions, depending on the jurisdiction.

Mercury emissions from gold refining vary greatly based on the mercury content of the ore being used, production process, and control technology. Recovering mercury during the refining process may be done to

comply with regulatory requirements, or if the value of the mercury recovered provides an incentive. Mercury is sometimes used in laboratories for gold assaying and as a gold-plating agent in small-scale jewellery manufacturing, though these uses are diminishing because of its toxicity.

Further information on managing wastes is provided in the guidance for [Waste and Emissions](#).

C. Key regulations

International standards

Standards and regulations exist for many of the hazardous substances used in the gold and diamond jewellery supply chain. Some of the key international regulations relating to hazardous substances include:

- The Rotterdam Convention (1998) with the objective to protect human health and the environment from potential harm from the movement and trade of hazardous substances and to contribute to the environmentally sound use of those hazardous chemicals. The Convention creates legally binding obligations for signatory countries including the need for Prior Informed Consent about the movement and effects of hazardous substances. It covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons. Countries ratify the obligations in the Convention by setting up government agencies to manage hazardous substances within their jurisdictions. Therefore, compliance with local Applicable Law generally means that this Convention is being followed.
- The Stockholm Convention (2004) is an international legally binding convention aiming to end the release and use of persistent organic pollutants (POPs). POPs are defined as chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects on the environment and human health. Substances targeted under this Convention for reduction and ultimate elimination are nine kinds of pesticides, two industrial chemicals (hexachlorobenzene and polychlorinated biphenyls (PCBs)), and two families of chemical byproducts (dioxins and furans) from combustion processes and production of chlorinated substances.
- The Montreal Protocol on Substances that Deplete the Ozone Layer (1989) phases out production of a number of ozone-depleting substances. To date, the primary focus has been on chlorofluorocarbons (CFCs), with slower phasing out of other substances.
- In 2002, the United Nations Economic Commission for Europe proposed an international system for the safe use, transport and disposal of chemicals and hazardous substances. The new system, which was called "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)", addressed classification of chemicals by types of hazard and a common language to communicate information about the chemical including labels and safety data sheets. The GHS is primarily written for governments, regional institutions and international organizations, it also contains sufficient context and guidance for those in industry who will ultimately be implementing the requirements which have been adopted. Implementation has already occurred in 67 countries with the aim of global implementation by 2015. Significant changes to domestic regulation in many countries are anticipated as a result of GHS implementation. The GHS includes harmonised criteria for the classification of:
 - physical hazards,
 - health hazards, and
 - environmental hazards.

National law

Most countries have legislation and regulation regarding the proper handling, management, use and disposal of hazardous substances. Many national and state jurisdictions require additional specific conditions for businesses that need to be met especially in storage and handling of hazardous substances.

Most countries already have laws regarding the implementation of the UN GHS program regarding the need for all hazardous substance to be accompanied by a safety data sheet (SDS), or equivalent. A SDS is a

document containing important information about a hazardous substance and on how to safely handle them, and usually must state:

- a hazardous substance's product name
- the chemical and generic name of certain ingredients
- the chemical and physical properties of the hazardous substance
- health hazard information
- precautions for safe use and handling
- first aid procedures
- the manufacturer's or importer's name, address and telephone number.

The SDS provides employers, self-employed persons, workers and other health and safety representatives with the necessary information to safely manage the risk from hazardous substance exposure. It is important that everyone in the workplace has access to and can read and interpret a SDS. Many jurisdictions require that SDS must have been issued within the previous 3 years. Members thus need to ensure that their SDS are current.

It is essential for Members to be aware of and comply with applicable laws and regulations.

