



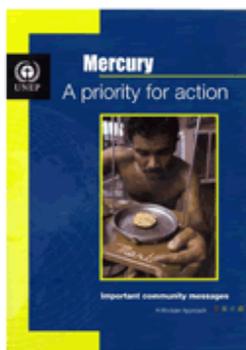
United Nations Environment Programme
environment for development

Harmful Substances

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Awareness Raising Package



This publication is intended to raise awareness amongst stakeholders of the effects of **mercury**. It is designed for the use of government officials, community leaders, and/or workers to provide information intended to contribute in building public support and capacity to take preventive actions.

This publication exists also in [French](#) and [Spanish](#). [I've attached the Spanish version.]

<http://www.unep.org/hazardoussubstances/Mercury/MercuryPublications/ReportsPublications/AwarenessRaisingPackage/tabid/4022/language/en-US/Default.aspx>

The document can be used in a number of ways:

- for reference,
- to train staff,
- to present or hand out as copies directly from the toolkit,
- to develop materials specific to your community.

How is it laid out?

The package begins with a [user's guide](#), providing information on general awareness raising for small and medium-sized businesses.

The package includes an [introductory booklet](#) which provides a general overview of the mercury situation.

There follows a set of 5 modules that describe different aspects of the mercury issue:

[MODULE 1: Mercury in Products and Wastes](#)

[MODULE 2: Mercury and Industry](#)

[MODULE 3: Mercury Use in Artisanal and Small Scale Gold Mining](#)

[MODULE 4: Mercury Use in Healthcare Settings and Dentistry](#)

[MODULE 5: Cultural Uses of Mercury](#)

The organization of the modules allows you to go directly to the topic of interest. Each module provides information on the issue and what people need to know in order to recognize and reduce sources of exposure, and provides examples of how some mercury exposure situations have been handled.

A series of associated presentations have been prepared for use in awareness raising activities.

Introduction to the Mercury Issue

Module 1: Mercury in Products and Wastes

Module 2: Mercury and Industry

Module 3: Mercury Use in Artisanal and Small Scale Gold Mining (for Government Officials)

Module 3: Mercury Use in Artisanal and Small Scale Gold Mining (for Miners)

Module 4: Mercury Use in Healthcare Settings and Dentistry (for Government Officials)

Module 4: Mercury Use in Healthcare Settings and Dentistry (for Healthcare Workers)

Module 5: Cultural Uses of Mercury

If you believe anything is missing or develop additional materials you think would be useful, please contact us at the following email address: mercury@unep.org



www.chem.unep.ch/mercury/awareness_raising.../G_01-16_BD.pdf

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Module 5

Cultural Uses of Mercury

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KEY MESSAGES

Mercury has been used for hundreds of years for cultural and religious reasons and has, on occasion, had mythological associations.

A number of practices exist today that use mercury, including: **Santería** (an Afro-Hispanic belief system), **Palo Mayombé** (Caribbean), Candomblé (Afro-Brazilian), Voodoo (Afro-Haitian), **Espiritismo** (Puerto Rican) and **Yoruba Orisha** (Afro-Hispanic). Mercury is also used in Hindu practice as a major constituent of Parad, from which religious relics are made.

In some cases, mercury is injected subcutaneously, intravenously or intramuscularly to improve athletic prowess or protect users from evil.

Exposures resulting from cultural uses depend to a large extent on the nature of the practice: swallowing elemental mercury capsules and **inhalation of mercury vapour** are the most common exposure routes.

WHY IS THIS IMPORTANT TO YOU?

Direct and prolonged exposure to mercury is a human health hazard **and has an impact on the downstream environment.**

People using mercury for cultural uses are often unaware of mercury's toxicity and associated risks.

Often the mercury vapour exposure from cultural use is second-hand, from magico-religious mercury use by a prior occupant of a dwelling.

The storage, transport and handling of mercury for these purposes can impose risk by introducing opportunities for spills and vapour releases.

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For the Public

Be aware of dangers of mercury and the risks of mercury use! There is no safe way to use mercury and scientists have found no safe mercury level in the human body.

Help raise awareness about mercury exposure risks with your family and in your community.

Dispose of mercury-containing products separately, not with other trash.

For Governments and Health Care Workers

Identify communities or cultural groups that use mercury for cultural/religious purposes and investigate the impacts.

Embark on a public awareness campaign for mercury reduction with targeted cultural groups, engaging health professionals and cultural/spiritual leaders.

