Pilot Project
"Reduction of Mercury Use in Costa Rican Hospitals"
Costa Rica is located in the Western Hemisphere on the American continent in Central America.

It has about 4,000,000 inhabitants and an area of 51,100 km².

It is divided administratively into provinces. It has seven provinces.

Costa Rica is considered one of the 20 countries with the greatest biodiversity in the world.
Pilot Project Objective

• To reduce the risk to staff, patients, and the environment associated with the use of mercury in hospitals. Risk reduction will be done through identification, inventory, and proper handling of spills and waste. The goal is to eventually eliminate the use of mercury in hospitals.

Project Scope

• This pilot project was limited to National Children's Hospital. In 2009 it was extended to the Hospital of San Ramon. We are preparing to begin the project in the Hospital of Limon in April, 2009.
Participants

**CCSS:** Caja Costarricense de Seguro Social. This institution promotes the health of the inhabitants of the country, guaranteeing efficient public health service management.

**MINAET:** Ministry of Environment, Energy and Telecommunications. Through the leadership of the Minister, MINAET is coordinating the participation of other public and private entities to generate and implement policies, strategies and actions aimed at fulfilling national and international environmental laws and goals.

**EPA:** Environmental Protection Agency of the United States. EPA is funding the project.
Roles and Responsibilities

- The Caja Costarricense de Seguro Social reviews and approves the mercury waste handling plans. This institution will continue to be involved with every project location in Costa Rica.

- The Ministry of Environment, Energy and Telecommunications has to review the mercury waste handling plans. MINAET is the link with the different organizations within the country.

- The Environment Protection Agency has approved and funded the budget for the development of the project. For example: professional support and equipment replacement.
• These institutions have worked in the pilot project.

• The pilot Project was developed at the National Children's Hospital.
Pilot Project Outcomes

• The pilot project, *Reduction of Mercury Use in Costa Rican Hospitals* developed four interactive plans:
  – Inventory
  – Storage
  – Training
  – Reduction and Replacement of Medical Equipment

• This pilot project was extended to another hospital. The hospital of San Ramon is using the plans elaborated in the pilot project’s plans.

• Another outcome was the creation of the General Plan. National Children’s Hospital has committed to continue the reduction of mercury.
Stage 1: Inventory

- Identified and quantified the medical instruments, chemical reagents, electrical connections and other sources of mercury in hospitals.
- The plan was developed for the diagnosis and inventory of materials that contain mercury.
# Equipment and substances containing mercury

<table>
<thead>
<tr>
<th>Inventory of the quantities of mercury.</th>
<th>National Children's Hospital</th>
<th>Hospital of San Ramón</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.9% mercury wastes</td>
<td>52% mercury wastes</td>
<td></td>
</tr>
<tr>
<td>12.4% dilator probes</td>
<td>6% thermostats</td>
<td></td>
</tr>
<tr>
<td>20.8% sphygmomanometers</td>
<td>37% sphygmomanometers</td>
<td></td>
</tr>
<tr>
<td>1.7% stored broken fever thermometers</td>
<td>1% stored broken fever</td>
<td></td>
</tr>
<tr>
<td>0.5% Laboratory thermometers</td>
<td>thermometers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4% dental amalgam</td>
<td></td>
</tr>
<tr>
<td>100.0% = 24.2 Kg</td>
<td>100.0% = 5.2 Kg</td>
<td></td>
</tr>
</tbody>
</table>
Stage 2: Storage

- We identified the conditions to be met by the storage site and the materials needed for the containers for temporary storage.

- Developed a generic plan for the temporary storage of mercury waste generated by obsolete equipment or accidental spills of medical devices that contain mercury.
Stage 3: Training

- A plan for training and education in the proper handling of mercury in hospital environments:
  - to identify risk situations, to take actions to reduce mercury and provide information necessary to properly dispose of materials containing mercury.
  - Brochures were produced.
¡Evitemos la exposición al mercurio!

Ante derrames pequeños de mercurio

1. Siga las instrucciones de la Norma Institucional sobre el Almacenamiento, Manejo y Uso de Mercurio en Establecimientos de Salud de la Caja Costarricense del Seguro Social.
2. Lleve a mano un kit con los siguientes materiales para contener derrames pequeños:
   - Fuelle
   - Azúcar
   - Algodón
   - Bolsas plásticas de basura
   - Buleto de cierre hermético tipo ziploc
   - Tazones de papel
   - Jeringas plásticas
   - Cinta adhesiva
   - Guantes de nilón o látex
   - Rayas de papel
3. Para recolectar el derrame
   1. Llene el patín de personas ahí donde se derramó. Si es posible evíte el área, abra las ventanas y espere el aire acondicionado.
   2. Quite el reloj y cualquier joya.
   3. Póngase el equipo de protección personal: indumentaria de laboratorio, guantes de goma, vinilo o látex, protectores de botas plásticas desechables, protección de ojos, respirador con mascarilla N95 o aprobada por OCUDA si el derrame fuera grande en una área poco ventilada.
   4. Organice los materiales del kit que utilicé.
   5. Recoja el mercurio usando papel rápido u hojas plásticas, dándolos cuidadosamente todas las partes de mercurio y en una hoja plana. Rurál el mercurio en un recipiente de vidrio o plástico de boca ancha, oto de transferir con un embudo a un recipiente de vidrio o plástico limpio, pequeño y hermético.
   6. Descontamine el área del derrame usando uno de los métodos siguientes:
   a) Esparza en el área del derrame azúcar en polvo, y después de esperar media hora, recoja la mezcla y colóquela en un recipiente hermético, que debe etiquetarse con la leyenda “Deshacce de mercurio, cuidado ventila”
   b) Use papeles de zinc previamente enjuagados en ácido clorhídrico diluido para actuar como “imanes” para recolectar las gotitas de mercurio; después ponga las piezas de zinc/mercurio en un tarro de plástico amplio equipado con una tapa ajustada. Ponga una etiqueta que diga “Material de limpieza de mercurio.”
   7. En caso de grietas, rellene con azúcar en polvo y déjelas cubiertas para inhibir la evaporación de cualquier porción de mercurio que no sea visible o accesible.
   8. Una vez terminadas las procedimientos elimine el equipo de protección personal y dispóngalo como “Material de desechos de mercurio.”
   9. Llame a la Subárea de Gestión Ambiental si requiere una orientación sobre alguno de los puntos anteriores o necesita coordinar la recolación.
Stage 4: Replacement Equipment

- Generated a plan for reduction and replacement of medical equipment using guidelines for mercury and mercury-free environments in hospitals.

This document is a guide of recommendations for those responsible for the purchasing processes in medical centers. It delivers a methodology for analysis and procurement that contributes to reduced use of mercury in medical instruments, such as chemical reagents, measuring instruments, and others.
Experiences

The National Children's Hospital has 25 medical departments that use fever thermometers. The hospital decided to replace mercury thermometers with digital thermometers in one of the services (infectology) first.

Outcome

1. Proposed protocols for the use of digital thermometers: proper use, cleaning, storage, and corrective and preventative maintenance.

2. We identified the strengths, weaknesses, threats and opportunities for change.
Success Factors
Mercury Reduction Project

- Meeting the project objectives according to the timeline.

- Inter-institutional support and commitment (EPA, CCSS, MINAET and hospitals) to the project.

- The involvement and commitment of people responsible for management of equipment containing mercury. This is a result of the training that was developed in the pilot project.

- The project will be sustainable because the purchasing specifications have been rewritten. To provide for the gradual replacement of mercury containing products and equipment.
• Thank you for your attention!

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