D. Suggested implementation approach

- ***COP 23.1: Inventory and documentation:*** *Members shall maintain an inventory of Hazardous Substances at Facilities. Safety Data Sheets (or equivalent) shall be accessible where all Hazardous Substances are in use and their associated Risks shall be clearly communicated to all Employees and Contractors who work with them.*

Points to consider:

- You may be surprised at the quantity and diversity of hazardous substances that are present in your workplace, with many present in small quantities and others not used for a long time.
- Many hazardous substances may not be recognised as such, and may be taken for granted without due attention to their proper handling, labelling, storage and disposal.
- Responsible management of hazardous substances requires accurate inventories, and proper handling by trained workers.
- Any worker involved in the handling and use of a hazardous substance must be aware of the relevant risks and procedures for use of the substance.
- Members should review the use and handling of all hazardous substances used in the workplace to determine if there are risks to workers' health or the environment, and implement controls to minimise risk, through for example improved training and procedures, and use of safer alternatives. See the RJC Risk Assessment Toolkit for a general risk assessment template that can be used, particularly for small to medium enterprises. Alternatively Members may use their own risk assessment process.
- A person should be identified with responsibility for maintaining the inventory at each workplace, including authority for approving the introduction of new chemicals into a facility and the provision of adequate resources to store and respond to incidents specific to the nature of the material.
- For some commonly used hazardous substances purchased in small volumes, the equivalent of a Safety Data Sheet (SDS) will be found on the label printed on the container.
- The system for maintaining inventory records should be appropriate to the quantities and diversity of hazardous substances that are present in your workplace.
- Written policies and procedures regarding the review and use of chemicals, including the need for all substances to be accompanied by SDS's, should be kept in two locations: firstly, in a consolidated register of all hazardous substances; and secondly, close enough to where the good is stored or used.
- For office-type environments and workplaces that use limited quantities of hazardous substances, quantities on-site could be recorded in a range rather than continuously updated, for example: "3 to 5 150ml bottles of isopropyl alcohol".
- For operational workplaces using larger volumes of hazardous substances as part of a process, such as a refiner or manufacturer, more sophisticated systems will be necessary that regularly update quantities, locations and status of the hazardous substances used. In these types of environments it may be appropriate to maintain the inventory in an electronic database. Various third-party database systems are available for these purposes.

- Also note:
 - Inventories are subject to constant change, as substances are used, moved, replaced and disposed.
 - Hazardous substances that are in longer term storage and not in active use are vulnerable to being misplaced, mislabelled, and improperly handled.
 - Original containers for hazardous substances must not be re-used for a different purpose without being properly cleaned and relabelled.
 - All labels should be properly affixed and protected from damage.
 - Vessels and containers should be stored in a manner that keeps the label visible
 - Caution should be used when hazardous substances are transferred to new containers to ensure they have appropriate physical properties and are properly labelled.
 - Empty hazardous substance containers and packaging should be treated as a hazardous waste as these can be contaminated with residual material. Most countries have laws about disposal of these containers and prohibit disposal with general waste.
- **COP 23.2: International bans:** *Members shall not manufacture, trade, and/or use chemicals and Hazardous Substances subject to international bans due to their high toxicity to living organisms, environmental persistence, or potential for bioaccumulation, irreversible ecological impacts, or depletion of the ozone layer.*

Points to consider:

- Check whether you use hazardous substances subject to international bans. Refer to the adjacent table for some of these substances.
- Hazardous substances should be procured only through legitimate commercial suppliers.
- *Non-consumptive* use of hazardous substances, for example chlorofluorocarbons (CFCs) that were integrated into equipment before restrictions were introduced, are permitted under this provision if used in accordance with Applicable Law.
- Compliance with Applicable Law should in the vast majority of cases result in the avoidance of hazardous substances subject to international bans.
- If there are any uncertainties about the status of certain substances, Members should take steps to verify compliance.

Hazardous Substances Subject to International Bans

The list of hazardous substances subject to international bans is constantly growing. Internationally banned hazardous substances include, but are not limited to:

- Ozone depleting substances such as
 - Chlorofluorocarbons (CFCs), Hydrobromofluorocarbons (HBFCs) or Hydrochlorofluorocarbons (HCFCs)
 - Halons
 - Carbon tetrachloride (CCl₄) and Methyl chloroform (CH₃CCl₃)
 - Methyl bromide (CH₃Br).
- Persistent Organic Pollutants such as:
 - Aldrin, Chlordane, Dieldrin, Endrin, Hexachlorobenzene, Mirex or Toxaphene
 - Dioxins and Furans
 - Dichlorodiphenyltrichloroethane (DDT)
 - Polychlorinated biphenyls (PCBs), and Polychlorinated terphenyls (PCTs).
- Or other substances such as Tributyl Tin (TBT), Hexavalent chromium, Brominated flame retardants (BFR), Polybrominated biphenyls or Polybrominated diphenyl ether.