Develop and distribute informative material for the public on mercury and its toxic effects.

Ask the mass media (newspapers, magazines, radio and television) to help you educate the community on the dangers of the use of mercury.

Encourage reduced mercury use through voluntary promotional initiatives or through regulation of production and sales.

Measure mercury concentrations in dwellings and commercial establishments in the affected area and use this information to communicate risks.

Take part in the UNEP Global Mercury Partnership. Go to www.chem.unep.ch/mercury/partnerships/new_partnership.htm for more information.

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What is the history of mercury use for cultural purposes?

- > Mercury has been used for hundreds of years for cultural and religious reasons and has, on occasion, had mythological associations.
- > Mercury was brought to the New World by Spaniards for use in extracting gold from ores. Its amalgamating properties led to a belief that mercury attracts good fortune, wealth and love.
- > Other characteristics of mercury have led to a range of beliefs. Some people believe its characteristic sudden movements mean it will furnish remedies more quickly. It is also said to prevent evil or bad luck from sticking to a person because it seems slippery.
- > China's first emperor, Qin Shi Huang Di (260 BC – 210 BC) took mercury pills in an attempt to achieve eternal life, but instead he died from mercury poisoning.
- > In the 13th through 17th centuries, mercury was used in India in elixirs believed to confer immortality.

What are common cultural practices that use mercury?

Mercury has long been used in ethnocultural or religious practices such as Santería (an Afro-Hispanic belief system), Palo Mayombé (Caribbean), Candomblé (Afro-Brazilian), Voodoo (Afro-Haitian), Espiritismo (a spirit-focused belief system native to Puerto Rico) and Yoruba Orisha (Afro-Hispanic).

Most of these uses are associated with African roots, and many of them are related the Roman Catholic teachings of Spaniards. The use of mercury – also known as azogue (Spanish) or vidajan (Creole) for such practices – has been documented in many countries, including by minority populations in large cities. Mercury is also used in revised Wiccan (witchcraft) practices. Mercury is employed in Hindu practices as a major constituent of Parad, from which religious relics are made.

How and why is the mercury used?

Sometimes mercury is used to facilitate or to hasten desired results, such as:

- > **Sprinkled on the floor** to protect occupants of a car, home etc.. This is done in children's rooms, and in cars to prevent accidents.
- > Used with water and a mop for spiritual cleaning of a dwelling.

> Added to oil lamps and candles which are then burned to ward off evil spirits; bring good luck, love or money; or to hasten other spells.

> Used in various ways to cast love spells (Greenberg, 1999), heal or dispel evil influences.

Cultural and/or religious practices with mercury use include:

> Carried in amulets, ampoules, vials or pouches worn around the neck or carried on the person.

> Used to make religious statues or other objects, such as parad shivling (see Case Study 14).

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> Applied to the skin or used in bathwater, perfumes, lotions or soaps.

> Injected subcutaneously to ward off evil and protect against exposure to disease while traveling (Prasad, 2004) or intramuscularly to help athletes build muscle mass (Celli and Khan, 1976).

> Ingested for superstitious or medicinal purposes (Greenberg, 1999), including steeped in raw milk before the milk is drunk.

> Mercury and mercury compounds are also used in culturally specific medicinal compounds, such as Asian medicines (see Module 4).

Some examples of risks associated with common practices:

Mercury capsules: Mercury capsules known as Azogue, sold in religious stores, are sometimes used as a Mexican folk remedy for indigestion or gastroenteritis blockages (*empacho*). Ingestion of the heavy, mobile liquid mercury is believed by practitioners to dislodge gastrointestinal blockages, particularly in children (Geffner and Sandler, 1980). Mercury ingestion generally leads to both digestive and renal problems and neurological symptoms. Diagnosis is complicated by the similarity between the symptoms from consuming the mercury and the symptoms of the illness it is used to treat.

Mercury use in the home: Mercury is sometimes kept in containers, such as pots or cauldrons, in the home. These are sometimes sealed but **other times left open to “purify” the air. In the Palo belief system a significant quantity of mercury is one of the most important of many special and mystical ingredients when brewing up the cauldron which is believed to have a spirit in it.** Sometimes mercury is mixed with water, ammonia or camphor, or a magnet is placed in it. Other times it is kept in a gourd or piece of fruit. The most common use of elemental mercury in Latin American and Caribbean communities in New York City is in a container in the home. This practice is found in more than 30% of homes in Latin American communities and in about 25% of homes in Caribbean communities in New York City (Johnson, 1999).

