GMP News, n. 02, June 2003

Global Mercury Project

Project EG/GLO/01/G34: Removal of Barriers to Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies

From the Editor

In this issue we highlight the decision of the US Environmental Protection Agency (USEPA) to give GMP the benefit of their advisory services and technical field support. In addition to USEPA, WHO Jakarta declared their interest in supporting health related programs for mercury-affected mining communities in Indonesia. Another good news is the completion of the Protocols and Questionnaires for the Environmental and Health Assessment (E&HA) of mercury impacts in hotspot areas. The required investigations in the six participating countries Brazil, Indonesia, Lao PDR, Sudan, Tanzania and Zimbabwe have been recently sub-contracted to BGS/UK, BRGM/France and CETEM/Brazil. The work is starting in July.

Indonesia Gold Rush: Mercury Pollution Is Escalating

With the gold price rising from US$ 270/oz (May 2001) to US$ 350/oz (May 2003), an increasing number of people are rushing into artisanal gold mining in the hope of escaping poverty.

In Indonesia, the number of people directly involved in artisanal gold mining is estimated to have tripled in the last years and might have reached 500,000. Evidence of this increase can be seen at the two sites selected for the project's *Environmental and Health Assessment (E&HA)*: Gelangan in Central Kalimantan and Talawaan in North Sulawesi.

In Gelangan, where gold mining activities have been pursued since the 70s, currently 10,000 - 12,000 gold miners are releasing **1 to 2 tonnes of mercury annually to the environment**. In Talawaan, the number of miners was estimated at some 10,000 operating 200 to 250 processing units in 1998. A preliminary assessment indicates that each unit purchases (and loses) 10 to 30 kg of mercury per month. Based on the 1998 figures, the **Hg loss in the region can be as much as 90 tonnes/a.** These numbers will be validated in the E&HA.

In meetings with stakeholders in Kalimantan and Sulawesi, the GMP team demonstrated how mercury vapor exposure can be reduced by using retorts made with water plumbing and costing around US$ 5 (photo).

Retort made in Manado, North Sulawesi according to UNIDO instructions

Tanzania: Artisanal Gold Miners in Lakes Victoria and Tanganyika

Artisanal and small-scale gold mining (ASM) activities in Tanzania provide work for 50,000-100,000 miners in the district of Geita close to Lake Victoria and Lake Tanganyika.

The selected project site is located in Rwamagaza, one of the four major mining centers in Geita. In order to assist miners in grinding hard rocks, a joint venture between the Government and private investors from South Africa was established. The company provides grinding services to the miners transporting crushers and ball mills to the site. The ground ore is manually panned and amalgamated by the miners. Mercury amalgam is burned in open pans. Miners frequently conduct amalgamation at the banks of rivers draining to the two great lakes. Women often prepare food in the contaminated area. Many of them are directly involved in the handling of amalgam and are, therefore, permanently exposed to the toxic metal.

The Global Mercury Project (GMP) *began in August 2002. The GMP will demonstrate ways of overcoming barriers to the adoption of best practices and pollution prevention measures that limit the mercury (Hg) contamination of international waters from artisanal and small-scale gold mining (ASM). Six countries are participating in the GMP: Brazil, Lao PDR, Indonesia, Sudan, Tanzania and Zimbabwe. In addition, the GMP aims to introduce cleaner technologies, train miners, develop regulatory mechanisms and capacities within Government, conduct environmental and health assessments (E&HA) and build capacity in local laboratories to continue monitoring Hg pollution after the project.*

Cooperation with US Environmental Protection Agency

The US Environmental Protection Agency has accepted an invitation from UNIDO to bring its vast experience to the GMP in general and its E&HA in particular. The invitation was to cooperate under the GMP in Global Task Force Meetings and to join UNIDO field missions. After the mutual interest in a cooperation had been established, a meeting took place at the USEPA Office of International Affairs in Washington DC on 5 May 2003, in which the details of USEPA's assistance through advisory services as well as technical field support were worked out.

For a long period USEPA has been supporting mercury research on global scale and has helped other countries reduce mercury emissions and demand for mercury. With the experience of the impact of historical gold mining activities in USA, much research has been conducted by USEPA to better understand sources and mechanisms of mercury mobility. Nowadays, California and Nevada are dealing with the legacy of 19th century gold mines, which released large amounts of mercury to vast watersheds including those that drains into San Francisco Bay.

Areas of particular interest to USEPA in the GMP are: human health risk assessment, estimation of the regional or global impacts of the overall contribution of artisanal gold mining practices to the global atmospheric pool, removal of mercury from soils, sediments and water and mining engineering advice to prevent pollution. More specifically, USEPA offered immediate help through the provision of the following contribution/services :

- Peer review of the Scientific Protocols on E&HA prepared by the GMP Coordination Unit;
- Participation of USEPA in advisory boards as well as field missions;
- Provision of health experts;
- Provision of experts in Legal Issues/Mining Law Enforcement;
- Provision of students from US universities to accompany the GMP field work;
- Establishing contacts to Hg-analytical and mineral processing equipment suppliers,
- Development of a strategy to generate additional income for small-scale miners.

