



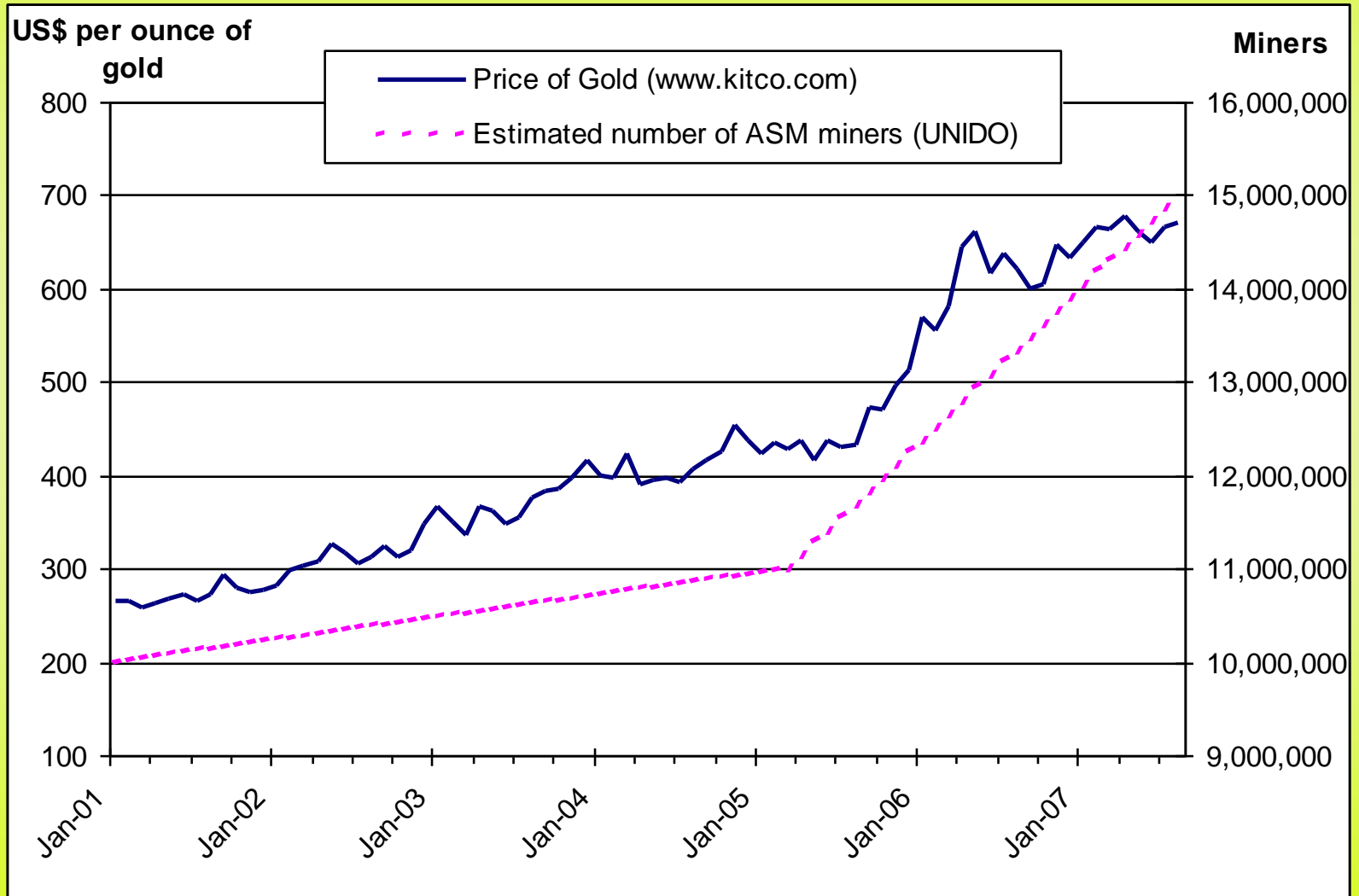
Global extent of mercury use in Artisanal and Small-Scale Gold Mining and why is it a problem?

