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**Ad hoc Open-ended Working Group on Mercury**

First meeting

Bangkok, 12–16 November 2007

Item 5 of the provisional agenda\*

**Report on activities under the UNEP mercury programme**

**Progress on partnerships: consultation process**

1. The Governing Council of the United Nations Environment Programme (UNEP), by paragraphs 26 and 27 of its decision 24/3 on chemicals management, urged Governments and other stakeholders to continue and enhance their support for the UNEP mercury programme partnerships, through the provision of technical and financial resources, as a means to achieve reductions in demand for and releases of mercury and thereby reducing the risks to human health and the environment from mercury. By the same decision, the Governing Council also requested the Executive Director, working in consultation with Governments and other stakeholders, to strengthen the UNEP mercury programme partnerships.

2. The consultation document entitled “Proposed approach to strengthening mercury partnerships”, which is set out in the annex to the present document for consideration by the Open-ended Working Group, outlines the proposed UNEP strategy for strengthening the mercury partnership programme in accordance with decision 24/3. It has been developed in consultation with several interested partners.

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\* UNEP(DTIE)/Hg/OEWG.1/1.

## **Annex**

### **Strengthening the UNEP Mercury Programme Partnerships**

#### **Proposed Overarching Strategy**

The United Nations Environment Programme (UNEP) is currently preparing for the overarching Meeting of Partners called for in UNEP Governing Council Decision 24/3 part IV Paragraph 27 and is seeking comments on the Proposed Overarching Strategy to strengthen the UNEP Mercury Programme partnerships.

This 'Proposed Overarching Strategy' document has been drafted in consultation with current partnership leads as well as key governments and stakeholders. It is structured as follows (consistent with the UNEP Governing Council Decision on Partnerships (Paragraph 27)):

#### **Overview**

##### **Part A: Development of an overarching partnership framework the UNEP Global Mercury Partnership**

- i) The proposed approach for the overarching Meeting of Partners
- ii) Options for an overarching framework and operational guidelines
- iii) Business planning
- iv) Identification of partnership goals and priority actions

##### **Part B: Expanding the number and scope of partnerships**

- i) Enhancing the existing partnerships
- ii) Thought starters for the new and emerging areas

##### **Part C: Enhancing the Artisanal and Small Scale Mining Partnership**

##### **Part D: Funding**

**The 'Proposed Overarching Strategy' is open for government and stakeholder comment until 14 December 2007. Comments are to be submitted to [mercury@chemicals.unep.ch](mailto:mercury@chemicals.unep.ch).**

The 'Proposed Overarching Strategy' will also be provided as an INF document for the first Mercury ad hoc Open Ended Working Group meeting (OEWG1) taking place from 12-16 November 2007. The key feedback being sought by UNEP from the OEWG is on the proposed approach for the overarching meeting of partners.

## Overview

UNEP Governing Council Decision 23/9 called for mercury partnerships<sup>1</sup> between governments and other stakeholders as one approach to reducing risks to human health and the environment from the release of mercury and its compounds to the environment. In response to this decision, five partnership areas were identified in 2005: mercury release from coal combustion, artisanal and small scale gold mining, chlor alkali production, mercury in products, and mercury fate and air transport research.

In Decision 24/3 part IV, the UNEP Governing Council recognized “that current efforts to reduce risks from mercury are not sufficient to address the global challenges posed by mercury” and concluded, therefore, “that further long-term international action is required to reduce risks to human health and the environment and that, for this reason, the options of enhanced voluntary measures and new or existing international legal instruments will be reviewed and assessed in order to make progress in addressing this issue.”

The UNEP Governing Council Decision sets up a complementary process of (i) strengthening the UNEP mercury programme partnerships (Paragraph 27) and (ii) establishing the ad hoc OEWG to review and assess options for enhanced voluntary measures and new or existing international legal instruments (Paragraph 28). Decision 24/3 IV thus demonstrates the Governing Council’s concurrent commitments to continue strengthening the UNEP mercury programme partnerships and to explore the possibility of taking additional measures, including legally binding ones, for dealing with the global mercury problem.

Working in consultation with Governments and stakeholders, UNEP is tasked in Paragraph 27 of the UNEP Governing Council Decision 24/3 part IV with strengthening the UNEP mercury programme partnerships by:

- “... (a) Developing an overarching framework for the United Nations Environment Programme Global Mercury Partnership through, among other means, organizing a meeting of partners and other stakeholders, including:
- (i) Development of business plans;
  - (ii) Identification of partnership goals;
  - (iii) Development of operational guidelines;
- (b) Expanding the number and scope of partnerships to include new, growing or related sectors such as vinyl chloride monomer production, non-ferrous metals mining and cement production and waste combustion;
- (c) Enhancing the artisanal and small-scale gold mining partnership through, among other things, increased cooperation with the United Nations Industrial Development Organization, exploration of innovative market-based approaches and dissemination of alternative capture and recycling technologies;
- (d) Endeavouring to secure adequate funds for the Global Mercury Partnership efforts.”

UNEP has been actively seeking input from countries and other stakeholders, including current partners, on ways to strengthen and enhance support for the UNEP mercury programme partnerships. This overarching strategy document sets out a path forward for the development of the overarching framework for the UNEP Global Mercury Partnership, provides an overview of the current status of the existing partnership areas and outlines considerations in moving forward on the new and emerging areas.

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<sup>1</sup> In strengthening the UNEP Mercury Programme partnerships, UNEP is following the United Nations General Assembly Resolution 60/215 "Towards Global Partnerships" definition of Partnerships (Paragraph 2): “...partnerships are voluntary and collaborative relationships between various parties, both public and non-public, in which all participants agree to work together to achieve a common purpose or undertake a specific task and, as mutually agreed, to share risks and responsibilities, resources and benefits”.

In the partnership strategy, it is important to consider the seven priorities guiding the OEWG as set out in Paragraph 19 of the UNEP Governing Council Decision:

- “ . . . (a) To reduce atmospheric mercury emissions from human sources;
- (b) To find environmentally sound solutions for the management of waste containing mercury and mercury compounds;
- (c) To reduce global mercury demand related to use in products and production processes;
- (d) To reduce the global mercury supply, including considering curbing primary mining and taking into account a hierarchy of sources;
- (e) To find environmentally sound storage solutions for mercury;
- (f) To address . . . the remediation of existing contaminated sites affecting public and environmental health;
- (g) To increase knowledge on areas such as inventories, human and environmental exposure, environmental monitoring and socio-economic impacts . . .”.

Some questions for government and stakeholder consideration in reviewing this document:

- i) What partnership areas will your government, organization, business support? In what way?  
Please note: proposed role of partners is outlined in Part 3.
- ii) Are you interested in co-leading any of the existing partnership areas? Are you willing to lead any new and emerging areas?
- iii) What further elements need to be considered in strengthening mercury partnerships?

## **Part A: Development of an Overarching Partnership Framework for the UNEP Global Mercury Partnership**

### **Part A.i) The proposed approach for the overarching Meeting of Partners**

The objective of the Meeting of Partners is to develop an overarching framework for the UNEP Global Mercury Partnership, including operational guidelines, further development of the partnership goals, consideration of existing draft business plans for the partnership areas, and considerations in moving forward on the emerging areas. Overarching priorities across partnership areas will also be considered at the Meeting of Partners.

#### **a) Timing**

The Meeting of Partners called for in GC Decision 24/3 paragraph 27 is scheduled for 1-3 April 2008 in Geneva, Switzerland. Meeting invitations will be issued by 25 January 2008.

The timing will allow: (1) several months for the individual partnership areas to convene and prepare for the meeting of partners; (2) several months for new partners to identify themselves and engage in related planning activity; and (3) the opportunity to consider any feedback from the first Open Ended Working Group (OEWG1) in moving forward on the UNEP Global Mercury Partnership.

#### **b) Participation in the meeting**

The overarching Meeting of Partners will be an open meeting; those interested in participating can approach UNEP to register ([mercury@chemicals.unep.ch](mailto:mercury@chemicals.unep.ch)). Governments and stakeholders will equally participate as partners in partnership meetings.

Although the meeting is open, a number of specific invitations will be formally issued to entities such as the current partner leads; key overarching groups; governments, intergovernmental organizations and stakeholders representing emerging areas; and potential donors. Some limited funding will be available to support that participation in the meeting. Appropriate regional engagement will be sought through the SAICM regional representatives.

#### **c) Planning timeline**

The timeline will require the existing partnerships to have drafted proposed business plans by 18 January 2008. The individual partnerships will decide how to meet the timeline and are already moving forward in the business planning process for the Meeting of Partners. Formal and informal collaboration between now and the Meeting of Partners is welcome from all partners and prospective partners. Information on business planning for the individual partnerships will be posted at the following web address as available:

[http://www.chem.unep.ch/mercury/partnerships/new\\_partnership.htm](http://www.chem.unep.ch/mercury/partnerships/new_partnership.htm)

In cases where there are no identified leaders (e.g. the new and emerging areas), UNEP will assume the leadership role in drafting initial business plans, pending identification of partners and leads.

As a preparatory session for the overarching Meeting of Partners, the first meeting of the ‘Interim Partnership Advisory Panel’<sup>2</sup> will be held from 30-31 January 2008. The purpose of the Interim Advisory Panel meeting will be to review the draft business plans of the individual partnerships and to review and consider the proposed overarching framework for the UNEP Global Mercury Partnership in advance of the Meeting of Partners. Invitations will be issued by 30 November 2008.

#### **d) Document preparations**

##### **Operational Guidelines**

Options for an overarching framework will be developed by UNEP in consultation with the partnerships for consideration at the Meeting of Partners. A preliminary outline is provided in Part A.ii.

##### **Business Plans**

Business plans are required as per UNEP Governing Council Decision 24/3. A suggested business plan structure is outlined in Part A.iii. The draft business plans will be drafted by the partnerships and will build upon the work to date of the partnership.

The development of the business plans will be an iterative process as the goals and organizational structure for the UNEP Global Mercury Partnership are formalized and as new partners join the partnerships over the course of the coming year. The business plans need to have the flexibility to allow for perspectives of new partners to be considered and included within them.

Development of business plans will be coordinated by the partnership leads. Leads will be responsible to convene meetings<sup>3</sup> of the partnerships and develop the business plans in an open and transparent manner. UNEP will act as Secretariat if requested and support the leads in the business planning process. UNEP will review business plans for consistency and overarching issues across partnership areas.

The draft business plans will be posted on the UNEP mercury web-page in advance of the Meeting of Partners: <http://www.chem.unep.ch/mercury/default.htm>.

##### **Enhancing the partnerships**

In response to the Governing Council request to enhance the UNEP mercury programme partnerships, information is collated in Part B.i on the existing partnership areas – outlining the issue, the activities to date and highlighting potential areas for opportunity. The partnerships are considering the opportunities outlined in this document and other ideas as business plans are developed.

The ‘thought starters’ in Part B.ii were developed for the new and emerging areas by UNEP, in consultation with some early identified potential partners. These ‘thought starters’ are intended to outline the issue, the current status as well as highlight potential strategies in moving forward and areas of opportunity for potential partners to consider. The thought starters will provide a basis for the business planning process for the new and emerging areas. Where no leads are yet identified, UNEP will work to identify partners and leads and will draft tentative business plans for consideration at the meeting of partners, in collaboration with potential partners.