A major problem associated with ritualistic mercury use, is the contamination of wastewater. Johnson reported that 27% of users dumped their residual, unused mercury down the drain, and more enters wastewater from the practices of putting mercury in bathwater and mopping the floor with it, when the mercury in the bottom of the bucket is inadvertently dumped out with the residual soapy water. Additionally, absorbed and ingested mercury is excreted in urine and faeces.

What are the risks?

> Exposures resulting from cultural uses depend to a large extent on the nature of the practice:

- **The most common exposure pathway is through inhalation of mercury vapours.** This is of particular concern especially in closed spaces. Approximately 75-85% **p. 6** of inhaled mercury vapour is absorbed and enters the bloodstream. Any mercury held in unsealed containers or spilled will result in mercury vapour.

- In particular, the practice of sprinkling mercury in a car can result in very high vapour concentrations, especially after the closed vehicle has stood in the sun on a warm day. **Similarly, vapour concentrations in contaminated dwellings can increase in colder weather, when the room or apartment is closed and possibly heated (Johnson, 1999).**

> Special risks are involved in the storage, transport and handling of mercury which introduce opportunities for spills and exposures, both immediate and longer term.

> Unsuspecting persons can be poisoned by exposure to mercury spilled by previous residents of their dwelling. Mercury can linger in cracks in the floor, carpeting, dirt and even concrete for many years, slowly volatilizing.

What can you do?

> Be aware of the risks of mercury use and share this knowledge with your family and friends!

> Always dispose of mercury and mercury containing products as separate hazardous waste (see Module 1).

> Non-governmental organizations can initiate a public awareness campaign with governments to investigate this issue and with cultural groups in your area who are known to use mercury.

What can healthcare professionals do?

> **Be aware of the symptoms of mercury poisoning and how patients might be exposed to mercury.**

> **Help bring together community groups and leaders and government (for example the Health Department) personnel to discuss ways to publicize the risks associated with mercury.**

> **Design and distribute information posters on mercury exposure, risks and symptoms in the local language for public gathering places and see that these are placed in clinics, doctors' offices and hospitals.**

What can governments do?

> Measure contamination levels at locations where mercury is sold and/or used to *measure* and communicate risks.

> Meet with members of cultural groups using mercury, engaging health professionals, cultural/spiritual leaders and local distributors (e.g., botánicas owners and sanadores) in the discussion. These meetings can serve as a forum to understand the use of mercury and share ideas. They could also be useful forums to explore alternatives to mercury use.

> **Develop printed informative material based on documented risks, such as leaflets or posters, on mercury exposure and toxicity in local languages.**

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> **Distribute or post these in targeted public places, transportation centers, government buildings, hospitals, schools and particularly stores that sell mercury.**

> Encourage mercury use reduction by promoting voluntary initiatives or regulating import or sales of mercury and mercury containing products.

> Require that mercury be labeled as hazardous and that signs regarding exposure risks be posted at point-of-sale.

> **Prohibition of the sale of mercury can be effective in reducing mercury use for cultural purposes and is most effective with inspection follow-ups. Prohibition can lead to a significant increase in cost of mercury capsules on the black market (see Case Study 13).**

> Secure proper waste management facilities. See Module 1.

The UNEP Global Mercury Partnership is open to new partners. Joining the partnership can be an excellent opportunity to network with experts and build capacity.

What are the potential barriers in changing cultural practices?

For many ritual and cultural uses of mercury, safer substitutes are identified and readily available.

There is a general lack of awareness of the risks of mercury use as well as available alternatives amongst cultural leaders, communities, health care professionals and people who sell the products.

It is usually difficult at first for individuals to consider changing long-standing cultural or traditional practices. Furthermore, experience has shown that even if users recognize that mercury is considered toxic, they may believe that its ritualistic or supernatural nature renders it harmless or the user beyond harm.

Strong messaging including concrete examples demonstrating the risks can have an impact.

Convincing cultural leaders of mercury risks is of uppermost importance. Trusted health care leaders can play a big role in relaying the message.

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Example: The use of mercury in Santeria

Santeria is an Afro-Hispanic belief system. The use of mercury for Santeria and other spiritual practices has been reported in the Dominican Republic, Cuba and other Caribbean islands, Suriname, Belize, Trinidad, Jamaica, Peru, Ecuador, Argentina, Brazil, Colombia, Mexico, Venezuela, Guyana, France, the Netherlands and Puerto Rico (Wendroff, 1991). Santería was actively suppressed in Cuba after Fidel Castro's revolution – particularly during the 1960s. However, oppression has now largely ended, and the popularity and practice of Santería has increased in Cuba during the 1990s.

