


MVOTMA
Ministerio de Vivienda
Ordenamiento Territorial
y Medio Ambiente

DINAMA
Dirección Nacional
de Medio Ambiente


# UNEP Mercury Partnership

# Supply & Storage Area

# Experts Group Meeting

Madrid, Spain

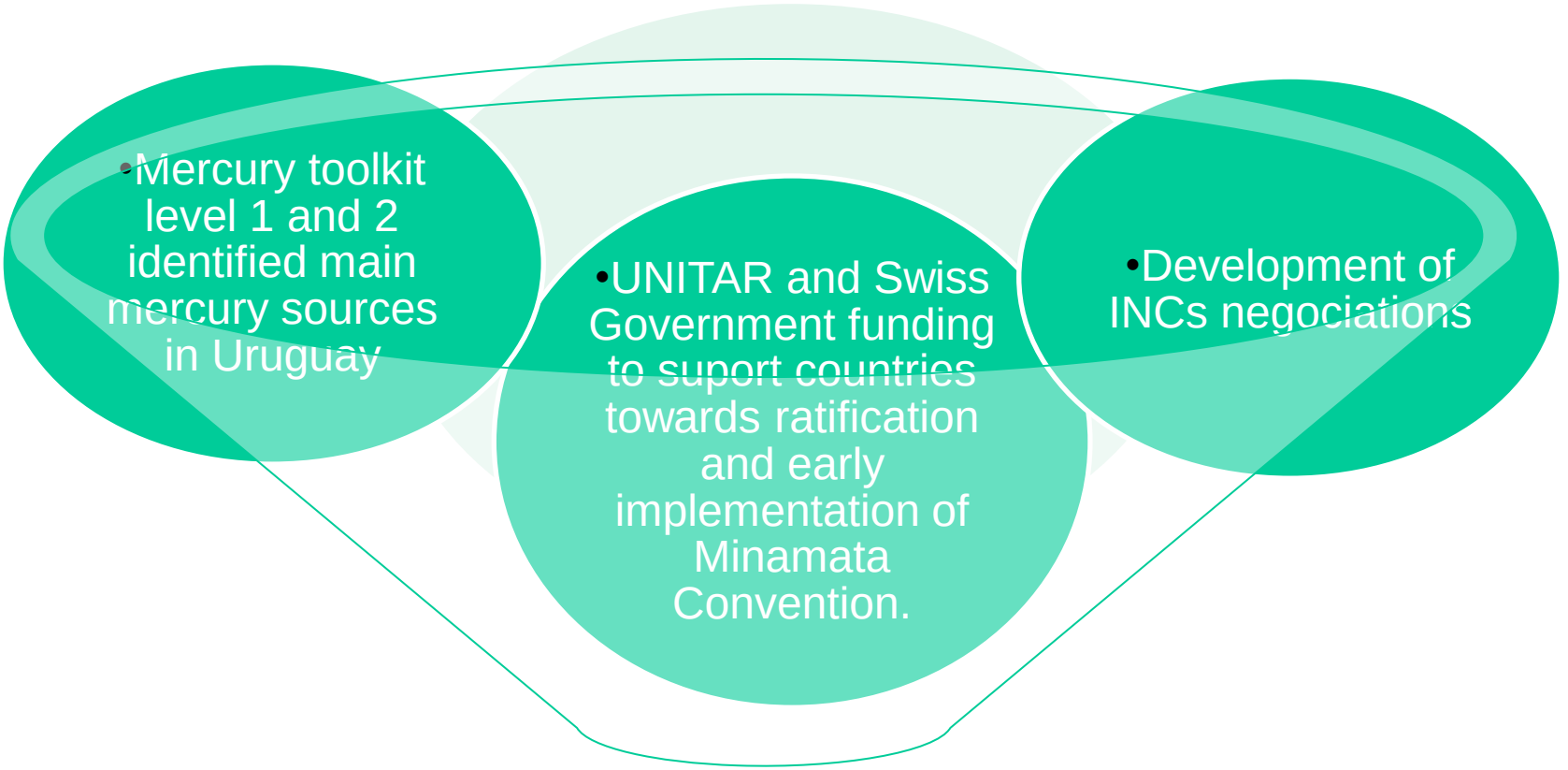
October, 25th and 26Th, 2016

Projects and experiences on the application of mercury stabilization and solidification technologies