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<sup>2</sup> The intention of this meeting will be to have a focused discussion with key players in the lead up to the Meeting of Partners. Until the Overarching Framework for the UNEP Global Mercury Partnership is formalized and regionally balanced leadership is established for the partnership areas, the Advisory Panel will be considered an ‘Interim Advisory Panel’ and consist of partnership leads, key overarching stakeholders, stakeholders in emerging areas and donors. Part A.ii provides further information on the proposed Partnership Advisory Panel.

<sup>3</sup> All attempts will be made to host meetings of the individual partnerships in the most cost effective way (e.g. through teleconferences and back-to-back with other related meetings).

**e) Other potential partnership meetings**

The need for a second Meeting of Partners will be determined following OEWG1 and the first Meeting of Partners. Such a meeting could be held back to back with OEWG2 and could provide a cost-effective, inclusive venue for participation of new partners, identification and announcement resources, and further defining accountability and goals.

**Part A.ii) Options for an overarching framework and operational guidelines for the UNEP Global Mercury Partnership**

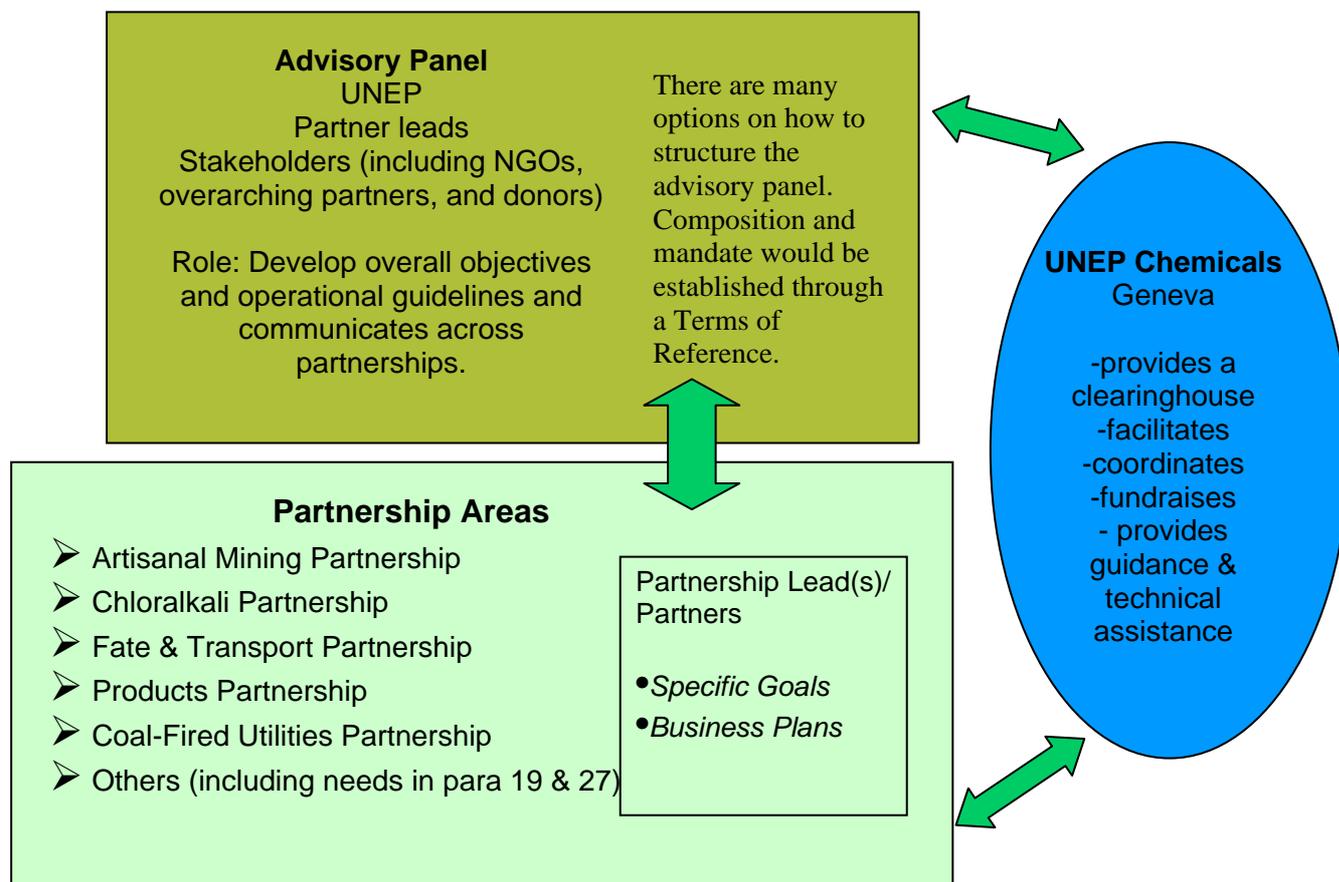
**Organizational Structure**

The creation of a strong UNEP Global Mercury Partnership requires an organizational structure that will facilitate meeting the overall goals of the UNEP Global Mercury Partnership and the objectives of the individual partnership areas in a transparent, inclusive, flexible and effective way. In order for the Partnership to be effective, it must be accountable and sustainable and allow for effective monitoring and review.

Such an organizational structure could provide broad oversight, coherence, direction and facilitation. It will assist partners in coordinating objectives and serve as a body for deliberation on cross-cutting issues.

Figure 1 presents the proposed organizational structure. The model formalizes an advisory panel and the role of UNEP Chemicals in the partnerships, and also allows for the individual partnerships to continue working in a focused manner.

**Figure 1 - Proposed Organizational Structure for the UNEP Global Mercury Partnership<sup>4</sup>**



<sup>4</sup> There is an issue to be resolved by partners with respect to the required ‘governing body’ of the UNEP Global Mercury Partnership and its institutional link to UNEP, including the role of UNEP (eg. Is UNEP a member of the advisory panel and providing secretariat functions and guidance to the Advisory Panel?).

## Operational Guidelines

Within any structure, transparent, inclusive, sustainable and accountable mechanisms need to be established to operate the partnerships. They need to be dynamic enough to accommodate for the wide scope of issues under the mercury partnerships yet maintain flexibility in undertaking partnership activities.

The ‘Governance Rules for The Partnership for Clean Fuels and Vehicles’ are a potential model of operation for the individual partnership areas. To access these governance rules, please see:

<http://www.unep.org/pcfV/PDF/GovcRules.pdf>.

## Proposed Role of Partnership Leads<sup>5,6</sup> and Partners

Roles and responsibilities of the partners and their respective leads should be consistent across partnerships, while recognizing the unique contributions of individual partners.

### *Role of Leads*

- Hold regular business planning meetings<sup>7</sup>, which will be chaired by the lead (Secretariat support will be provided by UNEP as requested).
- Encourage input and the sharing of information and strategies among all individual partners.
- Facilitate the initial development of business plans and timelines [to be endorsed by the UNEP Global Mercury Partnership Advisory Panel] and conduct periodic reviews.
- Facilitate the codification of the goals and objectives of the partnership, as agreed upon in the partnership business plan, and outlined in relevant UNEP Governing Council decisions and the overall goals of the UNEP Mercury Programme.
- Share and disseminate information regularly including providing reports on progress, lessons learned, and best practices to UNEP for wider public dissemination.
- Act as representative of the respective partnership on the Advisory Panel and report to the Advisory Panel on behalf of the partnership.

### *Role of Partners*

- Contribute time, resources, or expertise to implement the objectives of the partnership.
- Track individual activities and report on progress, with the understanding that the partnership will “own” partnership project results.
- Confer with other partners in project groups as needed, reporting results in a timely manner in order to meet partnership timelines.
- Review the results of individual activities in order to gain an overall perspective on progress in meeting UNEP Global Mercury Partnership goals, including providing status reports on projects and documentation of meetings or workshops to UNEP as requested.
- Be proactive in identifying additional activities, strategies, and resources that would contribute to advancing the partnership objectives.

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<sup>5</sup> Co-leadership is an option.

<sup>6</sup> In cases where there are no identified leaders (e.g. the new and emerging areas), UNEP will assume the leadership role pending identification of partners and leads.

<sup>7</sup> All attempts will be made to host meetings of the partnerships in the most cost effective way (e.g. through teleconferences and back-to-back with other related meetings).

## **Part A.iii) Business planning**<sup>8</sup>

**Overall goals** are to be developed for the UNEP Global Mercury Partnership. The goals should reflect the priorities established by UNEP Governing Council and would be presented to UNEP Governing Council for endorsement.

### **Development of business plans**

Business Plans would be developed by partners, coordinated by the Partnership lead(s) and periodically reviewed. While the goal and objectives would largely remain the same over time, priorities and timelines would be updated regularly.

A proposed business plan template is outlined below.

### **Proposed business plan template**

#### **I. Summary of the Issue (max of 250 words)**

The summary highlight why this particular issue is important in the context of the overall UNEP Mercury Partnerships Programme. It provides the reader with some context of the issue.

#### **II. Objective of the partnership**

The objective should reflect desired outcomes. It should clearly link to the UNEP Global Mercury Partnership goals. Objectives are to be ambitious and target-oriented.

#### **III. Priority actions**

This section identifies the key priority activities for the particular partnership area (suggest three to five priority actions). Section A.iv proposes priority actions for the UNEP Global Mercury Partnership. The individual partnership areas need to consider which priority actions apply to the individual partnership and tailor the action as appropriate.

#### **IV. Partner efforts and timelines**

This section delineates the major contributions of the partners for each of the priority actions, including overarching, bilateral and collaborative efforts:

- Efforts must be clearly link to the partnership objective.
- Brief specific descriptions of efforts are provided, with costs, timeframes, targets and milestones.
- Contact information is provided for all efforts.

#### **V. Opportunities**

This section notes other concepts and ideas that are of potential interest to the partnership in terms of meeting partnership objectives but that are not being pursued in the current time frame. This allows the partners to log 'good ideas' that may need more scoping and/or are currently unfunded. It also allows partners to communicate with each other on interesting efforts for future business plans and may generate interest of new partners and enhanced transparency.

Opportunities should clearly link to the partnership objectives and be as specific as possible.

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<sup>8</sup> UNEP has been asked to consider developing an overarching Business Plan for the UNEP Global Mercury Partnership. In response to this, UNEP has drafted a proposed goal and priority actions for the UNEP Global Mercury Partnership in Part A.iv for partner consideration. The development of an overarching business plan will be considered by the Interim Advisory Panel at its first meeting and initiated at that time if deemed appropriate.

## **VI. Monitoring, Evaluation and Measures of Success of UNEP Global Mercury Partnership**

The partnership areas will report [at a minimum annually and] upon request to UNEP Governing Council through UNEP on progress under the partnership. Partners will also provide periodic reports to UNEP upon completion of priority activities. Results will be reported in terms of measurables related to the partnership goals, consistent with the targets and milestones identified in the partnership efforts. The evaluation of respective activities will include an assessment of feasibility and effectiveness.

## **VII. Financial Plan**

Partnerships and the associated business plans are a way of mobilizing funding in a systematic, focused and harmonized way. The partnerships objectives and business plans should provide clarity for potential donors and finance institutions.

The business plans and the associated financial plan should be designed to encourage and facilitate donors to support activities and should provide a tool to leverage funds.

The financial plan should be updated regularly to reflect experience and reassess funding requirements to achieve the objective of the partnership under II.

Partners can develop specific initiatives, work with non-partners, or pursue projects consistent with partnership objectives. Partners are encouraged to apply for funding to relevant funders and regional organizations (seeking to collaborate regionally).

Developing countries and countries with economies in transition can also submit requests for funding to UNEP under the UNEP Mercury Small Grants Programme.

## **VIII. Business Planning Process**

The process in developing and reviewing business plans will be outlined in this section.