Statistics on Economy of ASGM

- 330 tonnes of gold from 70 countries (12% of the world output, larger than any single producer)
- 9.6 billion USD at 900\$/oz
- 10 million miners (3 million women and children)
- \$960/miner - unevenly distributed
- Secondary economy, perhaps 50 million people at 50 billion USD/a

Number of artisanal miners

Evolution between 2001 and 2007



Why Artisanal Miners Use Hg?

- Mercury amalgamation is an ancient technique but still used by artisanal gold miners
- Main reasons by which Hg is widely used by ASM:
 1. easy to use
 2. cheap (1kg Hg = 1g Au)
 3. very accessible
 4. miners are not aware of the risks



Senegal, 2006

Global mercury consumption

Evolution between 2000 and 2005

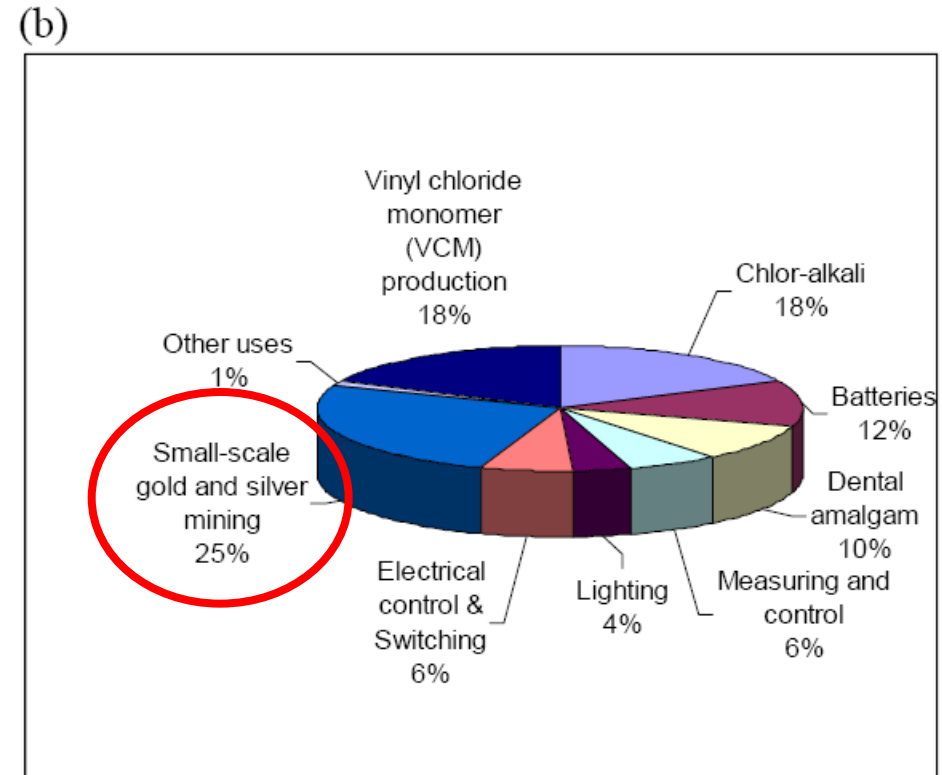
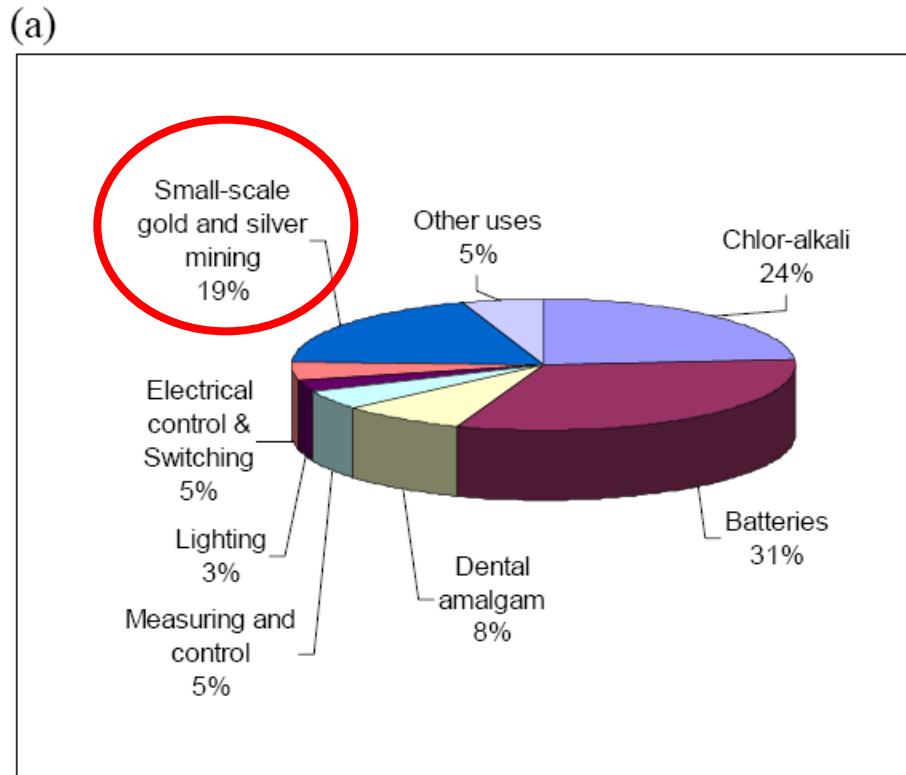
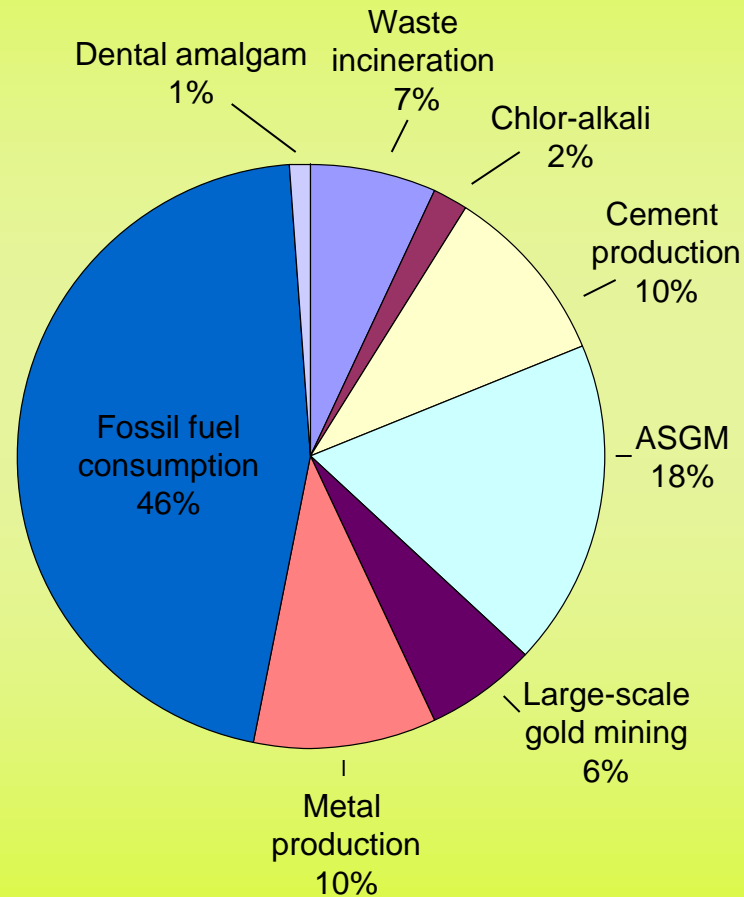