Mercury is used in a variety of ways that pose a poisoning risk to users. Some typical uses identified in Santeria are:

- Place mercury in water or in a tea bag with some coins.
- Carry a capsule of mercury in an amulet on a chain or between two coins in a wallet.
- Throw a capsule of it in bath water.
- Swallow a capsule of mercury mixed with holy water.
- Burn mercury in a candle.
- Wash the house with water containing mercury to purify it.
- Put mercury under the bed.
- Swallow a capsule of mercury, sometimes mixed with water, for stomach ailments or cancer.
- Take mercury with beer to increase virility.
- Rub a mixture of mercury and alcohol on an area affected by arthritis.
- **Put mercury in a glass near a candle so that it evaporates quickly.**
- Mix mercury with other ingredients for use in sorcery.
- Apply mercury to the skin during massages.

In communities and regions where these practices are prevalent, mercury is typically sold in capsules from “botánicas” or “yerberias,” which are small, privately owned shops that sell popular religious articles, as well as a variety of products believed to have medicinal or healing properties. Mercury is sometimes sold in gelatin capsules with a capacity of more than 13.5 g, but which typically contain 8-9 g mercury (Riley et al., 2001). A capsule can contain up to 10 times more mercury than one thermometer. Small glass jars, plastic bottles or plastic bags are sometimes used as well, containing as much as 65 grams of mercury.

Most customers arrive at botánicas with a prescription received from a sanador. Besides selling products, some botánicas offer spiritual inquiry services for clients. Usually these consultations are offered in a room inside the botánicas that has been designed for that purpose. Generally, the person that offers these consultations is a spiritualist medium or santero. Some botánica owners function as counselors for their clients and offer social and emotional support.

See Case Study 13# for further information.

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Example: Hindu mercury use in Parad

Parad is an amalgamation of mercury and other metals that is used to make relics for worship of God in the Hindu tradition. Solidifying mercury is an ancient Vedic science. ‘Dharnidhar Samhita’ (scripture) has prescribed sixteen steps through which elemental mercury has to pass to purify it and bring out its beneficial qualities before it is alloyed (mixed with other metals) to make parad, which can be molded

into any solid form. Parad is traditionally made of silver and mercury, but it is now often made of mercury and tin, with trace amounts of other metals.

To people who practice this, the benefits of parad are said to be many and varied, and may include:

- Vaastu or Tanrik dosh nivaran (removes bad luck from the workplace or home).
- Curing a range of diseases.
- Warding off evil spirits.
- Establishing an inner spiritual balance.
- Increasing willpower.
- Stopping nightmares.
- Resolving marriage problems.

In Hindu culture, it is traditionally believed that the worship of parad shivling (an abstract image of God, an icon or statue) will destroy sins. It is said in Brahma Purana scripture that any person who worships parad idols devotedly will receive full worldly pleasures - glory, honor, high office, fame, sons, grandsons and learning - and upon death attain supreme destination (salvation). Various religious objects are made of parad and sold in markets in India. These include: beads worn around the waist or neck, amrit (a nectar or ambrosia) cup, Shivling (an abstract image or statue of God), Lakshmi (a representation of the Goddess of wealth), and a Ganesh (an idol of Lord Ganesh). India has many Shiva temples, which have parad shivlings. Sales of parad statues, jewelry and other artifacts through websites and television are widespread in India.

See Case Study 14# for further information.

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CASE STUDY 14:

PUERTO RICO: PROHIBITION OF MERCURY SALES IN BOTÁNICAS

In 1991 the Puerto Rico Department of Consumer Affairs (DACO) issued an order prohibiting the distribution and sale of mercury capsules.

The order followed a visit to a botánica by an inspector of the Department of Health. In the botánica, the inspector bought two capsules of silvery liquid. These capsules were analyzed by the Department of Health and it was confirmed that they contained mercury. The average price of a mercury gelatin capsule in botánicas at the time the research was done was \$US 2.00, although some botánicas charged as much as \$5.00. (The price of the mercury had increased significantly after the Department of Health prohibited its sale in botánicas. Prior to this regulation a capsule of mercury could be bought for \$US 0.75.)

