COP-5 Online Side Event:
Sharing the results of the Specific International Programme: Strengthening the legal framework and institutional capacities of ECOWAS countries

10 October 2023
Marianne Bailey, Senior Coordination Officer
Secretariat of the Minamata Convention on Mercury
Overview of SIP Projects after three Rounds

A total of 24 projects were approved

8 projects are complete and 15 projects are being implemented

### Article 13
Financial resources and mechanism

5. A Mechanism for the provision of adequate, predictable, and timely financial resources is hereby defined. The Mechanism is to support developing country Parties and Parties with economies in transition in implementing their obligations under this Convention.

6. The Mechanism shall include:
   (a) The Global Environment Facility Trust Fund; and
   (b) A specific international Programme to support capacity-building and technical assistance.

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**First round 2018**
- 19 applications
- 5 projects approved
- $1 million

**Second round 2019**
- 24 applications
- 9 projects approved
- $2.2 million

**Third round 2020–2021**
- 20 applications
- 10 projects approved
- $2 million
SIP project in Senegal, Burkina Faso and Togo

Key project indicators:
- Quantity of elemental mercury flows controlled
- Quantity of imported and exported mercury-containing products eliminated
- Number of regulations on trade in mercury and mercury-containing products adopted
- Number of stakeholders made aware and trained
Thank you for your attention

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TWITTER: @minamataMEA
#MakeMercuryHistory
Republic of Senegal
One People – One Goal – One Faith

MINISTRY OF THE ENVIRONMENT AND SUSTAINABLE
DEVELOPMENT AND ECOLOGICAL TRANSITION

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Department of the Environment and Classified
Establishments

Sharing the results of the Specific International Programme in 3 ECOWAS
countries (Senegal, Togo and Burkina Faso) for the implementation of
Articles 3 and 4 of the Minamata Convention

PRESENTED ON OCTOBER 10, 2023
BY MR. PATHÉ DIEYE, SENEGAL'S FOCAL POINT OF
THE MINAMATA CONVENTION

SIP TEAM
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Mercury arrives through Togo and is distributed either legally through states which have no constraints on the transport of mercury or illegally through contraband.
**Presentation of the project**

**Country/Region:** Senegal, Togo and Burkina Faso / Africa  
**Project title:** Strengthening the legal framework and institutional capacities of ECOWAS countries (Senegal, Togo and Burkina Faso) for the implementation of Articles 3 and 4 of the Minamata Convention  
**Organization/Institution carrying out the project:** Ministry of Environment of Senegal, Togo and Burkina Faso / Regional Center for the Basel and Stockholm Conventions for Francophone Africa (CRCBS-AF)  
**Duration:** 36 months  
**Total amount:** $238,632 USD  
**BCP start date:** July 14, 2022

**Programme results in year 1**

- The regional meetings made it possible to identify the types of regulation adapted to each country and each institution on articles 3 and 4.  
- All parties are equipped with information education techniques with several types of media distributed to the different stakeholders on mercury.

**Programme results in year 1**

- 22 governmental and non-governmental structures formed in the 3 countries.  
- The project allowed for the first time CDEAO, UEMOA, river basin authorities as well as the services responsible for controlling borders to come together and better understand mercury and the Minamata Convention.  
- More than twenty structures were trained on devices such as the DM80 and the XRF in order to be able, during year 2 of the programme, to obtain statistical data on mercury by sector.

**Presentation of the objective of the SIP project**

To strengthen legal and institutional capacity at the regional and national levels to implement the provisions of Article 3, on mercury supply sources and trade, and Article 4, on mercury-added products, of the Minamata Convention.
Presentation of the activities carried out

IDENTIFIED CONSTRAINTS

1. The porosity of borders at the ECOWAS scale;
2. Differences in mercury regulations across ECOWAS;
3. Weak synergy of interventions related to the absence of a community-wide coordination unit on mercury.
Conclusion and outlook

CONCLUSION

The SIP is in the process of creating a real dynamic of internal collaboration at the country level and external at the level of the West African region.

Three countries (Togo, Burkina Faso and Senegal) which in the past carried out their activities in isolation on the provisions of Article 3 and 4 now have an effective framework for coordination and harmonization on trade of mercury and mercury-added products.