Figure 1.5 - Percentages of global mercury consumption for different sector in 2000 (a) and 2005 (b) (from Maxon 2003 and UNEP, 2006b).

In 5 years, ASGM has increased its consumption by 54% to become the highest user.

Global Anthropogenic Emission of Mercury

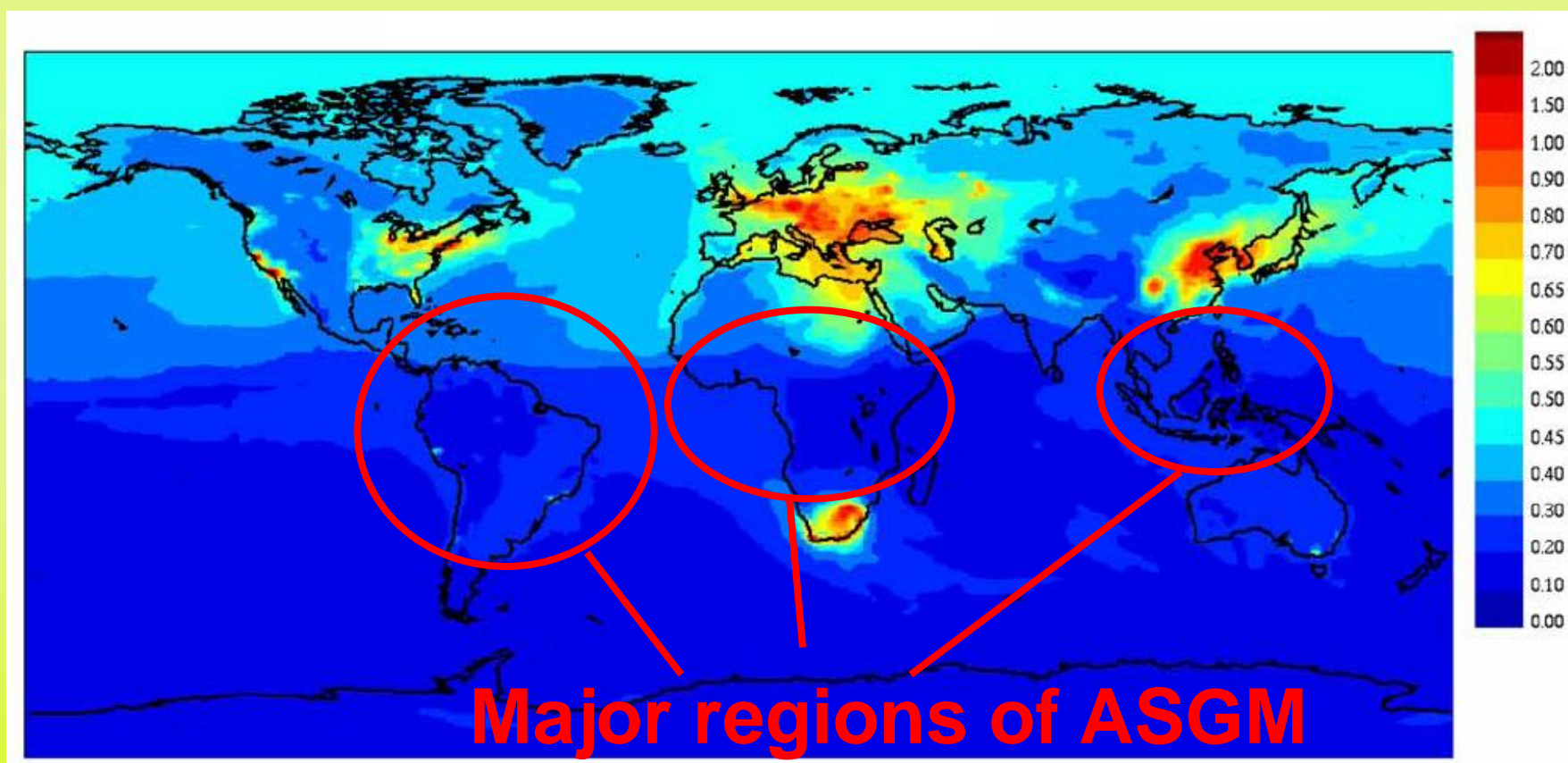
By Industry (2005)