DACO intervened at the level of the two mercury distributors in Puerto Rico. The presidents of both companies denied having sold capsules of mercury to owners of botánicas. They agreed to impose a fine of \$10,000 on people who violated this prohibition.

Despite the fact that most botánicas owners are aware of the regulation, **a significant percentage of botánicas continue to sell capsules of mercury. In a study that followed the prohibition 132 botánicas were identified in 74 towns:**

- **The majority of the botánicas were located in the coastal areas. 41 % of 76 botánicas visited by researchers sold mercury. Researchers found that botánica owners were reluctant to speak about mercury because of a ban on sales, and most initially denied that they had any for sale.**
- **In 7 cases, owners of botánicas that did not carry mercury sent the customers to others who did sell it or recommended that they obtain it from thermometers.**
- About 50% of botánicas owners knew that the sale of mercury was prohibited because it can damage health, and they adhered to the restrictions. These owners do not have mercury for sale and they tell customers who ask that the sale of mercury has been prohibited because it is dangerous for health.
- **Some owners of botánicas know that the sale of mercury is prohibited, but continue selling it to their clients. Some of these owners advise customers on how to utilize mercury in a way that they say is not toxic. These people very likely continue selling mercury because they are not convinced that mercury is toxic or because they have a financial interest in selling mercury that outweighs its negative health effects. Other owners of botánicas sell mercury knowing its toxic potential but believing that if it is used in a certain way the mercury will not do damage – these owners tend to advise customers on the toxic potential of mercury.**

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C A S E S T U D Y 1 4

- According to owners, candles are the most frequently sold product.

Santería spiritual leaders (sanadores), in the western part of Puerto Rico were interviewed to find out how they use mercury and whether they know of its risks. Of the 24 interviewed, all but two admitted knowing of mercury use, six knew that it was dangerous to health, and four knew that its sale was prohibited.

Botánicas are an important source of information and support system for a significant part of the Puerto Rican population. They perform important therapeutic, economic and social functions in the community. Their name evokes uses of medicines and natural substances, and their context implies traditions of healing and popular medicine. The botánicas have a great variety of products available.

While some botánica owners function like sanadores, others merely sell products for a profit whether they believe in their effectiveness or not. Some attribute the effectiveness of the products to the faith that the user places in them and confess that most of the products they sell are simply not necessarily effective.

SOURCE: This is based on a case study from a Spanish language document: Course notes Sistemas Folclóricos de Ayuda, Módulo 8: El mercurio: <http://www.uprm.edu/socialsciences/sfaenlinea/id15.htm>. By Mario Núñez-Molina. Universidad de Puerto Rico, Recinto Universitario de Mayagüez

CASE STUDY 15:

TOXICS LINK STUDIES MERCURY LEVELS IN PARAD

The Indian non-governmental organization Toxics Link initiated a study of Parad following the creation of a 500 kg Parad shivling at Siddha Ashram. Their objective was to identify the extent of this traditional use of mercury and the cultural significance of Parad, identify possible sources of Parad in the region,

determine the material composition of Parad, and test the leaching behavior of Parad in milk (this test was chosen because the shiv puja involves immersion and bathing of shivling by milk and drinking of that milk by the devotees). Studies revealed that the primary chemical composition of Parad by % weight is tin 74.8 %, mercury 24.9 %, and other metals at low percentages (including silver at 0.04%). Tests showed that mercury in Parad does indeed leach in milk and water, potentially exposing anyone who drinks milk that has been used to soak Parad relics or drinks from Parad cups. Toxics Link is working to raise awareness and educate the public directly on the toxicity of mercury.

Acknowledgement

This case study was provided by Toxics Link, a non-governmental organization in India. Toxics Link emerged from a need to establish a mechanism for disseminating credible information about toxics in India, and raising the level of toxics debate. Currently it has a main office in New Delhi as well as offices in Mumbai and Chennai. “The Ritual Use of Mercury,” an audio (broadcast) segment.

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C A S E S T U D Y 1 4 & 1 5

“The Ritual Use of Mercury,” an audio (broadcast) segment.

For more information see:

Fact Sheet – National Association of County and City Health Officials.

<http://www.naccho.org/topics/environmental/mercury/upload/MercuryFactsheet.pdf>

The UNEP Global Mercury Partnership:

www.chem.unep.ch/mercury/partnerships/new_partnership.htm

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Acknowledgements:

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Mercury Policy Project

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