The various national and regional actors who had very little information on mercury know the provisions of articles 3 and 4 of the convention were educated on mercury-added products and the mercury trade.

Although the financial resources allocated to the SIP are quite low, the implementation of the SIP for the three countries is proceeding well and does not encounter any major constraints.

Recommendations

Reflect with UEMOA, ECOWAS and other partners on a larger project to be submitted to donors which will focus on mercury control measuring the impact of mercury on health and the environment and the establishment of a mercury monitoring system;

Develop community regulatory texts to frame the management of mercury in collaboration with UEMOA and ECOWAS;

Encourage intergovernmental cooperation organizations to advocate for the strengthening of actions for the implementation of the Minamata Convention within the States.
SIP Support of communication
Objectif : présenter la prise en compte du genre dans la mise en œuvre de la CM au Togo

PLAN

- Le concept genre
- Aperçu de l’intégration du genre dans le MIA et le PAN
- Genre et commerce de mercure
- Sensibilisations et formations des femmes

Mme AJAVON Kayi Obidon
Juriste environnementaliste
Point Focal Convention de Minamata du Togo
Introduction

Le genre est un ensemble de caractéristique acquises, culturelles, sociales politiques fondées sur des inégalités et susceptibles de changer dans le temps et dans l'espace. Il y a une différence entre l'égalité du genre et l'égalité de sexe, puisque le sexe se définit comme étant un ensemble des caractéristiques biologiques, innées basées sur des différences.

La dimension de genre fait référence à l'influence des facteurs socio-culturels sur la répartition des rôles et la distribution des tâches entre hommes et femmes dans les secteurs professionnels et dans les ménages notamment.

Dans les programmes et projets de développement, l’approche genre vise à éliminer les inégalités observées au sein des différentes couches sociales.

Le genre dans la Convention de Minamata est un aspect essentiel car la répartition des rôles a un impact sur l’exposition et la contamination des individus.

Au Togo, probablement comme dans la plupart des pays d’Afrique, les femmes (et avec elles généralement les enfants) sont les plus exposées au mercure.
Exposition au mercure par sexe

**Femmes**
- activités domestiques (dans la cuisine par la combustion de charbon de bois, utilisation de produits d’entretien ménagers pouvant contenir du mercure)
- crèmes et savons éclaircissants pour la peau contenant du mercure
- les infirmières et sages-femmes sont exposées aux risques à travers le contact avec les différents instruments médicaux
- dans l’agriculture et la pêche exposition au méthylmercure dans les poissons et fruits de mer et denrées cultivées, dans la manipulation des pesticides

**Hommes**
- le brûlage des déchets à l’air libre (probablement en coordination avec les femmes également)
- la production de ciment
- produits d’usage domestique ou aux produits d’entretien corporels contenant du mercure
- les médecins et agents de santé lors de l’exercice de leur activité
Hommes et femmes sont exposés dans l’agriculture et dans la consommation de denrées alimentaires contenant du méthyldmercure toutefois, les femmes seraient moins informées par rapport aux risques du mercure sur la santé compte tenu de leur niveau d’instruction (32% des femmes non instruites contre seulement 11% pour les hommes) ce qui accroît leur degré d’exposition.
Rôle des femmes dans l'EMAPE

Selon le rapport de l’étude inventaire EMAPE Togo menée en 2021, 48% des travailleurs de l’EMAPE d’or au Togo (4 729) sont des femmes.

Les femmes réalisent toutes sortes de tâches sur les sites miniers : creusement et transport du minerai vers les lieux de traitement, l’extraction et traitement de minerais de type alluvionnaire, commerce des biens et services, restauration et approvisionnement en eau.