Total = 1930 metric tons

Awareness and data are limited

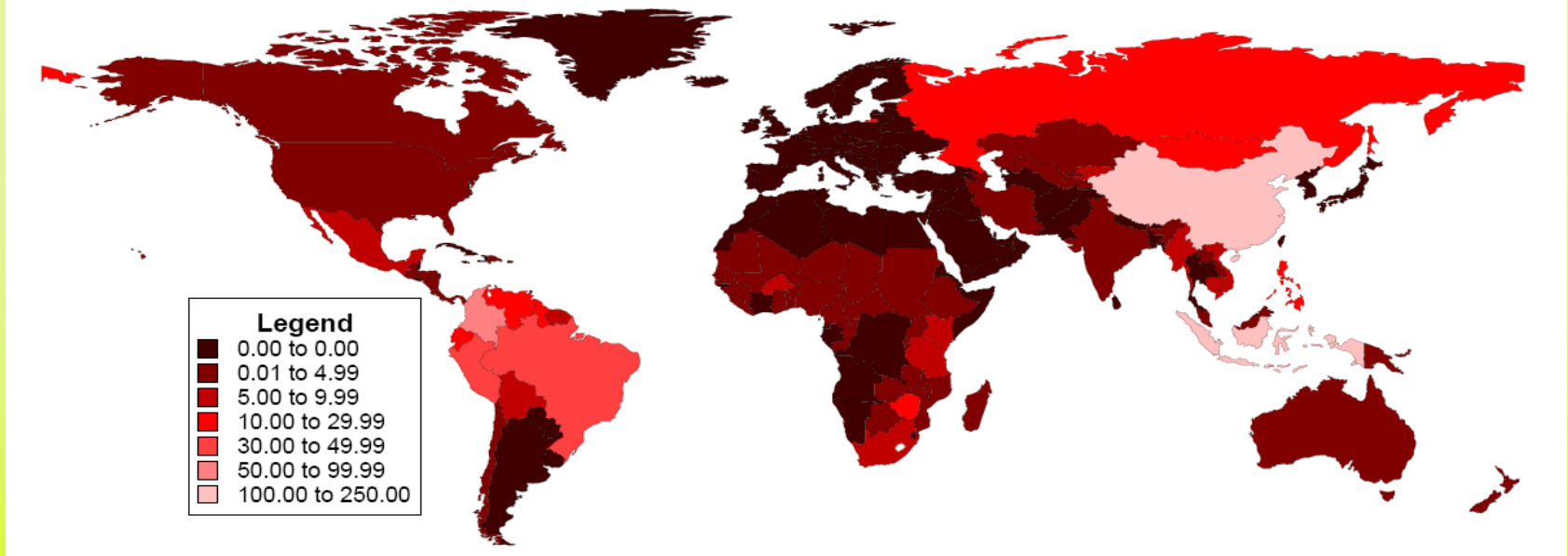
ASGM is one of the largest source but there is limited data



