Use of Mercury Retorts in small scale mining goldmining

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ASM Goldmining

- Landscape destruction
- Small patches of forest destruction scattered geographically
- Erosion
- River siltation
- Mercury pollution
  - Aquatic ecosystems damage
    (tailings and effluents dumping)
  - Socio-cultural fabric erosion
  - Human Health

Mercury
ASM Gold Sector is Growing very fast – need to act now !!!!!!
Gold price increasing = More people getting involved = more mercury in the environment

Hg occupational exposure is... obvious
Why Mercury continues to be used by ASM?

- Mercury amalgamation is an ancient technique but still useful for artisanal gold miners.
- Main reasons by which Hg is widely used by ASM:
  1. Simple technique
  2. Widely available
  3. Cheap (1kg Hg = 1g Au)
  4. Long term consequences are not immediately seen
  5. More interested in earning than environmental consequences
  6. Mercury impacts not very visible

Mahdia, 2004

WHY RETORTS ARE NOT USED?

- Poorly informed about the dangers of mercury.
- New miners with little experience
- Perceptions of the mercury retort
  - Loss of production
  - Discoloration of gold, hence, loss of value
- Miners do not know anyone affected by mercury poisoning
- Miners believe that being “up-wind” during burning is adequate to prevent mercury poisoning
- Miners believe that using certain types of leaves are good enough
- Mercury practices are habitual-done over 100 years
- Mercury is still ‘relatively’ cheap
**Negative cycle affecting miners**

- Inadequate techniques
- Low recovery & productivity
- Inability to re-invest
- Low income and savings
- Poor health & safety conditions
- Environmental damage

**Negative cycle affecting Government**

- Inadequate operational resources
- Unable to control the sub-sector
- Unable to collect taxes/royalties
- Insufficient government income
- Corruption
- Illegal operations
Negative cycle due to out of date or lack of mining appropriate codes:

- Inadequate information from the field (no info on Mining Regulations/Acts)
- No or inappropriate ASM policy
- Ineffective legislation and regulations
- Formalization barriers
- Non-compliance

- Uncontrolled sub-sector
**WHY RETORTS ARE USED?**

- Some miners are adequately informed about the dangers of mercury through EEA campaigns.
- Can recover the cost paid for retort by recycling mercury.
- Mercury is getting expensive and scarce.
- In some cases well informed mine workers are demanding that the team use mercury retort.
- It is now a legal requirement for operations to use approved retorts for burning amalgam in Guyana.
  - Fines and imprisonment for breach of regulations.

GGMC designed Mercury Retort
**Constraints (Mercury Projects)**

- Geographically scattered nature of operations
- Small scale miners are very mobile
- Initial lack of thrust by miners
- Weak regulatory institutions
- Mercury practices are habitual – it is very difficult to move miners away from this activity
- Little government support for the sector
- Most equipment operators/miners do not have concessions

**Possible Solutions**

- Review and comparison of mining policy, regulations and legislation to foster international harmonization for improved management of mercury
- Restricting the supply of available mercury while promoting mercury free technologies
- **ONE COLLABORATIVE GLOBAL VOICE** - with very strong messages to disseminate information to increase awareness of mercury pollution
- Develop appropriate video and other documentaries on the negative impacts of mercury to be shown in ASM countries
- Massive campaigns to spread out the knowledge and to introduce and implement the cleaner technologies are needed now!!!!!!
Draft mining codes (Guyana)

**Burning of Amalgam to Recover Gold**

**Principle:** Protect workers, their families, communities and the environment from mercury vapors through the use of appropriate gold-mercury separation technology.

**Standards of practice**
- Do not allow open-air burning of gold amalgam under any circumstances.
- Promote the use of safe amalgam-burning devices, such as mercury retorts.
- Enforce the Mining Laws that deal with the hazardous chemicals to ensure that retorts are used.
- Develop national standards and specifications for retorts.
- Demonstrate the manufacture and use of simple retorts (such as the kitchen bowl retorts)
- All persons involved in burning mercury use should use appropriate safety equipment and gears.
- Promote the setting up of processing centers

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**Burning of Amalgam to Recover Gold**

- Gold and mercury separation should be carried out so that maximum mercury recovery is achieved.

  a) Gold amalgam should never be burned in open air because lost mercury cannot be re-condensed and recovered and will cause secondary exposure and contamination.

  b) To burn amalgam, a mercury recovery device should be used, such as the retort, which consists of an airtight closed vessel fitted with a condensing tube to recover liquid mercury. There are some simple home made retorts that is effective for condensing mercury vapor

  c) Children should not be around when amalgam is burnt.

  d) Amalgam should not be burnt in living quarters or enclosed areas.
Conclusions

- Several “mercury-free” alternatives are available and should be modified accordingly for ASM

- Most legal miners in La Guyane is working mercury free (Examples are available). Lessons can be learnt

- Environmental mercury impacts are not adequately evaluated.

- Education and awareness should be promoted ALONG with alternative mercury free solutions.

- We should all continue to promote mercury free techniques to save the environment and humans from these atrocities.

MERCURY FREE GOLD IS POSSIBLE

THANK YOU