Il est à noter que certaines femmes, même enceintes ou allaitantes, continuent à pratiquer l’activité de l’EMAPE d’or entrainant des risques d’exposition durant la grossesse et, par conséquent, l’exposition du fœtus aux métaux lourds contenus dans le minerai. Parfois, les femmes participent aux opérations de traitement et d’élimination des déchets, ce qui les exposent à des substances chimiques dangereuses,
Femmes dans un puits dans la préfecture d'Assoli (Etude d'Inventaire _Projet PAN EMAPE Togo 2021)

Femme enceinte en pleine activité d'orpaillage à Tchaoudjo (Etude d'Inventaire _Projet PAN EMAPE Togo 2021)
Extraction du minerai
Place des femmes dans la chaine de valeur

- La plupart des femmes travaillent pour leur mari
- Transport du minerai ou de l’eau pour le lavage
- Elles sont reléguées au lavage du minerai
- Les femmes n'ont pas appris à faire fonctionner l'équipement et sont considérées comme intellectuellement faible
- Travaillent principalement dans des fosses peu profondes et la récupération des décharges de minerai et des résidus
- Les femmes n’ont pas accès au foncier
- Participant pas ou très peu à la commercialisation
- Elles sont sujettes à des VBG
Rôle des femmes dans le commerce de mercure et des produits contenant du mercure

La principale route commerciale du mercure en Afrique de l'Ouest part du port de Lomé au Togo pour rejoindre les pays Burkina, Niger, Ghana (COWI en 2016)

Des quantités d'environ 8000 Kg de mercure sont importées en 2018, 2019 (5175 Kg) et 2020 (5175 Kg)

Carte des flux de mercure et d'or (Source : ONUDI, 2018)
Rôle des femmes dans le flux de mercure et des produits contenant du mercure

Bien que réputé dans les activités de commerce, les femmes sont très peu ou pas présente dans le commerce du mercure.

Toutefois, elles sont plus exposées aux crèmes et savons éclaircissants et contribuent dans une grande proportion dans la chaîne de distribution.
Actions menées dans le cadre du PAN

- À différents étapes les préoccupations des femmes ont été recueillies, analysé et reversé dans les mesures
- Rencontres avec les ONG et les groupements des femmes dans les zones d’orpaillage
- Participation des coopératives féminines aux consultations régionales
Enormes défis à relever

- Prévenir les stéréotypes, les attitudes et les coutumes visant à marginaliser les femmes
- Renforcer le leadership féminin et promouvoir la formation professionnelle des femmes dans l’EMAPE de l’or
- Autonomiser la femme et améliorer sa position tout au long de la chaîne d’approvisionnement et du contrôle des produits contenant du mercure
- Faciliter l’accès des femmes au financement
- S’assurer que les femmes sont conscientes des dangers de l’exposition au mercure afin de soutenir le changement de comportement
- Intégrer l’égalité du genre dans les divers programmes et politiques relatives à la gestion des produits chimiques, et dans les instances décisionnels.
Œuvrons en bonne collaboration pour la mise en œuvre de la Convention de Minamata au Togo!!!

Merci pour votre attention
Sharing the results of the Specific International Programme “Strengthening the legal framework and institutional capacities of ECOWAS countries (Senegal, Togo and Burkina Faso) for the implementation of Articles 3 and 4 of the Minamata Convention”

Best Mercury Measuring Instruments

Dr. Birane NIANE

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UFR Sciences de l’ingénieur
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Tuesday, 10 October 2023
Assessing the effects of mercury on humans and the environment is of the most importance, and depends on reliable measurement results.

In support of the implementation of the Minamata Convention on Mercury, it would be important to develop procedures for quantifying the different species of Hg in the various environmental compartment.

From an analytical point of view, measuring mercury species is a real challenge, due to its reactive nature, the difficulty of storing and handling it, and its ability to evaporate easily.
Mercury
Elementary ($\text{Hg}^0$), Inorganic ($\text{Hg}^{2+}$) and organometallic (méthylmercure MeHg)

*Telmer and Stapper (2012)*

*Manuel et al., 2013*
Which Technique Is Right for You?

Selecting the right technique really depends on your analytical needs. The driving force for the decision will more likely be criteria such as:

- The characteristics of your sample matrix (for example, solid or liquid)
- The detection limits you need to reach in that matrix
- Your preferences regarding digesting the sample or not
- Your budgetary constraints
MONITORING OF MERCURY

CHALLENGES ARE ENORMOUS

WATER: Mainly due to the low concentrations of the various species

BIOLOGICAL TISSUES: The main analytical challenge is to extract all Hg species from the matrix without modifying its composition.

