

3. UNIDO プロジェクト資料



ASSISTANCE
IN ABATEMENT OF MERCURY POLLUTION
EMANATING FROM SMALL-SCALE GOLD MINING IN MINDANAO
- PHASE I -

OBJECTIVES, OUTPUTS AND ACTIVITIES

Immediate Objective:

Assistance
in reducing mercury emissions in highly contaminated gold mining areas.

Output 1

To upgrade the regional laboratory for monitoring mercury, cyanide and heavy metal pollution in mining areas, river systems and affected agricultural sites.

Activities:

Purchase and installation of an Atomic Adsorption Spectrophotometer (AAS), Mercury Analyzer, Cyanide Analyzer and Arsenic Analyzer, with appropriate fume hoods, water bath, and other accessories, glassware and chemicals, to enable the chemical laboratory of the DENR-MGB in Davao to determine mercury and other chemicals in water, silt, sediments, vegetables and fruits.

Training of laboratory technicians through the equipment suppliers, the MGB Central Office chemist, or from other institutions as necessary.

Analysis of samples for study on the extent of mercury pollution, including other related chemicals (e.g. arsenic, sulfur, cyanide, cadmium, lead) in selected river systems and other sites, required for study on the extent of chemical pollution and environmental degradation.

Output 2

Assessment of mercury levels in humans.

Develop questionnaire on general health condition of members of mining communities and on indications for symptoms of mercury poisoning.

Evaluate/estimate the occupational health risk in people directly exposed to mercury through amalgamation activities.

Evaluate/estimate the occupational health risk of people living in the vicinity of gold extraction plants and gold melting shops.

Check general health condition of directly exposed people and non-directly exposed members of mining population.

Take hair, urine, and blood samples according to state of the art in clinical studies.

Assess the health condition of people affected by mercury poisoning, for example regarding buccal health, alterations in hand-writing, muscle pain, typical neurological and organic dysfunction etc.

Propose training programs for toxicologists from Department of Health and hospitals (e.g. using computer systems such as Hg-Ex) for fast diagnosis of mercurialism and treatment measures.

Draft report summarizing facts and conclusions.

Output 3

A study on the extent of mercury and related chemical pollution along the Naboc river, Monkayo, Davao del Norte; Hijo River, Apokon ore processing site; and their neighboring areas (rice fields and banana plantations).

Activities:

Evaluation of the nature and extent of mercury and other chemical pollution.

Conduct systematic sampling and chemical studies on the nature and extent of cyanide, arsenic, cadmium and lead contamination.

Introduce and set up a monitoring system for continuous water quality assessment.

Formulate measures for the remediation and possible rehabilitation of hot spots in the river systems and vicinities.

Output 4

A study on the establishment of Mineral Processing Centres operating under environmentally controlled and sustainable conditions for artisanal and small-scale miners.

Activities:

Identification of possible sites for Mineral Processing Centres, with appropriate mine waste disposal site, taking into consideration access to users, safe geochemical environment, and protection of the surface environment and groundwater resources.

To identify technologies, machineries and equipment; estimate the costs of investments; and study the economic viability of establishing such centres.

To orient in various training sessions the LGUs and other stakeholders about the nature, operations and services to be made available in such a Mineral Processing Centre.

Output 5

Improvement of human safety through demonstration of mercury recycling by using maintenance-free retorts and training in their proper utilization.

Activities:

Purchase of 50 maintenance-free and user-friendly retorts to be made available at the mining sites/processing centers.

Training of miners in occupational safety aspects related to mercury

Training of miners through the local MGB office in proper handling and recycling of mercury at Diwalwal, Monkayo, Pantukan Gold Rush area, Mainit, Inupan, Saraban, Panganason, Siat, Boringot, Lumanggang, Gumayan, Biasona, all in the Province of Davao del Norte.

Output 6

Some 50 representatives from local small-scale mining associations, LGUs, provincial and municipal environmental officials, and DENR-MGB technical personnel, trained by UNEP in environmental management of small-scale mining operations.

Activities:

Design of training in

Environmental Management Strategies;
Sustainable Development Strategies;
Regulatory Framework.

Implementation of training in

Mining and Environmental Protection Legislation
Environmental Impact Assessment;
Environmental Risk Assessment;
Environmental Quality Standards and Criteria;
Enforcement Mechanisms.

Output 7

A Report on mining policies regarding artisanal and small-scale gold mining including recommendations for policy updating.

Activities:

Based on experience in other countries, advise the MGB on possible legal and administrative framework to address the various environmental challenges of small-scale gold mining.

Provide advisory assistance to the MGB in the formulation of new Small-Scale Mining Law, taking into consideration the various political, social, and environmental dimensions of small-scale mining activities.