

## Project Factsheet

# Reducing Mercury Releases from the Health Sector in Africa

## Background

Mercury is a highly toxic heavy metal that poses a global threat to human health and the environment. In the African healthcare sector, mercury is widely used. Mercury-containing devices such as thermometers and sphygmomanometers (blood pressure testing devices) and dental amalgam are the main sources of mercury in the health sector. Additionally, mercury is used in fluorescent lamps, batteries, etc.

During intentional or unintentional discharging of mercury containing devices, liquid elemental mercury is set free and might evaporate, exposing healthcare workers, patients and visitors in hospitals to potentially highly toxic levels. Together with its various compounds, the mercury released has a range of severe health impacts, including damage to the central nervous system, thyroid, kidneys, lungs, immune system, eyes, gums and skin.

To protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds, the Minamata convention was brought to life. As of 1 April 2019, 107 countries are party to the Minamata Convention. Mercury containing measuring devices, including thermometers and sphygmomanometers, are among the list of items whose manufacture, import and export must cease by 2020. Most African healthcare systems are however not prepared to change from mercury to non-mercury containing devices.



(A mercury containing blood pressure meter or sphygmomanometer)

## Approach

This project is focusing on the healthcare sector and aims to reduce mercury releases to help countries meet their obligations under the Minamata Convention. To achieve this, four countries (Ghana, Madagascar, Tanzania and Zambia) were supported in phasing-out the use of mercury containing medical devices and products, while improving practices for mercury containing wastes with the objective to reduce releases of mercury. The objective is to prepare the healthcare sector in the four countries for 2020 when the Minamata Convention comes into force. It includes the enabling of the countries to procure, validate, operate and maintain mercury free thermometers and sphygmomanometers to ensure high quality medical services.

## Activities

- A total of 24 healthcare facilities (HCF) were selected to become pilot/ model sites in the four countries for demonstrating mercury-free devices with the long-term target of becoming mercury free hospitals.
- Training and awareness-raising campaigns on mercury and on the future impact of the Minamata Convention for the national healthcare sector were held.
- In a first procurement round, more than 3500 thermometers and sphygmomanometers were purchased and distributed to the pilot hospitals.
- Old mercury containing medical devices were collected in the hospitals, following a 1:1 exchange concept.
- Interim storage places on national level were set up for the temporary storage of collected mercury containing waste in the pilot countries.

## Challenges

- The trust of the users in alternative, digital replacements was limited, and the first acceptance of the replacements was low.
- In several hospitals, there was either no mercury-containing equipment to be replaced or they were owned by the physicians and the nurses which made the planned 1:1 exchange difficult.
- Standard procurement systems and approved technical specifications for non-mercury containing medical devices (thermometers and sphygmomanometers) were not available.
- Quality control systems to validate the accuracy of supplied equipment in the countries did either not exist or were only available at high cost.
- A legal system for the transportation of small amounts of mercury waste collected from the hospitals was missing.

## Outcomes

- In all four countries, non-mercury containing thermometers and sphygmomanometers were successfully introduced and are used in the pilot health facilities which will be mercury-free in 2020.
- The health systems in the countries are aware of the impact of the Minamata convention 2020. Their systems are enabled to procure and validate high quality non-mercury alternatives fit for medical usage. The future import of mercury containing medical devices is banned.
- The training curriculums of nurses and physicians were changed and include the usage of digital thermometers and sphygmomanometers.
- Hundreds of mercury-containing thermometers and sphygmomanometers were safely collected, and several kilograms of mercury will not be released to the environment.
- A system for the collection and safe interim storage of existing mercury containing waste has been set up in the project countries.



(Interim storage for mercury waste, Lusaka, Zambia, 2019)

## Lessons learned

- To change from mercury containing medical devices to digital alternatives requires a comprehensive approach, as a simple exchange of equipment is not sustainable.
- A quality control system to ensure that only equipment which fulfils required standards is entering the country is a key to ensure trust of users in the new equipment. Specific requirements as e.g. arm-cuffs of different sizes for sphygmomanometers must be available.
- Awareness raising and training on digital equipment on the ground is essential. Formal trainings have to be adapted and have to start in the schools of health.
- To ensure lasting operation of digital equipment a maintenance system to ensure energy supply (batteries) is essential.
- National procurement systems for medical devices (such as medical stores) need to be included in the systems.
- Temporary interim storage facilities for mercury waste do not exist in most countries and need to be included in the strategy to prepare countries for 2020.
- With the exception of South Africa, no African countries operate systems for the final disposal of mercury-containing waste. Exporting of mercury-containing waste remains the main option for final disposal but the health systems in the countries need assistance in organizing export under procedures of the Basel Convention on the Transboundary Movement of Hazardous Wastes.

## Impacts through testimony

**Rajaobelina Sehen Olivia**, a nurse at the University Hospital CHU-HJRA Ampefiloha in Antananarivo, Madagascar, has spent 7 years in the nephrological reanimation unit where she used to monitor the temperature of patients twice in a day; morning and evening. She experienced a number of troubles with mercury thermometers due to frequent breakages, difficulties in cleaning up and lack of safe disposal. *"I was always afraid of hurting myself or of hurting the patient with the broken glasses and above all the reprimands of my supervisor... I was never confident in cleaning spilled mercury. And I was not aware of the hazard from the mercury release of the broken thermometer, until January 2017 when Dr. Hanta Ravaosendrasoa, one of the master trainers of the UNDP-GEF healthcare waste management project in Madagascar, gave us a training on how to deal with mercury spill and introduced mercury free alternatives. The alternatives are affordable and easily available; which I was not aware of either."*



(Rajaobelina Sehen Olivia, a nurse in University Hospital CHU-HJRA Ampefiloha in Antananarivo, Madagascar)

### **At a glance**

**Objective:** Implement best environmental practices and introduce non-incineration healthcare waste treatment technologies and mercury-free medical devices in four Sub-Saharan African countries to reduce harmful releases from the health sector

**Financing:** \$ 6,453,195 (GEF financing)  
\$ 28,936,164 (co-financing)

**Term:** December 2015 until April 2020

**Countries:** Ghana, Madagascar, Tanzania, Zambia

**Agency:** UNDP Istanbul Regional Hub for ECIS

**Partner:** WHO - World Health Organization  
HCWH - Health Care Without Harm

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