This cooperation reflects the growing concern on Hg pollution worldwide and the need for networking. The assistance of USEPA underscores the importance of the GMP on removing the barriers for the introduction of cleaner technology in small-scale gold mining and represents recognition of UNIDO's work in the artisanal gold mining sector. The CTA welcomed USEPA's in-kind assistance and expressed his thanks on behalf of GEF/UNDP/UNIDO for the very generous contribution of United States of America to the Project.

Workshop in Belém, Brazil

The Workshop on Mercury E&HA Techniques held in Belém on April 29-30th brought together 64 representatives of Federal Government and States of Amazonas and Pará, academia, small-scale mining associations, miners and other stakeholders. In view of the forthcoming sociological and E&HA in hot spot areas in Brazil, the Workshop focused on evaluation of monitoring techniques, their usefulness and reliability. The Workshop was combined with a Country Task Force Meeting, in which the present achievements and the future actions until the end of 2003 were discussed. Representatives of the new Federal Government stressed their strong interest in improving legal framework for the sub-sector and assist small-scale gold mining operations. They recognized the important role of the GMP in addressing the Hg problem and providing replicable solutions to reduce mercury pollution.

Workshop in Jakarta, Indonesia

The one-day seminar (March 20, 2003) was organized by UNIDO, WHO and Indonesian Dept. of Foreign Affairs. Attended by about 40 people from Indonesian Government agencies and representatives from foreign embassies, the seminar attracted the attention of possible donors to a new project (WHO-UNIDO) focusing on health and environmental aspects of artisanal hard-rock-gold mining activities in Indonesia. Mr. Dian Triansyah Djani, Ministry of Foreign Affairs, the Representative of UNIDO in Jakarta, Mr. Matsushita, and the Representative of WHO in Jakarta, Mr. George Petersen, all stressed the rampant nature of the problem of small-scale gold mining in Indonesia and the need for inter-agency cooperation. The GMP team presented an overview of the use of mercury in different mining sites worldwide, indicating the possible solutions for reducing emissions. The GMP CTA presented the main topics to be investigated in the proposed WHO-UNIDO project. The presentation included a UNIDO video from Kalimantan with scenes of amalgam being burned in the kitchen in front of women and children.

In Indonesia, kids playing around amalgamation mills

African Mining Network

In order to present results of small-scale mining projects related to mercury pollution, UNIDO participated in the UNCTAD-ECA Workshop held in Addis Ababa on 25-27 February 2003. The purpose of the workshop was to review the rationale for an African Mining Network (AMN) and discuss modalities for the Network's establishment and operation. The AMN will support ongoing and emerging initiatives in Africa including the African Mining Partnership, a recent initiative of African mining ministers linked to the New Partnership for Africa's Development (NEPAD). Participants in the workshop included experts from Government, the mining industry, academia and NGOs, from Africa and overseas.

The Demise of the Assistant to the Focal Point in Zimbabwe

It is with great sorrow that the GMP team learnt of the death of Mr. Richard Svotwa, former Assistant to the Focal Point in Zimbabwe. Mr. Svotwa's assistance was crucial for the project site selection and the organization of stakeholders' information workshop. He was known for his great experience in the small-scale mining sector and, among others, was one of the key actors in the development of the Shamva mining center. Before being recruited as Assistant to the Focal Point, he was the Chairman of the Mining Engineering Dept. of University of Zimbabwe. He successfully assisted in the organization of the first GMP Country Task Force meeting in Sept. 2002. He also represented UNIDO at the Yaounde seminar on "Artisanal and Small-scale Mining in Africa". The GMP team conveys sincere condolences to his family.

Protocols for E&HA

Environmental and Health Assessment (E&HA) is a crucial initial step of the GMP to: *"identify hotspots in project demonstration sites, conduct geochemical and toxicological studies and assess the extent of mercury pollution in surrounding water bodies".* The GMP team organized a workshop in Paris, Jan 31-Feb 1, 2003, with experts from Brazil, France, UK, Germany and Canada to discuss E&HA methodologies that will ensure replicable and comparable results when the E&HA is carried out by local environmental agencies, researchers and miners. As a result, GMP team has developed two documents containing standardized, reproducible and simple procedures for assessing mercury losses, biota selection, sampling, sample preparation & preservation, analysis, etc. The drafts of these documents **Protocols for Environmental & Health Assessment of Mercury Released by Artisanal and Small-Scale Gold Miners** and a **Users' Guide** with the frequent asked questions related to the toxic effects and behavior of mercury in the environment, are available at the GMP website. Comments and suggestions are very welcome and should be sent as soon as possible to the Project Coordination Unit.

