



Rumah **EMASKITA**

(Edukasi Memakai Air raksa agar Selamat)

Greetings



Welcome to all readers of this first issue of "Rumah Emas Kita", keeping you up-to-date on the progress of the Global Mercury Project in Central Kalimantan.

By now, people in Kereng Pangi might be thinking about two new billboards we put up recently. These

herald the start of our Awareness Campaign and their purpose is to make people in the town realize that Mercury pollution is dangerous. When the whole community is aware of the health impacts, we can act together to reduce them.

To raise this new awareness, we are also providing booklets to help miners and gold shops use mercury more safely, posters and flyers to make the public more aware of the risks, and even stickers for school children. These focus not only on the problem of Mercury pollution, but also on the solutions.

The main solution lies in more responsible behavior – people **can** change the way they use Mercury, to safeguard community health. Our project aims to stop Mercury emissions at their source. Mercury pollution is not something people have to live with, it is a problem that can be solved.

Sumali Agrawal
Editor

Global Mercury Project

The GMP is an innovative initiative seeking to reduce mercury emissions from artisanal gold mining. With major projects in mining areas of six participating countries - Zimbabwe, Tanzania, Sudan, Brazil, Indonesia and Lao PDR - the GMP is in the process of introducing cleaner technologies, training miners, strengthening governance, developing regulatory mechanisms, and building the capacity of local laboratories and health authorities to monitor mercury pollution. GMP project sites were selected based on the importance of small-scale mining in these regions and the proximity of communities to international waters that may be impacted by mercury.

The GMP is jointly supported by the Global Environment Facility (GEF), United Nations Development Programme (UNDP) and is executed by the United Nations Industrial Development Organization (UNIDO).

A second training event, September 7th and 8th, prior to the project launch will ensure trainers have the necessary skills and knowledge to demonstrate alternatives to people living in the town and the goldfields.

The launch at Kereng Pangi on September 9th is a public event intended to raise the level of awareness in the community about the project and its aims, and it will be an opportunity for key figures from the community and government to show leadership and support for the campaign.

Immediately afterwards, trainers will commence with community consultation, in both the town and the goldfields. They will provide advice, information and guidance on health issues related to mercury exposure and intoxication, as well as on other health concerns.

In the field, trainers shall also show miners how they can "use less mercury and get more gold" using simple technology. The project also aims to train gold shop operators



Pak Fauzi demonstrates the use of the Fauzi Retort

Training of Trainers

Project training began in Rungan Sari in February 2006. UNIDO trained representatives from the Departments of Mining, Environment, Education, and Health, as well as those from several NGO's.

directly, as to how they can install water and charcoal filter systems that will prevent the emission of mercury fumes into the urban environment.



Contributor's Column

The following is a summary of a study produced by WALHI over a three year period

In the last ten years, the problem of mercury contamination in Central Kalimantan has been increasing as the waste from artisanal mining continues to flow into major rivers like the Mentaya, Kahayan and Katingan. There has been conflict about this since 1996, but it has since diminished. However, it arose again in 2002, and is likely to become a hot discussion topic once again in the future.

According to The Environment Department of Kotawaringin Timur, mercury emissions come from illegal mining along the Katingan River. Here, mining practices were first started by PT. Ampalit Mas Perdana, and when the company was closed, the local community took over the operation. By 2001, there were 6000 miners working in this area. During the period from 2002 to 2003, there were 5196 units of artisanal mining along 11 major rivers in Central Kalimantan. About 40 percent of the total mercury used by miners is released out to rivers when they use a sluice box and burn amalgam.

The river in the worst condition is the Kahayan River. Out of a total of 2,264 units in Central Kalimantan, 1,563 of them are located along the Kahayan River, with a total of 1.5 tons of mercury emitted in just three months. The amount of mercury in fish taken from Kapuas River averages 0.22 ppm, exceeding the safe range defined by DPOM (Food and Health Monitoring Department), which is 0.04 ppm.

People who burn mercury to get gold from amalgam are especially threatened by mercury exposure. When the body ingests more mercury than the normal amount, various health problems result, especially if it contaminates the body in the form of methyl mercury.



Artisanal mining on the Kahayan River

Mercury evaporation from burning activities produces mercuric vapor in the air, which falls to the ground with rainwater, contaminating lakes, rivers and oceans. Most of this mercury deposition sticks to sediments and some is transformed into the highly toxic form of methyl mercury, by small organisms and bacteria. Snails and small shrimps then absorb methyl mercury from sediment and water. Fish that consume these contaminated snails and shrimps or other fish, will accumulate high levels of methyl mercury. Methyl mercury dissolves easily in water, and harms both respiratory functions and the metabolic system.

For miners in the field, mercury exposure occurs mostly from skin contact, breathing fumes, and eating contaminated fish. For the general population, exposure is most likely from eating contaminated fish and breathing mercury fumes from nearby gold shops during the burning of amalgam.

Mercury exposure can produce many adverse health symptoms. The major health concern of mercury vapor poisoning is the brain, central nervous system and kidneys. Inhaling the mercury vapor can cause lung irritation, difficulty in breathing and chest pain, pneumonia and kidney failure.

Pregnant mothers can pass the methyl mercury to the unborn fetus through the placenta. This can impair the brain and organs of the developing tissues and cause retardation or even death. Exposed babies and young children can develop learning difficulties or reduced IQ later on.