Partnerships will take stock of efforts and test direction and productivity in moving forward and will adjust planning accordingly.

## **IX. Linkages**

It is understood that the partnerships undertake cross-cutting work. Key related activities should be listed in this section, including:

- Cross-cutting activity internal to the UNEP Global Mercury Partnership efforts
- External to the UNEP Global Mercury Partnership efforts

## **X. Role of Partners in the UNEP Global Mercury Partnership**

A partner is any entity which expresses the willingness to contribute time, resources, or expertise to implement the objectives of the partnerships to achieve the goals of the UNEP Global Mercury Partnership. Participation in the partnerships is voluntary, with new partners welcomed on an equal basis.

## **XI. Partners**

This section is a list of Partner governments and organizations, with the key points of contact. It also identifies the partnership lead and any other relevant information.

## **Part A.iv) Identification of Partnership Goals and Priority Actions**

### **Proposed UNEP Global Mercury Partnership Goal:**

Protect human health and the global environment from the release of mercury and its compounds to the environment by reducing, and ultimately eliminating, global anthropogenic mercury releases to air, water, and land.

### **Proposed Priority Actions of the UNEP Global Mercury Partnership:**

The individual partnerships provide a forum to enhance coordination and cooperation across related programmes and projects. Priority actions of the UNEP Global Mercury Partnership include:

- Reduce the global mercury supply, including considering curbing primary mining and taking into account a hierarchy of sources.
- Reduce global mercury demand related to use in products and production processes.
- Develop and demonstrate sustainable and replicable methodologies to reduce mercury consumption and releases with active participation of stakeholders at national and regional levels.
- Encourage and implement use of best available technology and best environmental practices to reduce or eliminate mercury consumption and releases into the environment.
- Encourage and support conversion to mercury free products and production processes.
- Encourage and implement environmentally sound management of mercury waste, by following a life cycle management approach.
- Increase knowledge on mercury inventories, human and environmental exposure to mercury, mercury environmental monitoring and socio-economic impacts of mercury.
- Improve global awareness on mercury exposure, use, production, trade, disposal and release through exchange and dissemination of information.

Where appropriate, the individual business plans should reflect these priority actions and tailor them to the individual partnership.

## Part B: Expanding the number and scope of partnerships

### Part B.i) Enhancing the existing partnerships<sup>9,10,11</sup>

This section outlines the existing partnership areas. It provides a brief summary of the issue and status reports, with opportunities for increased momentum highlighted for each of the existing partnership areas:

- mercury releases from coal combustion
- mercury cell chlor alkali production
- mercury in products
- mercury air transport and fate research
- artisanal and small scale gold mining<sup>12</sup>

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<sup>9</sup> Existing partnership areas were identified based on government and stakeholder input in the 2005-2006 timeframe.

<sup>10</sup> Partnership leads are coordinating the development of business plans for the individual partnership areas following the suggested business plan structure outlined in Part A.iii. The draft business plans will be drafted by the partnerships and will build upon the work to date of the partnership. The opportunities and strategies included in this document and other ideas being brought forward by partners are being considered by the partnership areas. The development of the business plans will be an iterative process as the goals and organizational structure for the UNEP Global Mercury Partnership are formalized and as new partners join the partnerships. The draft business plans will be posted on the UNEP mercury web-page in advance of the Meeting of Partners: <http://www.chem.unep.ch/mercury/default.htm>.

<sup>11</sup> Unless otherwise stated, data referenced within this consultation document has been taken from either 'Summary of supply, trade and demand information on mercury', UNEP 2006, the 'Global Mercury Assessment', UNEP 2002 or 'A Strategy and Proposal for the Global Mercury Project – 2', UNIDO 2007.

<sup>12</sup> Artisanal and Small Scale Gold Mining is given special reference in UNEP Governing Council Decision Paragraph 27/c and, as such, is covered separately in Part C of this document. The above footnotes also apply to Part C.

**Area -- Mercury Releases from Coal Combustion****Issues**

- Mercury is found in trace quantities in coal, quantities vary within the different coal types.
- It is estimated that upwards of 60 %<sup>13</sup> of mercury emitted to the atmosphere comes from coal combustion.
- The major pathways for mercury releases from coal use and combustion are via emissions. To a lesser extent some mercury may be released in wastes/residues or water (in the case of coal washing, for example) and soil – sometimes many years after waste disposal. For coal combustion plants with no emission reduction equipment, or with relatively minimal controls (such as retention of larger particles only), most of the mercury inputs will be released directly to the atmosphere. This is because, contrary to most other heavy metals, the majority of the mercury in the exhaust gas remains in the gas phase as either elemental mercury vapour or reactive gaseous mercury. However, some mercury can also be adsorbed to small particles, especially if temperatures are lowered sufficiently during transport through the exhaust gas system.
- The mercury that is not released from the stack of a coal-fired plant is then found in wastes or combustion ash residues such as fly ash and gypsum. The use of fly ash in cement and, more importantly, gypsum in wallboard manufacture could potentially lead to the later release of mercury into the environment.
- Flue gas cleaning technologies for particulates can reduce mercury emissions by about 50-90% as a co-benefit of controlling other pollutants. This has led to significant capture of mercury from facilities in many parts of the world.
- The rapid development in developing countries and in Asia has led to an unprecedented rate of construction of large coal-fired units. Consequently, it is increasingly considered the dominant source of global mercury emissions.

**Current Status**

- The USA currently leads this partnership. IEA Clean Coal Centre has recently actively engaged in UNEP mercury discussions on partnerships and is willing to play a leading role in moving forward in this area.
- No business plan has been drafted for this sector.

**Activities (ongoing or undertaken)**

- China, Canada, Japan, the United States and UNEP partnered to hold a workshop in Beijing in November 2005 on measurement and control of mercury from coal-fired power plants. The workshop increased awareness of the magnitude of mercury emissions from this sector, examined limited data currently available on the level of mercury exposure in China, and provided information on control approaches (funded through Mercury Trust Fund<sup>14</sup>, and also bilaterally funded through Canada, Japan, USA).
- China Follow-on Projects: The Governments of Canada and China, and Tsinghua University have partnered on a study to compare the current China Mercury Emission Inventory with the UNEP mercury emissions toolkit, examine the status of coal washing technology and mercury removal in China, and examine coal combustion-related mercury emissions from small scale use in residential, commercial, and industrial sectors.
- China is partnering with the United States to plan a possible workshop in 2007 to focus on multi-pollutant control of coal-fired power plants.
- IEA Clean Coal Centre is preparing a document related to coal combustion entitled 'Economics of Mercury Control'. A first draft is expected by December 2007.
- The United States has partnered with India to share expertise on low cost approaches to improve electrostatic precipitator (ESP) performance in order to achieve greater particulate control including mercury capture. U.S. experts also conducted some stack testing in 2006. In addition, training and

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<sup>13</sup> This is an estimate for the year 2000. Reference : E. G. Pacyna *et al.* 2006

<sup>14</sup> Mercury Trust Fund: approximate total funding for coal combustion work to date is \$ 6,000 US.

technology transfer have occurred for mercury monitoring that can be used to estimate emissions levels, including evaluating co-benefit mercury capture.

- The Russian Federation and the United States have partnered to develop low-cost technology for improved air pollution control at a power plant in Russia - it will optimize operations of the scrubber and look at the possibility of transferring to other facilities in Russia. Also, the Russian Federation, Ukraine, and the United States have partnered on a project to transfer a low-cost technology to improve the performance of ESPs at coal-fired plants and other industrial facilities in Russia and Ukraine.
- South Africa's Council for Scientific and Industrial Research is partnering with the University of Connecticut, USA to determine the fate and transport of mercury from coal combustion and its impact on water resources in the country.

### **Potential Strategies/Opportunities**

1. Coal fired power emissions are a multi-pollutant challenge. In most instances, decisions related to coal fired utilities are driven by energy security, resource availability, emissions of a variety of air pollutants (such as NO<sub>x</sub>, SO<sub>2</sub>, PM, CO<sub>2</sub>), and other considerations. Mercury emissions are an additional issue for this sector. Building on existing efforts and recognition of these other policy drivers is an essential element of any strategy in this area. Attempts can be made to mainstream the issue of mercury emissions from coal combustion into overarching coal thinking/discussions and planning, through:
  - seeking out broader representation on the partnership;
  - increased outreach efforts and collaboration with complementary programmes (such as at UNFCCC level).
2. Review available information on best available techniques (BATs) / Best Environmental Practices (BEPs) for new and existing sources. This could be based on information submitted by countries, IGOs, NGOs, or available in the literature. Amend and supplement this information, as appropriate, to provide appropriate guidance on various options, approaches and technologies to achieve mercury emissions reductions from this sector, building on multi-pollutant control approaches and including:
  - Guidance on performance characteristics and control options for new and existing plants (such as installation of particulate control devices, efficiency and operation of existing flue gas cleaning technologies, and/or other approaches/technologies);
  - Guidance on possible pre-combustion control/prevention measures, such coal blending, coal cleaning (with appropriate monitoring and controls), or other approaches, including simple options which could reduce mercury emissions very economically.
3. Projects (including bilateral projects) in specific areas that are targeted towards meeting business plan objectives are encouraged. Some examples include:
  - Promote coal switching and blending, if appropriate and feasible – the mercury contents of coals vary, and it may be possible to select coals that give lower mercury emissions. An evaluation is necessary for the potential for coal switching (fire “dirtier” coals at those plants with flue gas cleaning technologies and “cleaner” coals at the older, less efficient plants). NOTE: There is also the potential for coal blending to enhance the capture of mercury in ash;
  - Promote coal washing – this can reduce the mercury in the coal by about 10-50 %, in some cases. NOTE: The operation of these washeries would need to be monitored to ensure the mercury is not simply released in liquid form or transferred to reject coal which is often used illegally as domestic fuel;
  - Promote the application of new control technologies for multi-pollutant control in existing facilities, optimizing mercury capture;
  - Promote fuel switching in small scale industrial and domestic applications of coal;

- Study to determine whether plants with emission control technologies (ESP, FGD, SCR) are using them correctly. In some cases, the operation of these systems (position, running temperature etc) can be “tweaked” to enhance mercury capture;
  - Raise awareness of the human health risks of domestic coal combustion, due to mercury and other pollutants, particularly in regions with high mercury content coal and/or other pollutants, and build capacity to reduce risks.
4. Enhanced information/knowledge:
- For Emissions Inventories:
    - Improve current basis of emission inventories and emission factors (encourage regional and global reporting by industries of their mercury emissions) and collaborate with existing information networks (such as those that exist for climate change).
    - Forecast future emissions scenarios taking into account current and planned actions, including co-benefits of greenhouse gas reductions.
    - Study the rate of retrofitting emission control technologies (ESP, FGD, SCR) to older, dirtier plants in order to help build capacity to forecast future emissions scenarios.
  - Study whether new plants have state-of-the-art efficient coal combustion technologies (super-critical and ultra-supercritical) with at least Electrostatic precipitators (ESP), Flue gas desulphurization (FGD) and Selective Catalytic reduction (SCR) technologies can achieve approximately 50-90% mercury control as a co-benefit of controlling other pollutants.
  - Analysis of linkages to energy efficiency.

### **Current Identified Partners**

Canada, Coalition for Mercury Management, Edison Electric Institute, Electric Power Research Institute, IEA Clean Coal Centre<sup>15</sup>, Japan, North American Commission for Environmental Cooperation, Quicksilver Caucus, South Africa Council for Scientific and Industrial Research, Tanzania, the United States, United Nations Environment Program,

### **Proposed Other Potential Partners**

COUNTRY PARTNERS, NGOs, other coal/energy players to be scoped by the partnership.