Manual mining in Ghana

Selection of the Subcontractors for the E&HA

The Bureau de Recherches Géologiques et Minières of France, Center of Mineral Technology of Brazil (CETEM), Geological Surveys of Japan, UK (BGS) and the US had been invited to compete in an international bidding for Environmental and Health Assessments (E&HA) in each of the six GMP participating countries. After a thorough evaluation of their quotations, the following subcontracts have been awarded:

- Brazil to CETEM
- Indonesia to CETEM
- Laos to BRGM
- Sudan to BRGM
- Tanzania to BGS
- Zimbabwe to BGS

WWF 3 in Kyoto/Japan

GMP team participated in World Water Forum 3 in the session "Industrial Development and Water/ Comprehensive role of UNIDO", held on 17/3/03 at the Kyoto International Conference Hall. Pablo Huidobro, GMP Project Manager, presented an "Overview of Water and Industry" including specific examples of UNIDO technical cooperation focusing on water management. A 30-minute presentation of the GMP was given by the Chief Technical Advisor of the Project, Mr. Christian Beinhoff. The session finished with questions and answers on actions and accomplishments of the Project.

Website Under Construction

Using the expertise of FACOME – Amazonian Forum on Mercury Contamination of Ecosystems (sponsored by International Development Research Centre, Canada) as an example, the GMP website was built not just to inform about the project activities, but also to provide data, reports, tips to miners and to create a global discussion forum about Hg in artisanal mining activities. Public participation is encouraged.

Activities January – June 2003

- ✓ Meeting with stakeholders in Indonesia (Jakarta, Palangkaraya and Manado) and presentation of lectures on environmental and health effects caused by mercury.
- ✓ First Country Task Force Meeting in Indonesia.
- ✓ Final agreement with national counterparts on project site in Central Kalimantan, Indonesia, meeting with national counterparts involved in the Environmental and Health Assessment (E&HA) and future work at the demonstration sites.
- ✓ Workshop in Paris with mercury experts from Brazil, France, Germany, Canada and the United Kingdom to establish E&HA methodologies.
- ✓ Invitation to competitive bidding for E&HA in hot spot areas (BGS, BRGM, CETEM, JGS, USGS).
- ✓ Selection of subcontractors for the E&HA in Brazil, Indonesia, Laos, Sudan, Tanzania and Zimbabwe.
- ✓ Elaboration of a comprehensive protocol to standardize E&HA methodologies to be used in all participating countries.
- ✓ Participation as observer in the UNEP Governing Council in Nairobi in order to contribute to the UNEP Global Mercury Assessment.
- ✓ Expert recruited to establish project website.
- ✓ Presentation of GMP at mining related workshops organized by UNCTAD-ECA (Addis Ababa), World Bank (Bali), and at the World Water Forum (Kyoto).
- ✓ Sociological Experts recruited in the 6 participating countries.
- ✓ Purchase of project vehicle in Sudan and Laos.
- ✓ Contacts established with USEPA for possible cooperation.
- ✓ Workshop on Mercury E&HA Techniques combined with a Country Task Force Meeting, in Belém, Brazil.
- ✓ Agreement with Government of the State of Amazonas for cooperating under the GMP.
- ✓ Contacts established to Chinese and Brazilian suppliers of equipment for small-scale miners.

For further information contact the Project Coordination Unit:

Dr.- Ing. Christian Beinhoff
Chief Technical Advisor
GMP - Global Mercury Project
UNIDO – United Nations Industrial Development Organization
Vienna International Center, D1275
PO Box 300, A-1400 Vienna, Austria
Tel +43-1-26026-3738/3807
Fax +43-1-26026-6819
E-mail: C.Beinhoff@unido.org

Plans for July – December 2003

- Completion of sociological studies in the hot spots of the 6 countries and transmission of conclusions to selected subcontractors for the health and environmental surveys.
- Field work to conduct E&HA in participating countries under guidance of GMP Coordination Unit.
- Publication of selected E&HA results.
- Publication of the E&HA Protocols.
- Completion of the project website.
- Selection of new Assistant to the Focal Point in Zimbabwe.
- Assessment of appropriateness of analytical and mineral processing equipment for GMP.
- Preparation of Terms of Reference for equipment.
- Initiation of international bidding on equipment.
- Preparation of further projects applying the GMP approach in Mozambique, Venezuela, Philippines, Ghana, Côte d'Ivoire and Republic of South Africa
- Preparation of 1st Global Task Force Meeting.
- Identification of national small-scale mining experts in each of the participating countries.
- Purchase of project vehicle in Zimbabwe.
- Production of digital promotional material and educational brochures.
- Donor Seminar for bilateral organizations and diplomatic community in Manila to raise funds for the continuation of the project in Mindanao/Philippines.

Gold miner in Indonesia using mercury in his habitat