





# GOLD AMALGAMATION PROCESS IN MZ



SALVADOR MONDLANE  
CASM África Chairperson  
salmond@zebra.uem.mz



# PRESENTATION LAYOUT

- INTRODUCTION AND CONTEXT
  - ASM IN MOZAMBIQUE
  - PRE AMALGAMATION PHASE
  - AMALGAMATION PROCESS
  - AMALGAMATION IN MOZAMBIQUE
  - AMALGAMA ROASTING
  - EXISTING MERCURY REDUCTION TECHNOLOGIES AND WHOLE ORE AMALGAMATION
  - PRE CONCENTRATION OF ORE
- 

# INTRODUCTION AND CONTEXT

- ASM SECTOR
  - 10 to 15 million artisanal gold miners producing 400-600 tonnes Au/a in more than 70 countries
  - About 50-100 million people directly and indirectly involved in artisanal gold mining
- In 2008, Brazil produced 54 tonnes of gold, of which 5.2 tonnes were produced by ASM
- Between 10 to 15 tonnes of Hg were lost by ASM
- 6,000,000 tonnes/a of Hg contaminated tailings into the rivers (Brazil)

# CONTEXT



In the world as many as 9 million women and 2 million children directly employed (50% involved in gold mining)



Worldwide >1000 t/a Hg is used and lost by artisanal miners 1/3 of the global Hg use is for ASM



# ASM IN MOZAMBIQUE

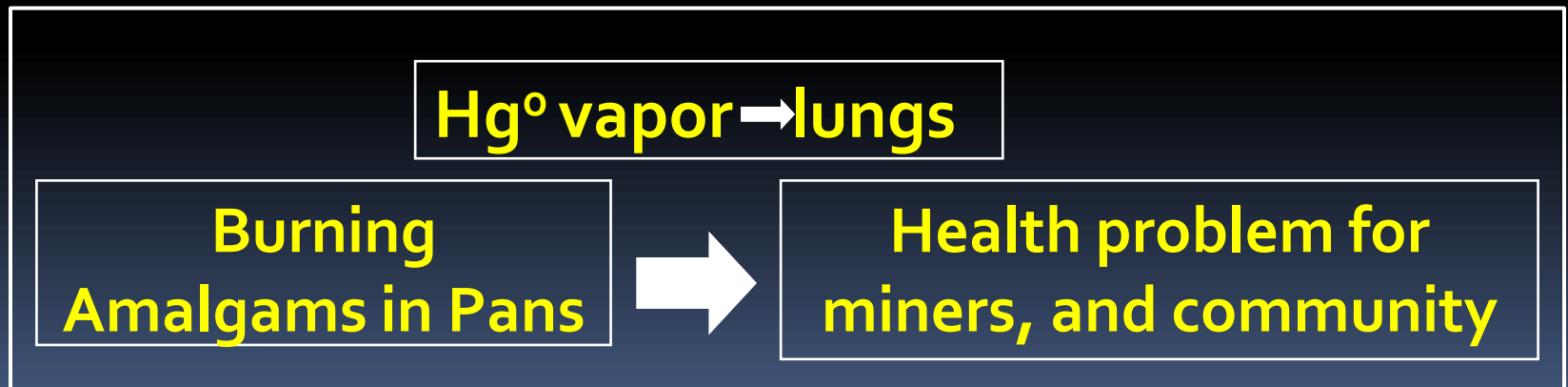
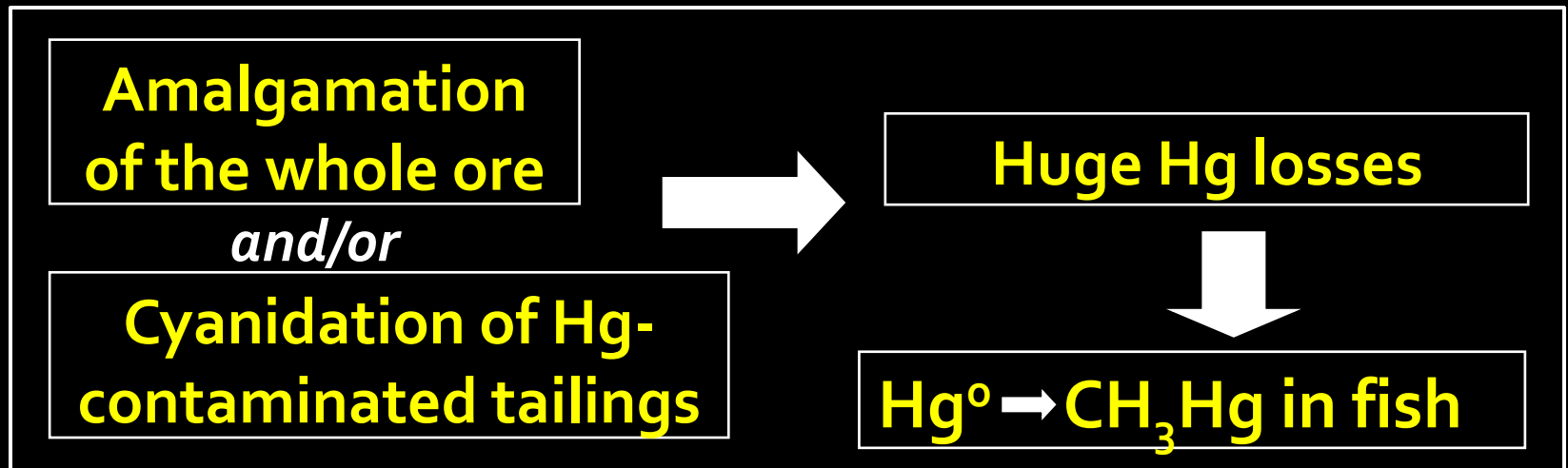
- Gold panning has been widespread in the Archaean part of Mozambique since the Monomotapa Empire C. 1500 AD.
- Presently around 100,000 people are directly involved in the sector providing subsistence to at least half a million people in the rural and poorest areas of Mozambique.
- ASM produce in average 0.7 grams of gold per day per miner. Working in groups of 5.
- Low recovery and mining and processing technologies
- Labour intensive
- Lack of geological knowledge
- Produces negative impacts on the physical and social environment.
- Mercury is used intensively in gold processing in Manica, Zambezia and Niassa Provinces, where primary gold quartz veins are worked.
- Manica show levels of contamination around  $8.23 \mu\text{g}/\text{m}^3$ , about 8 times the WHO recommended levels of Hg in humans. The amount of mercury that is used for processing one gram of Au, range between  $<1$  and 15g.



# PRE AMALGAMATION PHASE



# AMALGAMATION PROCESS



# AMALGAMATION IN MZ

Whole ore amalgamation is used for primary gold. The ratio of 4-15:1 Hg:Au is estimated in whole ore amalgamation. In some countries you can find ratios of 50:1 (Indonesia)

The process of amalgamation itself frees up to 60% of mercury into the atmosphere.

预览已结束，完整报告链接和二维码如下：

[https://www.yunbaogao.cn/report/index/report?reportId=5\\_14487](https://www.yunbaogao.cn/report/index/report?reportId=5_14487)