The method used is an acid extraction coupled with GC-ICPMS, which has the advantage of not using toxic reagents such as tetramethylammonium hydroxide (TMAH), and enables the quantification of mercury species Hg (II) and MeHg.
MONITORING OF MERCURY

Types of samples: Aqueous, with preliminary sampling under ultra-clean conditions

Treatment of samples by bromination and tin chloride. Method by generation of gaseous Hg0 (Cold Vapor), trapping and detection by Atomic Fluorescence Spectrometry (AFS) Tekran 2500. Detection Limit: 50 pg/L
MONITORING OF MERCURY

Types of samples: Solid, freeze-dried and crushed

Direct Mercury Analysis

- DMA-254

  - No sample preparation required: No need for acid digestion or other sample treatment prior to analysis.

  - Results in just 5 minutes

The new DMA-80 evo

  - Enhanced sensitivity and wide dynamic range: Accurate and precise results at ppt levels. Detection from 0.0003 ng up to 30,000 ng.

  - Lower running costs: 70% savings compared to other mercury determination techniques.
MONITORING OF MERCURY

Types of samples: Gaseous.

Fast and accurate, the portable mercury vapour indicator gives a real-time response and is ready to detect instantly. The Mercury Indicator provides continuous readings and offers two detection ranges: 0.1 to 199 and 1 to 1999 microgram/cubic meter.

Technical data:
Method by trapping and pre-concentration, and absorption at 254nm.
Detection limit <5 pg Hg
Types of samples: Urine, saliva and blood

• Cold Vapor Atomic Absorption Spectrometry (CVAAS)

• The cold vapor atomic absorption technique is widely used for mercury trace analysis because of its simplicity, robustness, and relative freedom from interferences.

Detection limit <30 pg Hg (gold trap off); < 5 pg Hg (gold trap on)
Thanks for your attention

Mercury in fish

Mercury in hair

Niane et al., 2015
Identification of mercury release on biological matrices

Dr. Ibrahima MALL
Amadou Mahtar MBOW university (Mining, Geology and Environment Departement)
Tuesday, October 10th, 2023
Identification of mercury release on biological matrices

**OS1**
Identify sources of mercury release

**OS2**
Classify different biological matrices

**OS3**
Identify target tissues and organs
Table 1. Quantities of mercury emitted to air from anthropogenic sources in 2015, by different sectors.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Mercury emission (range), tonnes</th>
<th>Sector % of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artisanal and small-scale gold mining (ASGM)</td>
<td>838 (675-1000)</td>
<td>37.2</td>
</tr>
<tr>
<td>Biomass burning (domestic, industrial and power plant) *</td>
<td>519 (44.3-62.1)</td>
<td>2.33</td>
</tr>
<tr>
<td>Cement production (raw materials and fuel, excluding coal)</td>
<td>233 (117-782)</td>
<td>10.5</td>
</tr>
<tr>
<td>Cremation emissions</td>
<td>3.77 (1.51-4.02)</td>
<td>0.17</td>
</tr>
<tr>
<td>Chlor-alkali production (mercury process)</td>
<td>15.1 (12.2-18.3)</td>
<td>0.68</td>
</tr>
<tr>
<td>Non-ferrous metal production (primary Al, Cu, Pb, Zn)</td>
<td>228 (154-338)</td>
<td>10.3</td>
</tr>
<tr>
<td>Large-scale gold production</td>
<td>84.5 (72.3-92.4)</td>
<td>3.8</td>
</tr>
<tr>
<td>Mercury production</td>
<td>13.8 (7.9-19.7)</td>
<td>0.62</td>
</tr>
<tr>
<td>Oil refining</td>
<td>14.4 (11.5-17.2)</td>
<td>0.65</td>
</tr>
<tr>
<td>Pig iron and steel production (primary)</td>
<td>29.8 (19.1-76.0)</td>
<td>1.34</td>
</tr>
<tr>
<td>Stationary combustion of coal (domestic/residential, transportation)</td>
<td>55.8 (36.7-69.4)</td>
<td>2.31</td>
</tr>
<tr>
<td>Stationary combustion of gas (domestic/residential, transportation)</td>
<td>0.165 (0.134-0.22)</td>
<td>0.01</td>
</tr>
<tr>
<td>Stationary combustion of oil (domestic/residential, transportation)</td>
<td>2.70 (2.33-3.21)</td>
<td>0.12</td>
</tr>
<tr>
<td>Stationary combustion of coal (industrial)</td>
<td>126 (106-146)</td>
<td>5.67</td>
</tr>
<tr>
<td>Stationary combustion of gas (industrial)</td>
<td>0.123 (0.10-0.15)</td>
<td>0.01</td>
</tr>
<tr>
<td>Stationary combustion of oil (industrial)</td>
<td>1.40 (1.18-1.69)</td>
<td>0.06</td>
</tr>
<tr>
<td>Stationary combustion of coal (power plants)</td>
<td>292 (255-346)</td>
<td>13.1</td>
</tr>
<tr>
<td>Stationary combustion of gas (power plants)</td>
<td>0.349 (0.285-0.435)</td>
<td>0.02</td>
</tr>
<tr>
<td>Stationary combustion of oil (power plants)</td>
<td>2.45 (2.17-2.84)</td>
<td>0.11</td>
</tr>
<tr>
<td>Secondary steel production *</td>
<td>10.1 (7.65-18.1)</td>
<td>0.46</td>
</tr>
<tr>
<td>Vinyl-chloride monomer (mercury catalyst) *</td>
<td>58.2 (28.0-88.8)</td>
<td>2.6</td>
</tr>
<tr>
<td>Waste (other waste)</td>
<td>147 (120-223)</td>
<td>6.6</td>
</tr>
<tr>
<td>Waste incineration (controlled burning)</td>
<td>150 (8.9-32.3)</td>
<td>0.67</td>
</tr>
<tr>
<td>Total</td>
<td>2220 (2000-2820)</td>
<td>100</td>
</tr>
</tbody>
</table>