### **Linkages:**

- potential to work on cement production under this partnership area
- mercury fate and transport research (for enhanced knowledge/information needs)
- Asia Pacific Partnership. Under the Asia-Pacific Partnership (APP) on Clean Development and Climate, partner countries have agreed to cooperate on development and transfer of technology to address both greenhouse gas emissions and air pollution. A major focus of the APP is the coal fired power sector with the objective of improving both its energy efficiency and environmental performance. Progress made under the APP will reduce greenhouse gas emissions and emission of conventional air pollutants and, as a significant co-benefit, also reduce mercury emissions.

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<sup>15</sup> New partner since UNEP Governing Council 24.

## Area – Mercury Cell Chlor Alkali Production

### Issues

- Mercury cell chlor alkali production (MCCAP) remains a significant user of mercury and source of mercury releases. The table below tracks the location of existing MCCAP facilities in operation in 2005.

Country/region	Estimated number of facilities
Europe	40-50
United States	8
Brazil	5
India	10
Russia	3
Other locations	46-60

- In general, the number of MCCAP facilities is on the decline, consistent with the end of the economic life of these facilities.
- The greatest concentration of mercury cell chlor-alkali production remains in Europe (approximately 60% of the global mercury cell capacity). The European chlor-alkali industry intends to phase out 40-50 mercury cell chlor-alkali units by 2020 (consistent with the life cycle of such facilities), freeing up at least 11,000 metric tonnes of elemental mercury.
- Due to these large quantities of surplus mercury that will be generated as chlor-alkali units are decommissioned between now and 2020, the European Commission has proposed legislation to ban mercury exports and require long-term storage of surplus mercury. Euro Chlor has an agreement with MAYASA<sup>16</sup> since 2001 that all European mercury not needed by the chlor-alkali industry should be delivered to MAYASA, who would then sell it on the world market.
- Incentives for storage of mercury following phase out of such large-scale uses may be necessary to prevent sale of mercury into the market. Storage schemes should be designed to avoid a negative impact on industry and provide an acceptable alternative to selling the mercury on the market.
- In some cases (chlor-alkali production) the membrane process is less expensive to operate once it is installed, for example in terms of energy consumption. Some countries outside Europe have also spoken of a transition to the economically and environmentally preferable membrane technology for producing chlorine and caustic. Nevertheless, in most cases the final decision remains an industry decision. Plants also occasionally close, and mercury-free plants are constructed, implying a slow transition away from the mercury cell process.
- There is an active government supported industry voluntary agreement for the rest of the mercury cell facilities in India to close by 2012, but there is no legal commitment.

### Current Status

- The United States currently leads this partnership.
- The World Chlorine Council (WCC) and its affiliates have been actively engaged in mercury partnership efforts to date and have indicated their willingness to play a leadership role in moving forward.
- The Government of India has also indicated its willingness to play a leadership role in the partnership.

<sup>16</sup> MAYASA is an incorporated company that belongs to the Spanish government, focusing on commercialisation of natural resources. In 2003, it halted operations of its primary mercury mine, Almadén. Now that the Almadén mercury mine has closed in Spain, the benefit of sending mercury to MAYASA is not evident.

- An initial planning meeting of partners was held in Portland, United States in May 2005. An initial business plan was drafted at this meeting. It is posted at the following web address:  
[http://www.chem.unep.ch/mercury/Sector-Specific-Information/Chlor-alkali\\_facilities.htm](http://www.chem.unep.ch/mercury/Sector-Specific-Information/Chlor-alkali_facilities.htm)
- The current business plan was initially established and consulted upon with partners identified in 2005-06. Given the UNEP GC Decision to enhance and strengthen the UNEP Global Mercury Partnership, business plans will be reviewed in moving forward.

#### **Activities (ongoing or undertaken)**

- An international mercury stewardship workshop was conducted in Mexico (March 2006). It served to share methods and guidelines for calculating mercury releases and consumption, share best practices for reducing releases, and encourage adoption of best management practices to facilitate reductions in consumption. Following the workshop, WCC provided the Mexican facilities with a technology mentor for six months to help identify process improvements. The facilities are now considering how to implement best practices. Additionally, several Mexican industry representatives traveled to Brazil to tour a state-of-the-art mercury cell facility for technical and information exchange and to discuss possible future improvements in Mexican facilities (funded through UNEP Mercury Trust Fund see total in footnote)<sup>17</sup>.
- Through efforts under the partnership, Russia agreed to do mercury audits for the first time in 2005, along the lines of those carried out in Europe, the United States, India and Brazil. Russia has made a concerted effort to lower emissions and improve mercury balance accounting.
  - A workshop was conducted in Volgograd, Russia with the participation of experts from all three Russian chlor-alkali facilities to share experiences and best practices. Participants completed cleaner production training and developed 14 low-cost technical projects to achieve measurable reductions of mercury use and releases.
  - Key technical experts from Volgograd “Caustic” and RusChlor participated in a technical exchange program with three state-of-the-art chlor-alkali facilities in Germany, Spain and Italy in February 2006 – facilitated by Eurochlor and United States. Volgograd “Caustic” developed an Action Plan for 2006-2010 to reduce mercury consumption and discharge. As a result of the above activities, Volgograd “Caustic” has already implemented four technical projects and achieved a reduction of mercury discharges of over 840 kg. Volgograd “Caustic” continues to develop and implement mercury reduction projects as identified in their Action Plan. (funded through UNEP Mercury Trust Fund see total in footnote, also with bilateral support from the United States, Norway, Canada and WCC) .
  - Key technical experts from Sterlitamak “Caustic” and RusChlor participated in a technical exchange program with two state-of-the-art chlor-alkali facilities in Germany and Belgium in June 2007– facilitated by Eurochlor and United States. The objective of the tour is to share best practices, experiences and expertise in operating mercury based chlor-alkali plants and in minimizing the use and emissions of mercury. The tour is expected to lead to reductions of at least 200 kg of mercury uses and releases from these facilities in 2007 (funded through UNEP Mercury Trust Fund see total in footnote).
- WCC is currently collecting data on mercury use and emissions within the chlor alkali sector for plants in the European Union and Switzerland, the United States, Canada, Russia, India, Brazil, Argentina and Uruguay. Data should be available through UNEP in the fall of 2007.

#### **Potential Strategies/Opportunities**

1. Broaden representation on the partnership, including:
  - Additional governments and stakeholders are encouraged to partner, particularly governments that still have chlor alkali facilities and/or those that are working to phase them out.
2. Identification of all chlor alkali facilities globally with facility level information (as available).

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<sup>17</sup> Mercury Trust Fund: approximate total funding for chlor alkali work to date is \$ 98,700 US.

3. Review available information on existing Best Available Techniques (BAT) / Best Environmental Practices (BEP) for new and existing sources. Amend and supplement as appropriate to provide and develop specific mercury guidance, building on multi-pollutant approaches.
4. Increased partnership activities in related cross-cutting areas have great potential in benefiting this and other related sectors, such as proposed work on mercury supply, storage and waste issues.
5. Encourage governments to ban new sources and promote conversion by sharing information on, for example, regulation, cost/benefit.
6. Projects (including bilateral projects) that are targeted towards meeting business plan objectives are encouraged.
7. Enhanced information/knowledge, including:
  - analysis of economic benefits of switching to non-mercury processes, and possible financing mechanisms.
  - improved information and tracking of mercury from decommissioned sources.

### **Current Identified Partners**

Arctic Council Action Program (ACAP), Clorosur, Coalition for Mercury Management, Euro Chlor, India's National Environmental Engineering Research Institute, North American Commission for Environmental Cooperation, Norway, Mexico, Quicksilver Caucus, RusChlor, the Russian Cleaner Production and Sustainable Development Center (RNCPC), United Nations Environment Programme, the United States, , United States Chlorine Institute, Volgograd Caustic, World Bank, World Chlorine Council (WCC)

### **Proposed Other Potential Partners**

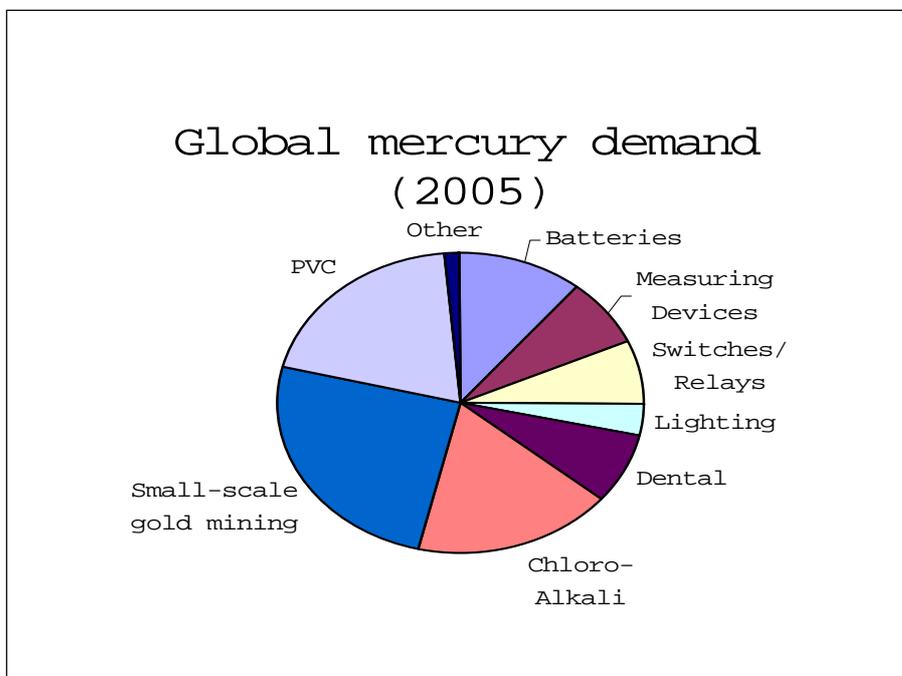
Europeans, others

### **Linkages**

- Mercury supply and mercury storage
- Mercury waste (Basel Convention)
- [UN cleaner production centres]

**Area --** Mercury in products**Issues**

- The diagram below points to mercury in products (batteries, measuring devices, switches, relays, lighting and dental use) comprising almost one third of total mercury demand in 2005.



- While demand for mercury in products is decreasing in most developed countries, there is evidence that demand for mercury in products remains relatively robust in many developing countries and countries with economies in transition.
- Waste from mercury in products is a significant source of mercury emission. Segregation, storage and disposal of waste from mercury containing products have remained a challenge. The situation in many countries promotes the release of mercury from products at end of life via the lack of hazardous waste recycling infrastructure; lack of mercury emission control equipment at incinerators; and lack of practice to prevent leaching, volatilization and fires at landfills.
- The rate of decline in mercury demand in the future will depend primarily upon reductions in the battery, electrical product, and measuring device manufacturing sectors; and in dental use. These sectors represent the greatest potential for short-term declines because alternatives are readily available and are of equal or better quality. For these products, the challenge is not technical but relates to the rate of and incentive to phase out.
- Mercury containing lamps remain the standard for energy-efficient lamps. There are ongoing industry efforts to reduce the amount of mercury in each lamp and indications are that mercury-free alternatives will become available in the coming years, but for most applications the alternatives are still quite limited and/or quite expensive.
- Dental use of mercury is now declining in high income countries, but it is still significant in most countries. Dental practitioners are generally slow to change long-standing methods of treatment.
- While mercury use in skin lightening creams and for traditional and ritual practices may not be considered major consumers of mercury, they potentially cause health problems and can result in mercury emissions to air, wastewater, and solid waste.