Current Estimates and Distribution

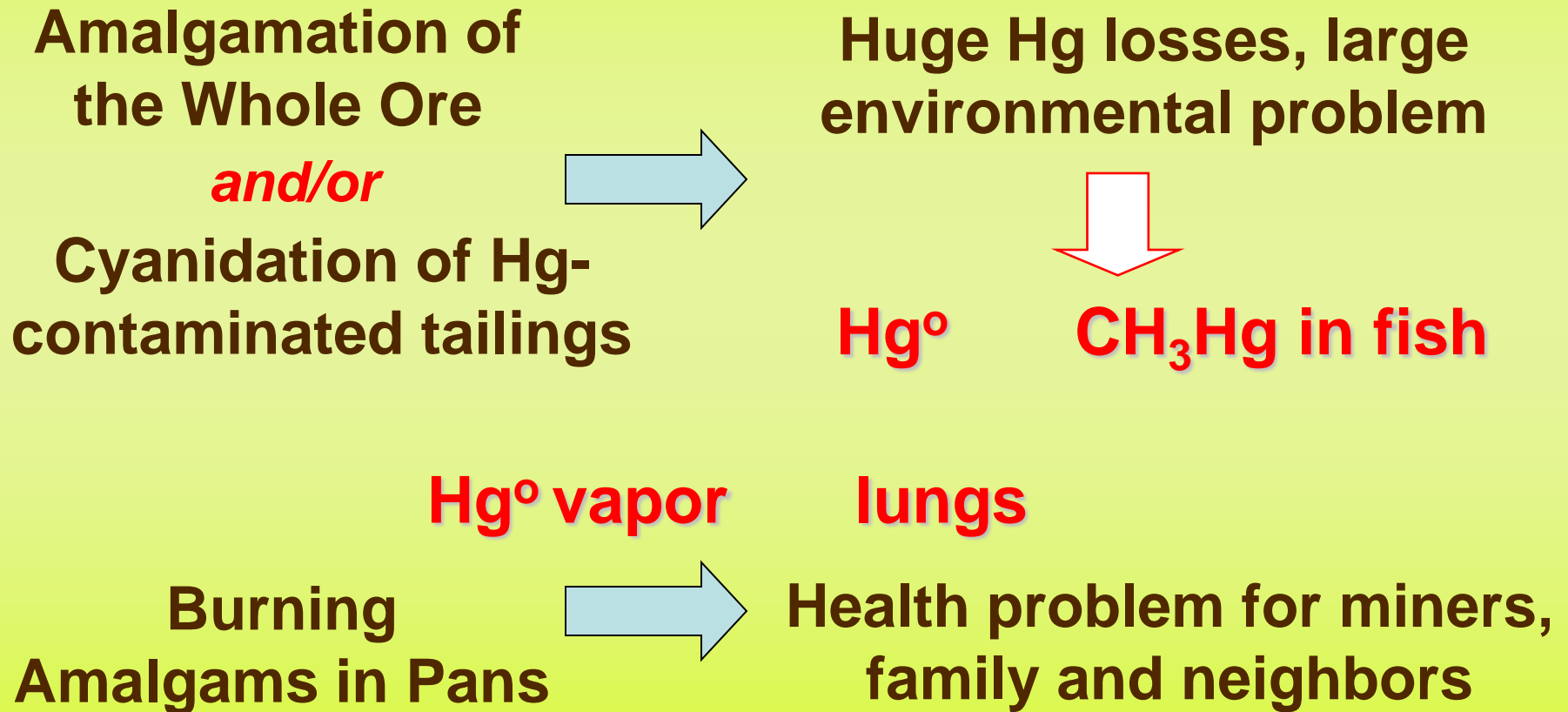
- Vast decentralized source – 70 countries (76 probable).
- 400 tonnes/a volatilized to the atmosphere
- 600 tonnes discharged into soils, rivers and lakes
- 1/3 anthropogenic releases, 2nd only to coal burning
- Sources of Information: More than 100 documents + other sources

ASM Mercury Consumption - WORLD



Source: Telmer and Veiga, 2008

Mercury releases in ASGM



Mercury is very toxic

Methylmercury exposure can cause

- impaired neurological development especially in fetuses, infants, and young children (cognition, memory, attention, motor and spatial skill problems)
- adult neurological damage and other health effects

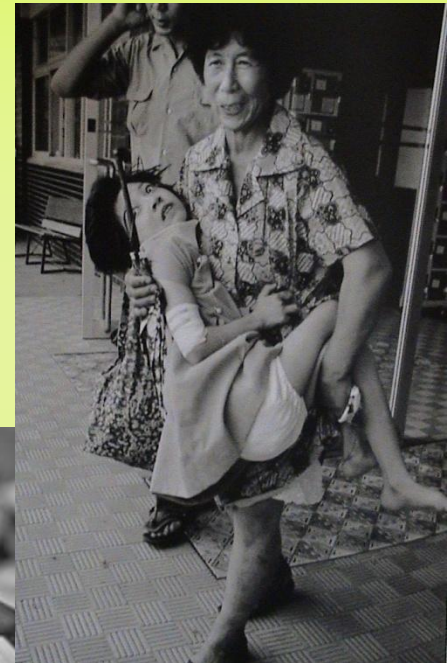
Elemental mercury (from vapor) exposure can cause

- neurological, cognitive, and behavioral damage
- neuromuscular problems
- kidney damage
- respiratory failure

Mercury is very toxic

Organic mercury

- causes severe neurological damages
- causes ataxia, muscular atrophy, contraction of visual field, speech impairment, tremor, hearing impairment, mental disorder, infertility
- penetrates the placental barrier causing spontaneous abortion or severe neurological symptoms in babies



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VITÓRIA



Source: UNIDO GMP

Mercury releases in ASGM

Whole ore amalgamation



Source: K. Telmer

Mercury releases in ASGM

Open burning of retort



Venezuela, 1995

Source: M. Veiga



Thanks for your attention

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