Colour coding indicates main sector groups (Stationary combustion, dark blue; Industry, light blue; Sectors associated with Intentional use, dark orange; ASGM, light orange). * Sectors included for the first time in the 2015 inventory. (UNEP, 2018)
<table>
<thead>
<tr>
<th>Species</th>
<th>Region</th>
<th>Sex</th>
<th>Tissue</th>
<th>Period (n*)</th>
<th>Trend</th>
<th>Trend significance</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moose</td>
<td>Yukon</td>
<td>Males</td>
<td>Kidney</td>
<td>1994–2003 (12)</td>
<td>↓</td>
<td>S</td>
<td>Gamberg et al., 2005</td>
</tr>
<tr>
<td>Caribou</td>
<td>Yukon</td>
<td>Males</td>
<td>Kidney</td>
<td>1993–2012 (19)</td>
<td>→</td>
<td>NS</td>
<td>Gamberg, 2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Females</td>
<td>Liver</td>
<td>1970–1976 (7)</td>
<td>↑</td>
<td>S</td>
<td>Gaskin et al., 1979</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Females</td>
<td>Muscle</td>
<td>1984–2008 (8)</td>
<td>↓</td>
<td>S</td>
<td>Gaden and Stern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Liver</td>
<td>1984–2008 (8)</td>
<td>→</td>
<td>NS</td>
<td>Gaden and Stern, 2010</td>
</tr>
</tbody>
</table>

a n represents number of sample years during time period. b ↑—increasing trend; ↓—decreasing trend; →—no trend. c Statistically significant (S) and non-significant (NS) time trends.