## **Current Status**

- The United States currently leads this partnership.
- An initial planning meeting of the partnership was held in Portland, USA in May 2005. An initial business plan was drafted at this meeting. It is posted at the following web address: <http://www.chem.unep.ch/mercury/Sector-Specific-Information/Mercury-in-products.htm> .
- The current business plan was initially established and consulted upon with partners identified in 2005-06. Given the UNEP GC Decision to enhance and strengthen the UNEP Global Mercury Partnership, business plans will be reviewed in moving forward.

### **Activities (ongoing or undertaken)**

- Two “Mercury in products” workshops: First was conducted by the North American Commission for Environment Cooperation (CEC) in Mexico in February 2006 with participants from Latin American countries and resulted in national action plans aimed at reducing mercury in products. The second workshop was conducted by UNEP Chemicals in Bangkok in May 2007, with 70 participants from the Asia and Pacific countries. The workshop strengthened awareness on the risks of mercury in the region, as well as resulted in national and subregional action plans aimed at reducing the use and release of mercury in products (funded through the UNEP Mercury Trust Fund, see footnote).<sup>18</sup>
- Development of technical guidelines on the environmentally sound management of mercury waste are currently under development, jointly supported by UNEP Chemicals and the Secretariat of the Basel Convention (funded through the UNEP Mercury Trust, see footnote).
- Health Care without Harm workshops and activities to eliminate mercury in the health care sector in selected countries (regional conferences in South East Asia, Latin America and South Africa, local workshops and initiatives to date in Philippines, Malaysia, Argentina, Brazil, and Mexico) took place from 2006-2007 (funded through UNEP Mercury Trust Fund, see footnote). Healthcare Without Harm is assisting the Buenos Aires City Government to deliver mercury-free training for all city-run hospitals and to eliminate mercury in 12 hospitals (funded through UNEP Mercury Trust Fund, see footnote).
- The North American Commission on Environment Cooperation (Mexico, Canada and the United States) is working with Health Care Without Harm to develop two healthcare facility projects in Mexico (Health Care Without Harm proposal for 40,000 US\$).
- China’s SEPA and Health Ministry, along with the Beijing City Government, the United States and Health Care Without Harm, are working on demonstration programs at two Beijing hospitals to significantly reduce mercury containing products and waste by late 2007.
- UNEP and Chile are partnering on a project that includes awareness raising, development of national inventory in Chile, and the drafting of a Chile mercury program (funded through UNEP Mercury Trust Fund, see footnote).
- UNITAR, with support from the United States, has initiated collaborative projects with Chile, Panama, and Ecuador on mercury product inventories. The goal of this work is to develop national Pollutant Release and Transfer Register frameworks. The projects will also initiate risk management plans for mercury based on the inventory information.
- Burkina Faso is conducting an initial mercury life cycle assessment for products as a first step in Burkina Faso's efforts to characterize and reduce mercury use. Results are expected in Fall 2007 (funded through UNEP Mercury Trust Fund, see footnote).
- The Philippines, the United States, and the Quicksilver Caucus are partnering to share lessons learned with mercury school spills and plan for effective responses.

## **Potential Strategies/Opportunities**

1. Broaden representation on the partnership, both in terms of number and scope of partners, including increased collaboration with other key international organizations such as the World Health

<sup>18</sup> The noted projects were funded through the UNEP Mercury Trust Fund: approximate total funding for products partnership work to date is 472,000USD.

Organization; build upon industry engagement such as the World Business Council for Sustainable development, and encourage additional governments and stakeholders to partner.

2. Consideration of sub-categories within this sector may help focus the business planning process, for example consumer products, health care and dental sectors.
3. Analysis of largest sources of mercury and where the products are produced, used etc..
4. Increased partnership activities in related cross-cutting areas have great potential in benefiting this sector, such as proposed work on mercury supply and waste issues.
5. Review available information on existing Best Available Techniques (BAT) / Best Environmental Practices (BEP) for new and existing sources. Amend and supplement as appropriate to provide and develop specific mercury guidance, building on multi-pollutant approaches.
  - Japan has expressed interest in participating and perhaps leading this activity.
6. Promote bilateral and multilateral aid and investment to foster the industrial transition to global production of affordable, high quality non-mercury products.
7. Promote product substitution and alternatives, including a forum to enhance information exchange.
8. Projects (including bilateral projects) targeted towards meeting business plan objectives are encouraged. Some examples include:
  - Development of sector related product substitution strategies.
  - Encourage research on alternatives to mercury use, particularly for energy efficient lighting.
  - Develop, implement and replicate model policies at the municipal, state/provincial and national levels to eliminate mercury use in products and assure its safe storage and disposal, including procurement policies.
  - International standards - Develop international standards for mercury-free medical devices so as to assure their accuracy and quality.
  - Technical and capacity building projects, including implementation of projects identified by countries in country action plans, and results of mercury inventories.
9. Explore possibilities for economic incentives:
  - Financial incentives for non mercury containing products and sound management of mercury containing waste products;
  - Loans from financial institutions for technological conversion /change over.

**Current Identified Partners:** Burkina Faso, Canada, China, Coalition for Mercury Management, Healthcare Without Harm, Japan<sup>19</sup>, National Electrical Manufacturers Association, Northeast Waste Management Officials' Association, North American Commission for Environmental Cooperation, Mexico, the Philippines, Quicksilver Caucus, Secretariat of the Basel Convention, South Africa Council for Scientific and Industrial Research, United Nations Environment Program, United Nations Institute for Training and Research, the United States, University of the Philippines, World Health Organization.

**Proposed Other Potential Partners:** Association of Medical Equipment Suppliers, Battery Manufacturer Association, Countries (including Switzerland), Doctors without Borders, International Council of Nurses, International Dental Association, International Hospital Federation, NGOs, Physicians for Social Responsibility, World Bank (and regional development banks), World Council of Family Physicians, World Federation of Public Health Associations, World Medical Association.

**Linkages:** Mercury waste (Basel Convention), Mercury supply and mercury storage, UN Cleaner Production Centers, WHO (health care policy)

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<sup>19</sup> New Partner since UNEP Governing Council 24.

## **Area** – Mercury Air Transport and Fate Research

### **Issues**

- Understanding of mercury emission sources, fate and transport is important:
  - in setting priorities at the national, regional and global levels;
  - in developing and implementing policy;
  - as a part of, and as a basis for, establishing baselines to monitor and assess progress.
- Integrated global assessments, based on valid data and information from regional and national levels, are essential for global understanding and for predicting trends.
- With competing resources and priorities at the national, regional and global levels, there is tremendous value in facilitating and encouraging synergies amongst partners, countries and stakeholders in the field of mercury research.

### **Current Status**

- Italy currently leads this partnership through their Institute for Atmospheric Pollution of the Italian National Research Council.
- The first meeting of partners took place in Madison, USA in August 2006 in the margins of the 8<sup>th</sup> *Intern. Conf. on Mercury as a Global Pollutant* global mercury conference. A second face-to-face meeting of the partnership was held in Ottawa, Canada in January 2007 and generated an initial business plan for this partnership.
- The current business plan was initially established and consulted upon with partners identified in 2005-06. Given the UNEP GC Decision to enhance and strengthen the UNEP Global Mercury Partnership, business plans will be reviewed in moving forward.
- Much of the activity under this partnership has worked to build on and facilitate coordination amongst existing domestic, bilateral and multilateral programmes.
- A third meeting was held from 10-11 October 2007 in Washington DC.

### **Activities (ongoing or undertaken)**

- Italian contribution focuses on on-going activities that are carried out in the Mediterranean region, in Europe and in Polar regions.
- Canada shares information with the Arctic countries in the development of a circumpolar mercury measurement network building upon the long-standing Canadian data set of continuous measurements of atmospheric mercury in the Arctic. Such a network is valuable input into any potential global monitoring network.
- South Africa's Mercury Assessment's collaborative partnership between Government Departments, research councils, industry and academia initiated in 2006. This activity and network of experts is important in contributing towards understanding the sources, fate and transport processes of mercury in Africa and the southern Hemisphere. Work is on-going on inventories, as well as research towards understanding mercury releases from coal.
- The contribution of the United States focuses on sharing existing national information sources, such as its monitoring data for three new long-term mercury monitoring stations as well as speciated measurements of atmospheric mercury. In addition, the US Geological Survey will share its World Coal Quality Inventory, a database that includes mercury analyses for 2800 coal samples from more than 80 country collaborators; results for 7500 U.S. coal samples are also available.
- Japan is developing the comprehensive fate modeling of mercury species in multimedia environment to assess the inter-media transport of mercury species through media-boundaries. This information is useful in assessing long range transport of trace elements in the Asia-Pacific region.

### Regionally

- UNEP is undertaking field testing of the 'Toolkit for Identification and Quantification of Mercury Releases' in the Asian region. In doing so, UNEP is working with Yemen, Pakistan, Cambodia, the Philippines and Syria in developing initial mercury inventories and associated action plans (funded through UNEP Mercury Trust Fund). Initial results from this project will start coming forward in early 2008 and will help provide valuable insights to these countries and to the Partnerships in strategic activities in moving forward.<sup>20</sup>
- A modeling inter-comparison to assess the effectiveness of emission reduction measures and assessing the relative contribution of natural vs. anthropogenic sources on hemispheric and global scales is taking place under the Heavy Metals Protocol to the United Nations Economic Commission for Europe (UNECE) Convention on Long Range Transport on Air Pollution (LRTAP). UNECE and UNEP are actively working to effectively coordinate activities and timelines. Specifically, the partnership is organizing a joint workshop with UNECE Task Force on Hemispheric Transport of Air Pollutants to be held in Rome in April 2008 in order to facilitate the exchange of up to date information on atmospheric emissions, transport and deposition of mercury and its compounds at regional and global scales.
- Relevant information will be gained through International Polar Year 2008 activities. The partners are collaborating together to mutually benefit from the knowledge and information generated under this activity.
- Canada, the United States and Mexico continue to collaborate on the measurement of mercury in air and precipitation and mapping of mercury wet deposition in North America. Canada and the US collaborate in the development of a network to estimate dry deposition under the National Atmospheric Deposition Program - Mercury Deposition Network/Mercury Trends Network. In addition, the Electric Power Research Institute (EPRI) supports this mercury deposition network.

### Projects

- A three year investigation on mercury emission control technologies and methodologies, including the development of national legislation in China is initiated with the Institute for Atmospheric Pollution of the Italian National Research Council. Training and capacity building activities will be carried out to interested parties. The Italian Ministry of Environment funded the project with 800,000 €
- Japan has started a project on the monitoring of ambient atmospheric mercury and other heavy metals in remote background areas in Japan to contribute to the understanding of their atmospheric long-range transport including valuable information from Asia (Japan funded at 65 million JPY).
- The United States will maintain its on-going partnership with the Chinese Ministry of Science and Technology and Zhejiang University, which includes developing emission factors for coal-fired power plants.

### **Potential Strategies/Opportunities**

1. Major contribution to and active participation in the development of the UNEP Emissions Report required under 24/3 IV, paragraph 24.
2. Provide a forum to enhance coordination and cooperation across related programmes and projects, including:
  - Public workshops, first tentatively scheduled for April 2008 in Rome, Italy.
  - Organize a special session on partnerships at 2009 international conference on mercury as a global pollutant
  - Explore opportunities for 'mercury issue' outreach with International Polar Year 2008 activities
  - Further coordination and liaison with various organizations and programmes (such as United Nations Economic Commission for Europe, Arctic Monitoring and Assessment Programme (AMAP), UNEP Regional Seas);

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<sup>20</sup> Funded through the UNEP Mercury Trust Fund: approximate total funding is 240,000 USD. There is some potential support from the Government of Japan for the results workshop, anticipated for early 2008.

