MERCURY POLLUTION ABATEMENT PROJECT

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PRESENTATION AT ASGM GLOBAL FORUM
MANILA, PHILIPPINES

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OUTLINE OF PRESENTATION

- Objective
- Direct smelting – the technique
- Why is the technique used?
- Challenges
- Conclusions

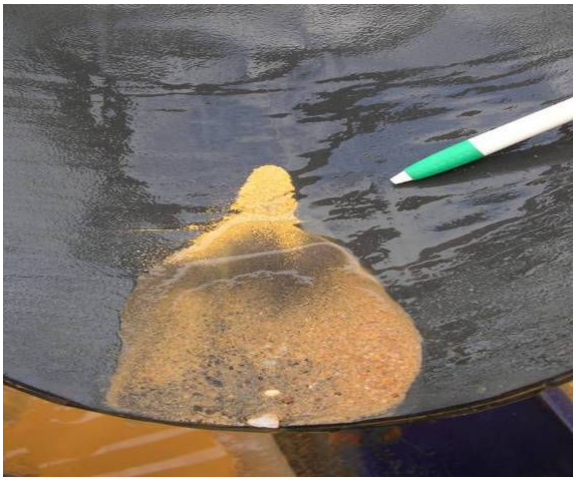
OBJECTIVE

Introduce the direct smelting technique we hope will replace the use of mercury by artisanal and small-scale gold miners (ASSM) in Ghana

SLUICING

PANNING

GOLD CONCENTRATE IN A PAN



AMALGAMATION

SQUEEZING EXCESS MERCURY FROM AMALGAM

FIREPLACE FOR BURNING AMALGAM

SPONGE GOLD

GATHER AND SELL

MERCURY LOSS

- Spillage during amalgamation
- Poor amalgam distillation
- Disposal of amalgamation tailings
- Further processing of sponge gold

CRITERIA OF SUITATBLE ALTERNATIVE FOR SSM

- **Effective**
- **Easy - no special equipment**
- **Quick**
- **Cheap**
- **Suitable for processing small batches of concentrate**
- **Visible - the miners should be able to see their products throughout the whole process**
- **Locally available**

DIRECT SMELTING

Method	Equipment/ Process	Principle	Applicability
Chemical	Direct Smelting	Melting black sand concs to produce pure gold	Smelting is applied in most small scale centres and miners are familiar with the method as it is being used for purifying sponge gold. It has been developed, tested and commercialised in Ghana. It can be use for all types of ores and comparatively cheaper than amalgamation.

SMELTING

- Smelting is a high-temperature melting process used to recover metals from ores and concentrates
- Fluxes are added to the concentrate to assist melting and react with impurities so that the metal separates out
- The final products are pure metal and a glassy slag containing the unwanted components
- It can be used for all types of ores

CHOICE OF DIRECT SMELTING

- Fulfils all main criteria