<table>
<thead>
<tr>
<th>Marine mammal</th>
<th>Liver (µg/g)</th>
<th>No risk</th>
<th>Low risk</th>
<th>Moderate risk</th>
<th>risk High</th>
<th>Severe risk</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seabird</td>
<td>Egg (µg/g)</td>
<td>&lt;0.11</td>
<td>0.11-0.47</td>
<td>0.47-1.30</td>
<td>1.30-1.170</td>
<td>≥ 1.70</td>
<td>Ackermannet al. 2016</td>
</tr>
<tr>
<td>Blood (µg/g)</td>
<td>&lt;0.20</td>
<td>0.20-1</td>
<td>1-3</td>
<td>3-4</td>
<td>≥ 4</td>
<td></td>
<td>Ackermannet al. 2016</td>
</tr>
<tr>
<td>Seabird</td>
<td>Body feather (µg/g)</td>
<td>&lt;1.58</td>
<td>0.58-7.92</td>
<td>7.92-23.8</td>
<td>23.8-31.7</td>
<td>≥ 31.7</td>
<td>Ackermannet al. 2016</td>
</tr>
<tr>
<td>Bird of prey</td>
<td>Body feather (µg/g)</td>
<td>&lt;1.58</td>
<td>0.58-7.92</td>
<td>7.92-23.8</td>
<td>23.8-31.7</td>
<td>≥ 31.7</td>
<td>Ackermannet al. 2016</td>
</tr>
<tr>
<td>Fish</td>
<td>Muscle (µg/g)</td>
<td>&lt;0.10</td>
<td>0.10-0.30</td>
<td>0.30-0.50</td>
<td>0.50-2.0</td>
<td>≥ 2.0</td>
<td>Dillon et al., 2016</td>
</tr>
<tr>
<td>Bivalve</td>
<td>Soft tissue (µg/g)</td>
<td>0.01</td>
<td>0.01-0.05</td>
<td>0.05-0.15</td>
<td>0.15-0.4</td>
<td>≥ 0.4</td>
<td>SFT 1997</td>
</tr>
</tbody>
</table>

Estimated Risk Categories for health effects in wildlife and human consumption (bivalves) owing to Hg exposure (Rune et al., 2021).
<table>
<thead>
<tr>
<th>Group</th>
<th>Tissue</th>
<th>THg sample size</th>
<th>Range of mean THg, μg g⁻¹ dry weight</th>
<th>MeHg sample size</th>
<th>Range of mean MeHg, ng g⁻¹ dry weight</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fungi</td>
<td></td>
<td>14</td>
<td>0.14–0.25</td>
<td></td>
<td></td>
<td>1–3</td>
</tr>
<tr>
<td>Lichens</td>
<td></td>
<td>310</td>
<td>0.03–2.06</td>
<td>11</td>
<td>0.18–2.0</td>
<td>1–15</td>
</tr>
<tr>
<td>Mosses</td>
<td></td>
<td>119</td>
<td>0.03–0.21</td>
<td>16</td>
<td>0.20–2.0</td>
<td>3, 4, 8, 9, 11, 12,</td>
</tr>
<tr>
<td>Herbaceous plants</td>
<td></td>
<td>82</td>
<td>0.003–0.07</td>
<td>21</td>
<td>0.02–0.60</td>
<td>14, 15</td>
</tr>
<tr>
<td>Shrubs</td>
<td>Berries</td>
<td>126</td>
<td>&lt;0.002–0.009</td>
<td></td>
<td></td>
<td>1, 2, 7, 16, 17, 18</td>
</tr>
<tr>
<td>Trees</td>
<td>Branches</td>
<td>109</td>
<td>0.005–0.21</td>
<td>3</td>
<td>0.19–0.45</td>
<td>2, 16, 17, 18, 19, 20</td>
</tr>
<tr>
<td></td>
<td>Bark</td>
<td>192</td>
<td>0.003–0.14</td>
<td></td>
<td></td>
<td>4, 9, 16, 17, 18</td>
</tr>
<tr>
<td>Litterfall</td>
<td>Branches</td>
<td>3521</td>
<td>0.003–0.14</td>
<td>4</td>
<td>0.03–0.16</td>
<td>2, 6, 14, 17, 18, 25</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
<td>27</td>
<td>&lt;0.002–0.04</td>
<td></td>
<td></td>
<td>2, 6, 14, 17, 18, 25</td>
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Human exposure to mercury is estimated by the measurement of mercury in human tissue and other samples. The most commonly used biomarkers are the concentrations of mercury in hair, urine, blood, and umbilical cord blood.

Most of the mercury in hair is methylmercury. Mercury taken up in hair remains there, providing an integrated measure of exposure that can be tracked over time as hair grows.

Hair is also easy to collect and transport, though care must be taken to distinguish mercury within the hair from mercury that has fallen on the hair during activities such as artisanal and small-scale gold mining.