3. Targeted projects (including bilateral projects), including:
  - Provide technical assistance and training to support the development of information, such as national emission inventories (approximately 30,000 – 50,000 USD per country).
4. Coordinate and conduct research on national/regional/global scales.
5. Enhance sharing of information, outreach and communication among scientists and policymakers.

**Current Identified Partners**

Canada, Italy, Japan, South Africa, United States, UNEP, Electric Power Research Institute, South Korea<sup>21</sup>.

**Proposed Other Potential Partners**

Countries (including China, India, Norway, Switzerland), Research Institutes/organizations including: AMAP, NGOs

**Linkages**

Knowledge and information in all partnership areas.

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<sup>21</sup> New Partner since GC 24.

## **Part B.ii) Thought starters for the new and emerging areas<sup>22,23</sup>**

‘Thought starters’ have been developed by UNEP, in consultation with some early identified potential partners, for the following areas:

1. vinyl chloride monomer production
2. non-ferrous metals mining
3. cement production
4. waste combustion
5. reducing global mercury supply
6. environmentally sound, long-term storage solutions

These ‘thought starters’ have been developed to initiate discussions on new and emerging areas. The areas were identified based on paragraphs 19 and 27 of UNEP GC Decision 24/3.

The ‘thought starters’ provide an outline of the issue, the current status and highlight potential strategies/opportunities in moving forward for each of the new and emerging sectors. The thought starters will provide a basis for the path forward in planning for the new and emerging areas.

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<sup>22</sup> No governments or stakeholders have identified themselves as potential leaders for the new and emerging areas. UNEP will assume the leadership role in drafting initial business plans, pending identification of partners and leads, for consideration at the meeting of partners.

<sup>23</sup> Unless otherwise stated, data referenced has been taken from either ‘Summary of supply, trade and demand information on mercury’ UNEP 2006 or the ‘Global Mercury Assessment’, UNEP 2002.

**Area** -- Vinyl chloride monomer (VCM) production**Issues**

- A major use of mercury is for the production of vinyl chloride monomer (VCM) from acetylene. In this process, mercury dichloride is used as a catalyst. VCM is then converted to polyvinyl chloride (PVC), which is used as a building material (for pipes and tubes, siding, window and door casings, and flooring), as well as in numerous consumer goods.
- An estimated 600-800 tonnes (of 3000-3900 tonnes used globally) of mercury were consumed in 2005 by this sector. China is believed to be the location of the vast majority of the industry capacity (62 known facilities). Russia also has a few plants using this process. It is believed that some facilities in other parts of the world continue to use the process as well.
- Economic conditions, combined with availability of appropriate raw materials in China suggest VCM production will continue to expand, and the mercury catalyst process will likely be used for much of that capacity. It is estimated that mercury demand for this sector in China could increase from about 700 metric tonnes per year at present to some 1,000 metric tonnes per year by 2010.
- The quality of the mercury-produced VCM product may limit its market range, and as such, there may be economic incentives for switching to a non-mercury process.

**Current Status under mercury partnerships**

- Through Decision 24, UNEP is requested, working in consultation with Governments and other stakeholders, to strengthen the UNEP Global Mercury Partnership. One element of strengthening the programme is expanding the number and scope to include new, growing or related sectors such as vinyl chloride monomer production, non-ferrous metals mining and cement production and waste combustion.
- To date, no work has directly been undertaken on vinyl chloride monomer production under the UNEP Global Mercury Partnership.
- The United States has indicated availability of funding support for some initial scoping work.

**Possible Long-Term Objective** -- Elimination of mercury use as a catalyst in chemical processes.**Potential Strategies/Opportunities**

- Review available information on existing Best Available Techniques (BAT) / Best Environmental Practices (BEP) for new and existing sources. Amend and supplement as appropriate to provide and develop specific mercury guidance, building on multi-pollutant approaches.
- Early opportunity for technical awareness raising workshop and/or technical exchanges on best practices and innovative approaches.
- Development of international standards for VCM products.
- Targeted bilateral demonstration projects.
- Enhanced information/knowledge, including analysis of economic benefits of switching to non-mercury processes; possible financing mechanisms; and improving emissions inventories (encourage reporting by industries of their mercury use and emissions).
- Mechanism to ban new sources.
- [Create a new partnership]

**Proposed Potential partners**

- United States, UNEP, World Chlorine Council, COUNTRY PARTNERS (including trading countries), NGOs

**Linkages**

- Mercury supply and mercury storage
- Mercury waste (Basel Convention)
- [UN cleaner production centres]

**Area** -- Non-ferrous metals mining / smelting

**Issues**

- Mercury is found in trace quantities in most non-ferrous (zinc, copper, lead, gold, silver and other) ores, the quantities depending on a variety of geological characteristics (especially when the metals are extracted from sulphide ores). Emitted from the non-ferrous metals refining processes are considered significant but estimates are quite uncertain at this time.
- An estimated 300-400 metric tonnes of mercury were recovered globally from zinc, gold, copper, lead and silver refining in 2005 (of the global 3000-3800 tonnes of supply). Recovering mercury during the refining process may be done to comply with regulatory requirements, it may be done if the value of the mercury recovered provides an incentive, or for other possible reasons.
- In general, as primary (mined) mercury production decreases worldwide, the demand for mercury is increasingly met by mercury obtained as a by-product during the production of other metals such as zinc, lead, copper, gold, etc. Increased emission control of mercury will likely result in increased recovery of by-product mercury.
- Mercury emissions from metal production vary greatly based on the mercury content of the ore being used, production process, and control technology. Uncontrolled smelters using ores with high mercury content are likely among the biggest individual sources of mercury emissions globally.
- Major producers of zinc, copper and/or lead, both from mining and smelting, include China, Australia, Canada, Russia, Indonesia and the United States. Chile, Peru, and Mexico are major mine producers, who both export ores and have some smelters within country. Japan, South Korea, Brazil, and India are all major non-ferrous metals producers that use primarily imported ores.
- Countries with large industrial scale gold mining and production operations include: amongst others South Africa, Australia, the United States, China, Peru and Russia.
- For some facilities, much of the mercury released goes directly to the atmosphere. For example, it is reported that as much as 200 metric tonnes are released from zinc smelting in China alone.
- While many smelting operations do not remove mercury from the flue gases, there are now about 35 mercury removal systems in operation globally.
- Finland has been capturing by-product mercury from zinc smelting for many years. Japan has also recovered certain amount of mercury from by-products of non-ferrous metal refineries. Currently, the main areas for recovered mercury from industrial gold mining are South America (Peru, Chile, Argentina) and the United States.

**Current Status under mercury partnerships**

- Through UNEP Governing Council Decision 24/3, UNEP is requested, working in consultation with Governments and other stakeholders, to strengthen the UNEP Global Mercury Partnership. One element of strengthening the programme is expanding the number and scope to include new, growing or related sectors such as vinyl chloride monomer production, non-ferrous metals mining and cement production and waste combustion.
- To date, no work has directly been undertaken in the nonferrous metals mining sector under the UNEP Global Mercury Partnership.
- The International Council on Mining and Metals (ICMM) is committed to apply materials stewardship to promote the responsible management of the mercury produced from ICMM members' operations, including that which naturally occurs in products (ICMM, February 2007 position statement).
- One proposal for a small grants project has been submitted to UNEP from Tshingua University in China. The United States is funding work by Tshingua University and Argonne Laboratories to better characterize zinc smelting emissions in China.

**Possible Long-Term Objective**

No mercury is released to the atmosphere from non-ferrous metals mining. <sup>24</sup>

NOTE: One way to achieve the objective is to identify major sources of mercury emissions and minimize emissions using best available control technology and cleaner production technologies.

*In order to help set short term objectives for this sector, what are some suggested indicators of progress?*

- The percentage of production that occurs at facilities with BAT installed.

**Potential Strategies/Opportunities**

- Review available information on existing Best Available Techniques (BAT) / Best Environmental Practices (BEP) for new and existing sources. Amend and supplement as appropriate to provide and develop specific mercury guidance, building on multi-pollutant approaches.
- Review of existing commitments on emission reductions and best practices.
- Enhanced information/knowledge, including improving emissions inventories — encouragement of regional and global reporting by industries of their mercury emissions and by-product capture.
- Awareness raising for best practices, including at country government level and non-ICMM member industries.
- Targeted bilateral demonstration projects.
- Commitments companies to install best available technologies.

**Proposed Potential partners**

- UNEP, International Council on Mining and Metals (ICMM), NGO, COUNTRY PARTNERS, United Nations Industrial Development Organization, North American Commission for Environmental Cooperation, Arctic Council Action Plan

**Linkages**

- Potential to incorporate all mining related activities under one partnership. Large and artisanal gold mines are often co-located -- large gold mines could provide on-site technical assistance to artisanal gold miners.
- Mercury supply and mercury storage.
- Mercury waste (Basel Convention).

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<sup>24</sup> Alternative Objectives proposed: Mercury releases are minimized at all non-ferrous metals mining facilities through application of best available control technology and/or cleaner production technologies. OR Mercury emissions are minimized to the lowest level that is economically and technically feasible.

**Area** -- Cement Production**Issue**

- The raw materials used for the production of cement contain trace concentrations of mercury. Mercury originates from three basic sources: naturally present in virgin raw materials (lime, coal, oil etc.), in solid residues from other sectors (e.g. fly-ashes and gypsum from combustion of coal) often used as raw materials for cement production, and at some facilities where mercury may be in wastes sometimes used as fuel. The last two sources may significantly increase the total input of mercury to cement production, depending on materials.
- Cement production is a good example of a source of mercury releases due to the use of materials with very low mercury concentrations, but consumed in very great quantities.
- About 6 %<sup>25</sup> of global anthropogenic mercury released to the atmosphere is estimated to come from cement production.
- The major pathway for mercury releases from cement production is to the air, and to a lesser extent to the soil, in wastes and residues, as well as in the cement product itself.
- Information on the mercury removal efficiency of different emission reduction systems for cement plants is scarce, but compared to other heavy metals (e.g. lead and cadmium) removed by these systems, the efficiency of the removal of mercury is relatively low.
- In general, it is assumed that the mercury removal efficiency in kilns is comparable to the efficiency of mercury removal by the same devices employed in combustion plants.
- An important multi-pollutant control strategy for cement is improving the energy efficiency of the plant.
- In most countries the issue of controlling mercury emissions from cement plants has not yet become a high priority, although plant operators are required to report them under various Pollutant Release and Transfer Registers (PRTRs).

**Current Status under mercury partnerships**

- Through UNEP Governing Council Decision 24/3, UNEP is requested, working in consultation with Governments and other stakeholders, to strengthen the UNEP Global Mercury Partnership. One element of strengthening the programme is expanding the number and scope to include new, growing or related sectors such as vinyl chloride monomer production, non-ferrous metals mining and cement production and waste combustion.
- To date, no work has directly been undertaken in the cement production sector under the UNEP Global Mercury Partnership.
- IEA Clean Coal Centre has recently engaged in UNEP mercury discussions on partnerships. Interest has been expressed in initiating related activity in this area.

**Possible Long-Term Objective**

Continued minimization of mercury released to the environment from the cement sector.