There are several ways to reduce mercury emissions from artisanal mining. The first thing we can do is to use a method that doesn't harm the environment, such as a closed system for the amalgamation process. This reduces the amount of mercury released to the ground and air. Another intervention is to give explanations and training to miners, to control the further release of mercury into the environment.

Yuanita Oktaviana



Working Safely with Mercury



- Avoid direct contact when working with mercury. Always use rubber gloves.
- Always store mercury in tightly closed containers (but not in Aluminum containers).
- Always put a layer of water on top of the mercury unless it is activated mercury.
- Avoid spilling mercury. It is very difficult to clean up.
- If you must use mercury, try to use as little as possible.
- Do not eat or smoke when using mercury.
- Do tell others what they should or should not do then using mercury.
- Never burn mercury or amalgam* indoors or in any enclosed room.
- If you must burn amalgam do it in the outdoors or a well-ventilated space.
- Always stand upwind when burning amalgam. Do not breathe the fumes.

* Amalgam: mercury mixed with gold particles

The Aim of the Project

Yayasan Tambuhak Sinta is implementing a Social Marketing Campaign aimed at raising public awareness about Mercury. Mercury harms not only those who use it, but the surrounding community as well. Therefore, we aim to provide education and training to health workers, government representatives, miners, teachers, men, women and children.

In addition, the project aims to provide miners with training to improve the processes they use, both to get more gold and to use less mercury. Experience has shown that miners are more likely to adopt a "cleaner" technology if it results in greater economic returns. Therefore, one aim is to give miners the information they need to get a better yield of gold from their worksite. Furthermore, to inform them how to use mercury safely, to protect themselves and the environment we all depend on.

As the project uses a mobile demonstration unit, we can visit miners where they work. This way, a variety of technical options for gold concentration, amalgamation and retorting can be demonstrated directly to miners. Miners can then select what is affordable and appropriate to their needs and resources.

To get more gold using less mercury, miners must change the way they concentrate and separate gold from sand. Thus, we will demonstrate with equipment designed to improve each stage of the process. For example, by adding simple design features to a sluice-box to capture more gold. With simple adaptations to existing technology, miners can get more gold from their location, so they need not move around, looking for new locations.

The project focus is on reducing exposure to vapor by introducing recycling techniques such as locally-made retorts.

Other simple technology can also prevent the release of Mercury into the environment. Rotating amalgamation drums will demonstrate how to recycle and reuse Mercury. Mercury-free technology includes use of an elutriation column and a magnetic strip to separate heavy minerals.

Once they are aware of the risks they face, mercury-users can improve their technology. We

shall build that capacity through demonstrations of simple technology, using locally manufactured equipment that can be easily supplied.

In this way, we shall promote health-seeking behaviors and give the local people the capacity to deal with this issue and improve their livelihoods at the same time.



The Fauzi Retort: a locally-made retort

Advice from the Clinic

Mercury, like all heavy metals is toxic. It behaves just like other heavy metals such as Lead, Copper, Arsenic, or Zinc. Heavy metals have the characteristic of not being

easily excreted from the body. If you ingest a large amount of Mercury it will stay in your body for a long time and damage your organs and your nervous system. If you ingest a little Mercury each day it will accumulate in your body and

slowly produce toxic symptoms, like loss of vision. There is no cure for Mercury poisoning, the only solution is not to let it escape into the air we breathe. Therefore we must stop the emissions and use it more carefully.





Can We Give Our Children A Clean Environment to Live in?

Gold mining has been a traditional activity in Kalimantan for generations. However, it is the pumping technology of sluice operations that is causing widespread damage to the environment. As a result, artisanal miners trying to make a living today are destroying the living environment of tomorrow. Many people in Kalimantan realize there are problems with the rivers and the landscape as a result of the restless search for gold. Fewer people realize that there is also a dangerous pollutant that is released through these activities.

Retorts

Around 250kg of Gold is recovered every year at the Galangan project site, at the same time around 500kg of Mercury is vaporized every year and released as environmental contamination. It can be said that technology will be beneficial if it is used wisely.

For example, if people use closed retorts to burn mercury, 95% of the



emissions can be prevented. Furthermore, if people use retorts, they can re-use their mercury.

One simple type of retort traps Mercury inside three kitchen bowls. A hole in the biggest bowl makes a place for a small enamel burning bowl. A third bowl placed upside-down inside the big bowl, allows the gas to condense inside.

The edge of this bowl can be sealed with sand, to trap all the Mercury gas.

Pipe retorts can be made from iron or stainless steel fittings. The Mercury is burned inside a large screw-cap which is fitted to a bent pipe.

The Mercury condenses inside the pipe and drips down into a container of water.

A pipe retort is quite efficient, with 95% of the Mercury condensing inside the pipe, almost all of the Mercury can be used again.

Burning amalgam in a retort is best done outdoors in the field far away from other



people. However, because it is often done in an urban environment, we have considered how to improve the situation with improved technology. For example, a simple fumehood design, uses a blower to suck the gas out of the burning chamber and to blow it into a water tank below. The exit pipe of the tank is also sealed with a carbon filter to stop any of the gas escaping. Such a simple unit is affordable, and if the mercury is reused, it will soon pay for itself.

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