- **COP 23.3: Alternatives:** *Members shall employ alternatives to other Hazardous Substances used in business processes wherever technically and economically viable.*

Points to consider:

- Prioritise those hazardous substances used in the workplace that pose the greatest risk to workers' health or the environment.
- Assess the effectiveness of alternatives, and determine if alternatives could be used without compromising business results.
- Minor inconveniences should not stand in the way of the use of a non-hazardous alternative.

Check:

- ✓ Do you have an inventory of hazardous substances?
- ✓ Do they all have Safety Data Sheets that are accessible to employees and contractors that use them?
- ✓ Have you checked whether your business manufacturers, trades or uses any substances subject to international bans?
- ✓ Have you reviewed whether there are suitable alternatives to hazardous substances used in your business?

Tips for Small Businesses

Small businesses will often have a range of hazardous substances many in small quantities in their business. It is useful to carry out a stock-take to determine what is on the premises, how much is stored and how best to dispose of the waste products.

A typical inventory may look like the following:

Facility Name / Location					Date Reviewed			
Product Name	Chemical ID No (e.g. UN No.)	Supplier	Storage Location	Maximum Storage Volume	SDS Location & Date	Waste Disposal Company	PPE / Equipment Required	Comments
List name and alternative names of chemicals	Most hazardous substances have a unique IS or UN No.	Provide the supplier(s) names	Identify the location, room, storage cabinet where the substance is stored. Consider also listing where it is used.	Nominate the maximum volume ever stored on site.	Identify the location and date of all SDSs.	Provide the name(s) of the waste disposal company. Note it may even be the supplier.	List special PPE and equipment for safe handling of the substance.	

This inventory should be regularly reviewed and updated especially whenever there is a change. It can also be used as the basis for a risk assessment associated with the handling, use, storage and disposal of the substances. Note that the RJC Risk Assessment Toolkit provides a general risk assessment template, particularly for small to medium enterprises.

The hazardous substances register can be used to recognise the potential for accidental spillage which may result in the contamination of soil, water or air. Priority actions can be identified using the hierarchy of controls, for example:

- **Eliminate:** Get rid of all the unused and unnecessary chemicals and hazardous substances through a licensed waste contractor
- **Substitute:** Ask your supplier for advice about which toxic substances could be substituted with less toxic ones.
- **Mitigate:** Install a storage area bunded to prevent pollution from accidental spillage, or review the emergency response plan.
- **Administer:** Develop a chemical handling procedure and training for employees.
- **Personal protective equipment:** Ensure that appropriate equipment is available for staff.

Also see the guidance for [Health and Safety](#), [Environmental Management](#) and [Wastes and Emissions](#).

E. Further information

The following websites have further information on hazardous substances:

- Material Safety Data Sheets (MSDS) Solutions Centre
www.msds.com/
- Rotterdam Convention on the Prior Informed Consent for Certain Hazardous Chemicals & Pesticides in International Trade
www.pic.int
- State of Nevada Department of Conservation and Natural Resources – Air Emissions - Mining

- http://ndep.nv.gov/mercury/mercury_air.htm
- Stockholm Convention on Persistent Organic Pollutants
www.pops.int/
- The Montreal Protocol on Substances that Deplete the Ozone Layer
www.theozonehole.com/montreal.htm
- United Nations Economic Commissions for Europe (UNECE) - Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html
www.unece.org/trans/danger/publi/ghs/implementation_e.html
- United Nations Environment Programme (UNEP) Global Mercury Partnership
www.chem.unep.ch/mercury/partnerships/new_partnership.htm
- United Nations Environment Programme- Persistent Organic Pollutants
<http://www.chem.unep.ch/pops/>