NOTE: One way to achieve the objective is to minimize emissions using best available control technology.

*In order to help set short term objectives for this sector, what are some suggested indicators of progress?*

**Potential Strategies/Opportunities**

- Review available information on existing Best Available Techniques (BAT) / Best Environmental Practices (BEP) for new and existing sources. Amend and supplement as appropriate to provide and develop specific mercury guidance, building on multi-pollutant approaches.
- Promoting with other governing bodies the development of an active set of sustainable energy programmes.
- Awareness raising with industry for best practices and at country government level.

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<sup>25</sup> This is an estimate for the year 2000. Reference : E. G. Pacyna *et al.* 2006

- Targeted bilateral demonstration projects.
- Enhanced information/knowledge, including improving emissions inventories for this sector (encourage regional and global reporting by industries of their mercury emissions).
- Initiative on coal by-products use in building materials (also wallboard).

**Proposed Potential partners**

- UNEP, IEA Clean Coal Centre, COUNTRY PARTNERS, NGO, coal/energy players

**Linkages**

- [potential to incorporate into mercury from coal combustion partnership]
- Mercury air transport and fate research (for enhanced knowledge/information needs)
- Sustainable growth initiatives.

**Area** -- Waste Combustion**Issues**

- Mercury concentrations in the waste stream are directly dependent on the inputs of mercury to the waste, and will therefore likely vary greatly between different countries and circumstances. Important factors determining releases of mercury from municipal solid waste are the concentration of mercury in the wastes, and the efficiency of any control devices that may reduce mercury emissions.
- Approximately 3 %<sup>26</sup> of global anthropogenic mercury released to the atmosphere is estimated to come from waste combustion.
- Many countries make an effort to separate products with high mercury content from the general waste stream, so they can be managed or recycled properly. Removing mercury from the waste stream is much more effective (both in terms of cost and emission capture) than removing mercury from the emission streams. It has, however, proven difficult to reach high collection rates, particularly when the separation is done by consumers. Available information indicates that medical waste incinerators can be significant a source of mercury emissions due to the nature of the waste.
- Separate collection and treatment generally implies significant extra costs for society. An increasing effort in many countries is being devoted to phasing out the use of most mercury containing products and processes.
- The mercury eliminated from exhaust gases is retained in incineration residues and, for some types of filtering technology, in solid residues from wastewater treatment (from the scrubbing process). These residues are generally sent to landfills or – depending upon their content of hazardous materials and other characteristics – used for special construction purposes (gypsum wallboard, roadbeds or similar).

**Current Status under mercury partnerships**

- Through UNEP Governing Council Decision 24/3, UNEP is requested, working in consultation with Governments and other stakeholders, to strengthen the UNEP Global Mercury Partnership. One element of strengthening the programme is expanding the number and scope to include new, growing or related sectors such as vinyl chloride monomer production, non-ferrous metals mining and cement production and waste combustion.
- Several Basel Convention Technical Guidelines of relevance have been developed and adopted by the Basel Convention, namely the technical guidelines on environmentally sound management of household waste, technical guidelines on the incineration on land and technical guidelines on specially engineered landfills. These guidelines are currently being reviewed by the Basel Convention Open Ended Working Group.
- Cooperation on mercury waste between UNEP Chemicals and the Basel Convention is on-going. The eighth Conference of the Parties to the Basel Convention included a new Strategic Plan focus area on mercury wastes in the 2007-08 biennium. Currently there are two main work area components being conducted by the Basel Convention Secretariat, in cooperation with UNEP Chemicals. **Component I:** draft of the technical guidelines on the Environmentally Sound Management (ESM) of mercury wastes; and **Component II:** a capacity-building and technical assistance programme to reduce risk and prevent pollution from mercury.
- Japan is considering leading waste incineration activities under the UNEP Global Mercury Partnership.

**Possible Long-Term Objective** - Prevent release of mercury to the environment from waste disposal through a waste management approach and eventual phase out of mercury in products.

**Potential Strategies/Opportunities**

- Review available information on existing Best Available Techniques (BAT) / Best Environmental Practices (BEP) for new and existing sources. Amend and supplement as appropriate to provide and

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<sup>26</sup> This is an estimate for the year 2000. Reference : E. G. Pacyna *et al.* 2006

develop specific mercury guidance, building on multi-pollutant approaches. Awareness raising focusing on waste management at the country level and phase out of mercury in products.

- Targeted bilateral demonstration projects.
- Enhanced information/knowledge, including improving emissions inventories for this sector.
- Create a Waste Partnership (including mercury storage)

**Proposed Potential partners**

- UNEP (Basel Convention Secretariat, UNEP Chemicals), COUNTRY PARTNERS – Japan (to be confirmed), United States, NGO.

**Linkages**

- Mercury supply and mercury storage
- Mercury in products

**Priority Area - Reducing global mercury supply****Issues**

- In order to effectively reduce the quantities of mercury circulating in the biosphere, it is widely agreed that there is a need to reduce simultaneously both the supply of, and demand for, mercury worldwide.
- Country-to-country and region-to-region commercial ("trade") flows of mercury are now understood well enough to show the consistent transfer of mercury from higher to lower income countries.
- The following table summarizes the estimated global mercury supply during 2005. Table 1: Global mercury supply, 2005:

Source of mercury supply (2005)	Mercury supply (metric tonnes, rounded)	
	Best estimate	Range
Mining and by-product	1980	1800-2200
Recycled mercury from chlor-alkali wastes	100	60-100
Recycled mercury – other	570	500-600
Mercury from (decommissioned) chlor-alkali cells	640	500-800
Stocks	0	0-200
Total	3300	3000-3500

- Despite best efforts to clarify the complexities of trade reporting data, there remain many uncertainties due to the wide range of sources, as well as the limited reporting of information with regard to most of these sources.
- In general, it appears that primary mining of mercury is decreasing. Global mercury mining in recent decades has been dominated by three nations mining mercury for export (Spain, Kyrgyzstan and Algeria), and China, which to date, has mostly provided for its own domestic market. Both Spain and Algeria have decided recently to terminate mercury mining operations.
- Mercury wastes generated as a by-product of certain non-mercury mining and smelting activities are a potentially large and growing source of the metal. Mercury is extracted from these wastes depending on the specific regulatory and economic environment in which each mine operates.
- The European Union plans to phase out 40-50 mercury cell chlor-alkali units by 2020, freeing up at least 11,000 metric tonnes of elemental mercury (see below for 2011 EU export ban information). Some other countries also have various plans for a transition to the economically and environmentally preferable membrane technology for producing chlorine and caustic. Global mercury supply and demand decreased substantially during the 1980s and 1990s, but these major reductions have not continued in the first half of this decade.
- Currently, the price of mercury is low, with abundant supply from withdrawal from chlor-alkali plants, release of stockpiles, and production as by-product. Market forces are working against the development and adoption of alternatives to mercury use.
- Greater limitation on trade is likely to increase the price of mercury, resulting in increased financial viability of alternatives, an incentive for research into alternatives, and pressure on mercury users to ensure that it is used in the most efficient and effective manner, with minimal environmental releases.
- In comparison to an increased mercury price, the cost of technology to minimise or prevent releases to allow re-use also becomes more financially attractive.
- As part of a larger regulatory strategy to reduce the amount of mercury available to the biosphere, a number of countries have already implemented policies with the express purpose of restricting or regulating mercury trade, supply and demand. In other countries such policies are under discussion. Focusing primarily on trade issues in this analysis, the following relevant examples related to mercury trade are worth noting:

- The European Union has agreed to a mercury strategy that calls for a ban on mercury exports from 2011, and is now in the process of adopting relevant legislation, including a storage requirement for surplus mercury. In the interim, Eurochlor is reported to have arrangements for exporting its mercury from chlor-alkali withdrawal.
- The United States Government has stored 100% of its federal mercury stocks (about 5600 tons) in order to keep it from the marketplace, and launched a stakeholder process last March to provide an assessment and options for managing the remaining non-federal stocks.
- Sweden and Denmark have banned the export of elemental mercury, among other restrictions on mercury.
- Mercury as a pesticide and some other mercury compounds are subject to the procedures of the Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade. Sweden has recently proposed elemental mercury to the Rotterdam Convention.

### **Current Status**

- Through UNEP Governing Council Decision 24/3 paragraph 19, UNEP Governing Council commits to increased efforts in seven priority areas to address the global challenges to reduce risks from releases of mercury, including reducing global mercury demand related to use in products and production processes; and reducing the global mercury supply, including considering curbing primary mining and taking into account a hierarchy of sources.
- Mercury supply links are strong with both the existing partnership areas and those areas identified as new, growing or related sectors in Decision 24/3/27.b. Consideration and understanding of this overall sector could be important in setting business plans and goals related to many of the individual partnership areas and the UNEP Mercury Partnership Programme at large.
- To date, no work has directly been undertaken in this sector under the UNEP Global Mercury Partnership.

### **Possible Long-Term Objective:**

Limit or control supply of mercury, taking into account a hierarchy of sources.

Phase-out use of mercury, with timed or limited exemptions for phase out in certain circumstances.

### **Potential Strategies/Opportunities**

- Bilateral projects with China and Kyrgyzstan to achieve a global program to curb primary mercury mining.
- Use of existing instruments to control trade of metallic mercury (one nomination (Sweden) already made under the Rotterdam Convention).
- Prevent re-introduction of phased out mercury from chlor-alkali industry from enterin the market.
- Encourage and provide incentives for non-mercury alternative products and/or processes.
- Enhanced information/knowledge, including a reliable system for recording cross-border transactions of mercury.
- Create a new partnership.

**Proposed Potential partners --** ICMM, NGO, COUNTRY PARTNERS --Switzerland, UNEP

### **Linkages**

- Mercury supply and mercury storage
- Mercury trade (Rotterdam Convention), Mercury waste (Basel Convention)
- Existing partnership areas where mercury is used in the product or process (chlor alkali, products, artisanal and small scale mining).

**Priority area** - Environmentally sound, long-term storage solutions

**Issue**

- Possible limitations in trade in large trading countries must be accompanied by access to viable, safe and secure long term storage for mercury stockpiles.
- Incentives for storage of mercury following phase out of large-scale uses (such as the chlor-alkali industry) may be necessary to prevent sale of mercury into the market.
- Storage should be readily accessible to industry, and non-punitive in nature, to provide an acceptable alternative to selling the material on the market.
- Related initiatives in Europe and the United States are noted in the mercury supply section.

**Current Status**

- Through UNEP Governing Council Decision 24/3 paragraph 19, UNEP Governing Council commits to increased efforts in seven priority areas to address the global challenges to reduce risks from releases of mercury, including finding environmentally sound storage solutions for mercury and finding environmentally sound solutions for the management of waste containing mercury and mercury compounds.
- Storage solutions for mercury are strongly linked with both the existing partnership areas and those areas identified as new, growing or related sectors in Decision 24/3/27.b. Consideration and understanding of this overall sector could be important in setting business plans and goals related to many of the individual partnership areas and the partnership programme at large.
- To date, no work has directly been undertaken on long-term storage under the UNEP Global Mercury Partnership.

**Possible Long-Term Objective**

Ensure long term (indefinite), non-punitive, safe and secure storage of accumulated mercury stocks that result as trade is limited over time.

**Potential Strategies/Opportunities**

- Development environmentally sound management (ESM) guidelines for mercury waste (started) with the Basel Convention.
- Development of a mechanism to identify and properly manage stockpiles.
- Financial and market based incentives for withdrawal for developing countries with respect to ESM.
- Targeted pilot projects with the Basel Convention.
- Create a new partnership on 'Mercury Waste' (including storage).