Urine analysis primarily provides information about exposure to inorganic and elemental mercury, although methylmercury may also contribute to the burden of urinary mercury, particularly among avid seafood consumers. Like hair, urine is a relatively easy and noninvasive sample to collect.

Mercury measured in whole blood provides information about exposures to both methylmercury and inorganic mercury within the past month or two. The measurement of mercury in umbilical cord blood provides information about developmental exposure. Blood collection, storage, and transport pose certain logistical, ethical, and financial barriers, however.
THANK YOU FOR YOUR ATTENTION
IMPACT OF MERCURY ON HUMAN HEALTH AND ENVIRONMENT

Dr DA Mwingné Laure Carolle

Lecturer researcher,
Environnemental geographer,
Water and Sanitation engineer,
Joseph KI-ZERBO University (Burkina Faso)

Tuesday, 10 OCTOBER 2023 | 11h00-12h00 CEST
Introduction

What is mercury?

Hg

Metallic Hg  inorganic Hg  methylmercury

Issues and challenges

Contamination problems

- Natural processes: volcanism; erosion
- Human activities: industries, domestic use

Origin

Human activities  F.e.  Industrial Activities

Heavy metal effects on humans

Biomagnification in food chain
Mercury use
Environmental exposition

- increased embyo-larval mortality
- growth inhibition of unicellular organisms (algae, fungi) and certain fish species
- reproductive problems and inhibition of egg-laying
Toxicokinetics

Sources of exposure:
- Air
- Water
- Soil

Routes of exposure:
- Breathing
- Absorption
- Ingestion

Distribution of toxic substances:
- Blood circulation
- Liver metabolism
- Gastrointestinal absorption
- Excretion
- Renal excretion

Solutions and prevention

Conclusion and perspectives
Toxicokinetics

- Disrupts vital organs
- several months to eliminate methylmercury from the body
- Symptoms: neurological disorders, learning difficulties, colic, diarrhea, vomiting, renal problems...
Challenges in Diagnoses and Healthcare

❖ Diagnosis difficulties

❖ Limited access to treatment

❖ No medical monitoring

Symptom similarities with other diseases (malaria, typhoid fever...)

Costly & limited access to diagnostic tools

Medicines rare & lacking in pharmacies

The true extent of mercury poisoning is likely underestimated in our countries!
Introduction

Environmental impact

Impact on Human Health

Solutions and prevention

Conclusion and perspectives

How to mitigate mercury contamination?

Preventive measures
- Reduce consumption
- Replace products

Control measures
- Manage mercury waste

Protective measures
- Individual: Appropriate equipment
- Collective: Atmospheric monitoring, Medical surveillance
How to mitigate mercury contamination?

Preventive measures

Control measures

Protective measures

Remediation measures

Phytoremediation e.g.
IRSAT project (Burkina Faso)
BIOACCUMULATION AND BIOMAGNIFICATION
- Support Regional research program

- Enhance Diagnostic Capabilities: Health diagnostic tools and environmental pollution level measurement devices

- Public awareness and education: healthcare staff and communities
Thank you!
COP-5 ONLINE EVENTS
Sharing SIP results in ECOWAS (Burkina Faso, Senegal and Togo)

IMPACTS OF MERCURY IN HUMAN HEALTH AND ENVIRONMENT

Presented by: Monsieur Assane DIOP, Head of Pollution and Nuisance Division/Direction of Environment and classified establisments (SENÉGAL)

Tuesday 10 October 2023
11h00-12h00 CEST
Impacts of mercury in the Environment

Mercury enters the environment through the natural breakdown of rocks exposed to wind and water, but also through certain anthropogenic activities.
Mercury is toxic in all its forms and has serious consequences on health and the environment.

In Senegal, pollution related to mercury is a reality in its south-eastern part, specially with the traditional gold mining activities.

Gold mining polluting a house (source P. DIEYE)

Bare hand amalgamation with high exposure to added mercury (Source Pathé Dieye)
FALEME river (Senegal – Mali) polluted by traditional gold mining activities
Challenges

- Need more information to ensure effective management in most countries affected by mercury pollution
- Need for quantitative data to better assess risks and ensure mercury management
- Need for urgent actions to reduce exposure and for the effective management of patients already affected
THANK YOU