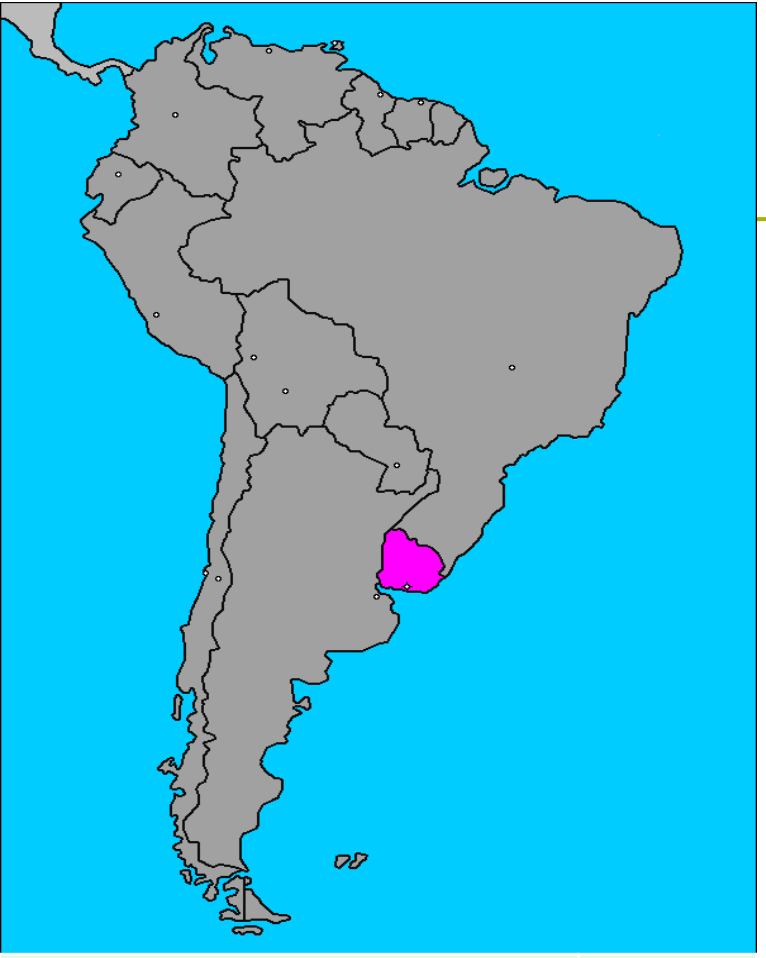
1. Demonstration Project: stabilization technologies for chlor-alkali mercury waste.
   Unitar and Swiss Government

2. Development of Mercury Risk Management approaches in Latinamerica.
   GEF, BCCC Uruguay, Argentina Ecuador; Peru, Uruguay.

# Background




**Demostration Project: stabilization technologies for chlor-alkali mercury waste**



# Mercury inventories in Uruguay

*URUGUAY*
*Hab. 3.431.555, Area: 176,215 km$^2$*

main mercury sources of mercury:

1. Chlorlkali sector
   - *1 facility operating since 1950*
   - *mercury cells from diferent data*
   - *various types of waste*

2. Waste coming from end-of-life articles and products containing mercury:
   - *lamps, cfls, medical devices, dental amalgam*

| **main sources** | **%** |
|---|---|
| cloroalkali sector | 38 |
| waste sector from articles containig mercury | 36 |
| releases to water from dental amalgam | 11 |
| emissions due to informal waste burning | 11 |
| others | 2 |

# Demonstration Project: stabilization technologies for chlor-alkali waste

There are different types of mercury waste in a chloralkali facility, derived from the varios materials utilized to operate the process and to eliminate mercury from the final products.

Type of chloralkali mercury waste selected to be stabilized according to the following criteria:

- **Small volumen and high content of mercury**
- **Large volumen and low mercury content**

# Demonstration Project: stabilization of chlor-alkali mercury waste

Stabilization/ solidification process performed in two centers in Spain:

1. Stabilization and microencapsulation in a sulphur polymeric matrix by **National Technological Center for Mercury Decontamination ( CTNDM)**

2. Stabilization with sulphur microcements by **Cement International Technologies ( CIT)**

# Demostration Project: stabilization of chlor-alkali mercury waste

**National Technological Center for Mercury Decontamination (CTNDM)**

| RESULTS | Masa desmercurizante | Slude from salt solution |
|---|---|---|
| Mercury content ( %) | 6,51 | 0,21 |
| [Hg] lecheate mg/L, sludge without treatment | 0,500 | 1,110 |
| [Hg] lecheate<br>mg/L, monolite after stabilization | 0,0192 | 0,0020 |
| Mercury content in the monolite g/Kg | 7,2 | 1,3 |
| [Hg] lecheate<br>µg/L, monolite after stabilization/solidification | < 10 | < 10 |
| Compression resistance, Mpa | < 53-61 | |
| Flexion resistance, Mpa | < 7-10 | |

# Demostration Project: stabilization of chlor-alkali mercury waste

- Monolite of Mercury waste after stabilization is 1,7 in mass from the original waste

- Mercury concentration in leacheate decreases 96% in the final monolite for both types of waste.

***It is feasible to stabilize chlor-alkali mercury waste selected though the sulphur polymeric + stabilization, technology as well as stabilization with microcements.***

***As for mercury concentration in leacheate and in the final monolite, it could be sent to industrial landfill acording to Uruguayan legislation:***

***-*** *no free liquids*
*- % Humidity: less than 80*
*- Hg conc. in leacheate less than 5 mg/L*

# Project: Development of Mercury Risk Management approaches in Latin America.

Funded by GEF and co-financed by Uruguay, Argentina, Ecuador, Peru, Uruguay.
Coordinated by Basel Convention Coordinating Center for LAC

- October 18th-20th, 2nd Regional workshop to decide the focus at national and regional level
  - *Storage of waste , mining waste y by-product mercury*
  - *Contaminated sites*
  - *Communication strategies*
  - *Analytical capacity*
  - *Waste and dismantling of chloralkali facilities were identifies as core work areas.*

Definition of ToR and one specifically for chloralkali waste and contaminated sites.

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