**Proposed Potential partners**

- Basel Convention, NGO – WCC, MPP, COUNTRY PARTNERS – United States, UNEP

**Linkages:**

- Mercury supply
- Mercury waste (Basel Convention)
- Existing partnership areas where mercury is used in the product or process (chlor alkali, products).

## Part C: Enhancing the artisanal and small-scale gold mining partnership<sup>27</sup>

UNEP Governing Council Decision 24/3 part IV Paragraph 27 mandates enhancement of "... the artisanal and small-scale gold mining partnership through, among other things, increased cooperation with the United Nations Industrial Development Organization, exploration of innovative market-based approaches and dissemination of alternative capture and recycling technologies".

### Issues

- The artisanal and small-scale gold mining sector remains the largest demand sector for mercury globally and one of the most significant sources of releases of mercury to the environment.
- This sector produces 20-30% of the world's gold. With gold rising from \$260 US/oz in March 2001 to \$760 US/oz in October 2007, a gold rush involving poverty-driven miners is currently being observed in many countries. The number of miners using mercury may increase in the coming years.
- Mercury amalgamation is currently the method most commonly used to extract gold in artisanal and small scale gold mining because it is easy to use, cheap and easy to obtain. Cyanide, the only chemical extraction alternative, also presents risks to human health and the environment.
- Currently, the price of mercury (\$20 US/kg), relative to the value of gold, is low. Mercury at artisanal gold mining sites can cost up to \$150 US/kg. Higher mercury prices can act as an economic incentive for miners to reduce mercury releases and can create demand for alternative technologies.
- There is a ready supply of mercury available from withdrawal and/or diversion from identified sources. Mercury is still classified as a 'commodity-with-value' and is traded globally as other marketable commodities.
- Artisanal and small scale-gold mining involves an estimated 10-15 million miners, including 4.5 million women and 1 million children. The impact of mercury use in this sector affects approximately 100 million people, directly or indirectly.
- Serious long-term environmental health hazards exist in populations living in, near or downstream/wind of mining operations.

### Current Status

- The United Nations Industrial Development Organization (UNIDO) currently leads this partnership.
- An initial planning meeting was hosted by the United States, UNEP and the World Bank's Communities and Small Scale Mining program (CASM) in June 2005. An initial business plan was drafted at this meeting. It is posted at the following web address: <http://www.chem.unep.ch/mercury/Sector-Specific-Information/Artisanal-small-scale-mining.htm>.
- The current business plan was initially established and consulted upon with partners identified in 2005-06. Given the UNEP GC Decision to enhance and strengthen mercury partnerships, business plans will be reviewed in moving forward.
- UNIDO's Global Mercury Project (GMP) is one of the most significant activities to date in the ASM sector. The GMP was launched in 2002 with financial support from the Global Environment Facility (GEF), and by partner countries and civil society. Countries participating in this pilot program, included Brazil, Indonesia, Lao People's Democratic Republic, Sudan, Tanzania and Zimbabwe. Over the past five years, the GMP worked with governments, non-governmental organizations, industry, and

<sup>27</sup> Unless otherwise stated, data referenced within this consultation document has been taken from either 'Summary of supply, trade and demand information on mercury', UNEP 2006, the 'Global Mercury Assessment', UNEP 2002 or 'A Strategy and Proposal for the Global Mercury Project – 2', UNIDO 2007. Existing partnership areas were identified based on government and stakeholder input in the 2005-2006 timeframe.

community stakeholders to remove barriers preventing the introduction of cleaner artisanal gold mining extractive technologies. The final analysis of the project is currently underway including total budget and results. The GEF portion of funding for this project through UNDP was for \$6.8 million US, the co-finance for this was set at \$12.9 million US. GMP1 is subject to GEF evaluation in the coming months. UNIDO results indicate that 30,000 miners and 150 government employees were trained under GMP1.

- UNIDO is currently launching phase two of the Global Mercury Project (GMP2).
- A business planning session will be hosted in Washington D.C. on 24 October 2007. UNIDO and CASM are working together to host this meeting back to back with the Madison Dialogue Ethical Jewelry Summit. Working in synergy with such activities is helping to explore innovative market based approaches for the ASM sector.

#### **Activities (ongoing or undertaken)**

- Stakeholder outreach: The United States is partnering with the World Bank's CASM Program to develop a mercury web page on the CASM website, with links to UNIDO, UNEP, and others.
- As noted above, UNIDO's Global Mercury Project (GMP) is one of the most significant activities to date in the ASM sector.
- Projects:
  - The United States and Brazil with UNIDO have partnered to reduce mercury emissions from gold refining shops in the Amazon. In this project, baseline measurements of mercury emissions from individual gold shops have been verified, and options were developed for locally-manufactured technology solutions for the capture of mercury vapors in the gold shops. A prototype technology was installed and tested at over 90% efficiency of mercury vapor capture (partly funded through UNEP Mercury Trust Fund, travel of one expert to the project site).<sup>28</sup>
  - Senegal and the United States, with UNIDO, the Blacksmith Institute, and local NGOs, have partnered to conduct an initial assessment mission to a large gold-producing region in Senegal: developing baseline measurements and a detailed program plan to train community-based NGOs and health workers on appropriate technologies for mercury capture and reuse, and safe mercury management techniques.
  - UNEP is partnering with the University of Bremen and UNIDO to train small scale gold miners in Suriname for clean technology, training of personnel to quantify atmospheric mercury emissions and its impact on health (funded through UNEP Mercury Trust Fund, see total in footnote).
  - Switzerland is supporting projects in Peru and Mongolia.

**Proposed Intermediate Term Objective:** 50% reduction in mercury use in ASM by 2017.

#### **Potential Strategies/Opportunities**

1. Broaden representation on the partnership, both in terms of number and scope of partners, including:
  - a. Enhanced work with other key international organizations such as the International Labour Organization, World Health Organization.
  - b. Build upon industry engagement. Discussions have been initiated with the International Council on Metals and Mining. The World Business Council for Sustainable development has also been approached.
  - c. Additional governments and stakeholders are encouraged to partner. In particular, labour, industry and development agency experts would add value to the partnership.
2. Increased partnership activities in related cross-cutting areas also have great potential in benefiting this sector, such as proposed work on mercury supply, trade and waste issues.

<sup>28</sup> Mercury Trust Fund: approximate total funding for ASM work to date is \$ 43,000 US.

3. The United Nations Industrial Development Organization (UNIDO) GMP 2 has identified the following strategies as critical for meeting a demand reduction goal of 50% by 2017: (1) Eliminate whole-ore amalgamation by introducing methods and educating miners on means to implement mercury-free concentration prior to amalgamation; (2) Reduce mercury losses during amalgamation of concentrates and when condensing gold from amalgam by introducing better Hg capture and recycling processes; (3) Introduce mercury-free mining practices where practical, particularly where ore concentration could preclude mercury use; (4) Improve public stewardship of local natural resources while improving understanding of mercury's impacts to local public and economic health and beyond. The partnership may wish to consider these strategies, support them by identifying complementary efforts and linking GMP efforts with the broader suite of initiatives relevant to the overarching UNEP Global Mercury Partnership.
4. Projects (including bilateral projects) targeted towards meeting business plan objectives are encouraged. Some examples include:
  - Demonstration of micro-finance projects with targeted mining communities;
  - Demonstration project with UN Cleaner Production Centres;
  - Creating 'Centres of Excellence' that are mobile and amenable to local users.
5. There is an opportunity for a government or other stakeholders to launch a high profile 'Green Gold' campaign with gold consuming populations (industry and individuals) to increase marketing of 'Green Gold', work to streamline existing initiatives and develop international standards and to build profile.<sup>29</sup> An associated capacity building project would be integrated into any campaign in order to build continued and assured supply of 'Green Gold' to consumers.
6. Increased complementary and collaborative outreach efforts, including:
  - a. with mining communities, local gold shop owners and operators – focusing on building capacity at the local level. Potential opportunity for demonstration projects by working with existing entities, such as Cleaner Production Centres and/or Basel Regional Centres etc.. Also an opportunity to use demonstration units to convey messages in places where miners will see them like banks, churches etc..
  - b. with local health care providers and other community based organizations– focusing on raising awareness and sharing information with local populations about health risks. Potential opportunity to partner with other international organization to raise awareness in country/regional level missions that are providing outreach on related environment and health issues [such as the Communities and Small-Scale Mining Programme, the World Health Organization, Doctors without Borders].

### **Current Partners**

Argonne National Laboratory, Booz Allen Hamilton, Burkina Faso, Chinese Academy of Sciences, Coalition for Mercury Management, Mongolia, North American Commission for Environmental Cooperation, Quicksilver Caucus, Senegal, South Africa Council for Scientific and Industrial Research, Tanzania, Tsinghua University, United Nations Environment Program (UNEP), the United Nations Industrial Development Organization (UNIDO) Global Mercury Project, the United States, the World Bank's Communities and Small-Scale Mining (CASM) Program.

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<sup>29</sup> 'Fair Trade Gold' is produced by artisanal and small-scale miners in participating countries and regions who agree to respect a pre-defined set of social, economic, labor and environmental development standards. The program was developed by the Association for Responsible Mining (ARM), which began its work in Colombia, and is now working to develop Fair Trade Standards for minerals and gemstones worldwide. It has been widely accepted by communities that have benefited to date and by traditional miners in the pilot region.

**Proposed Other Potential Partners**

Association for Responsible Mining, International Council on Metals and Mining, International Labour Organization, Switzerland, World Health Organization, other country partners, NGOs, jewelers, microfinance groups

**Linkages**

- Mercury supply and mercury storage
- [Potential to link all mining related activity under one partnership]
- [UNEP Regional Seas Programme]
- [UN cleaner production centres, Basel Regional Centres - potentially for demonstration projects]

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## **Part D: Funding**

### **Background**

1. In its decision GC 24/3 on chemicals management, the Governing Council invites Governments and others in a position to do so stakeholders to continue and enhance their support of the UNEP Mercury Programme through the provision of technical and financial resources, as a means of achieving reductions in demand for and releases of mercury and thereby reducing the risks to human health and the environment from mercury.
2. The Executive Director sent a fundraising letter dated 26 March 2007 to UNEP official focal points drawing attention to decision 24/3 and the need for funding to support the implementation of the decision, including work on partnerships.

### **Supporting Partnership Activities**

3. Partnerships and the associated business plans are a means of mobilizing funding in a systematic, focused and harmonized way. The partnerships objectives and business plans should provide clarity for potential donors and finance institutions. The business plans should be designed to encourage and facilitate donors to support activities and should provide a tool to leverage funds.
  4. Limited funding is available through the UNEP Small Grants Programme to support partnership related projects. UNEP continues to encourage submission of project proposals aimed to achieve mercury use and/or release reductions with measurable environmental results, consistent with objectives of the UNEP Global Mercury Partnership.
  5. Under the UNEP Small Grants Programme, the maximum amount per project is \$100,000; projects under \$50,000 are given preference, however, as are projects with an element of co-funding from other sources or substantial in-kind contributions. Geographic and sectoral balance are also taken into account. The proposals received to date generally underline the need, among other things, for technical assistance and capacity-building relating to inventories (identification and quantification of releases); training, awareness-raising and information exchange; measures to reduce or eliminate releases from wastes; and research, policy development and regulatory controls.
  6. In business planning, the partnership areas may consider working with certain developing countries or countries with economies in transition to help them develop targeted projects to propose to the UNEP Small Grants Programme.
-