Society of Occupational Medicine

Artisanal & Small Scale Gold Mining (ASGM)

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Artisanal & small-scale mining (ASM)

World Bank estimates 100 million work in ASM

Child labour is common, ILO estimates 1 million children aged 5-7.

Lack of knowledge of hazards and poor/non-existent controls

Poor safety practice/ management high risk of injury

Poor environmental controls

ASM health challenges

Responsible for 37% of global mercury emissions, largest source of mercury pollution

High burden of TB, HIV and silicosis

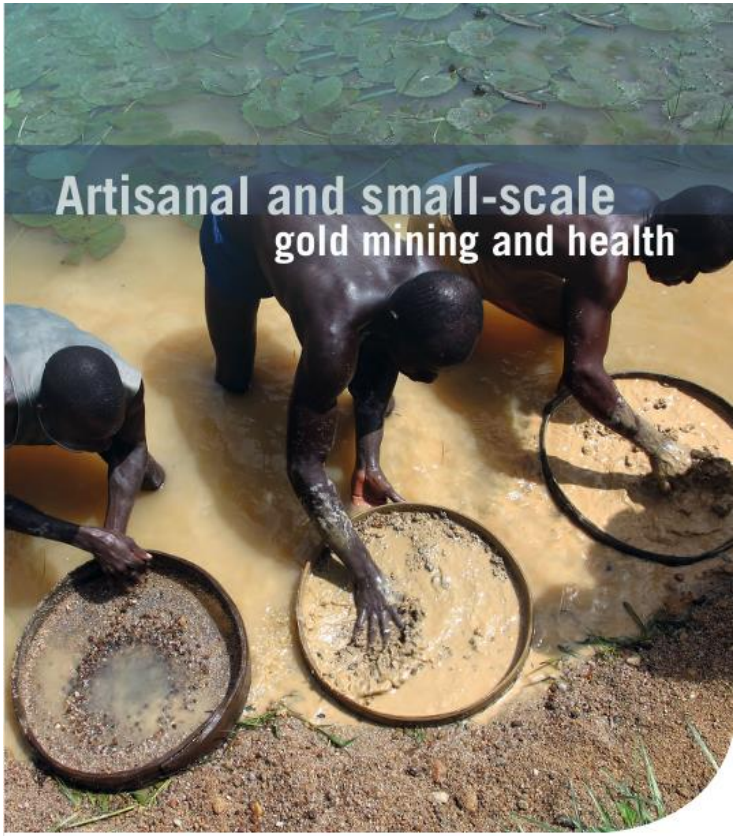
Injuries 7 times more likely for ASM and death 90 times more likely cf miners in developed countries

In Ghana 70% of ASM never wear PPE

Poor living condition for miners and families

Spread of HIV and STD in communities

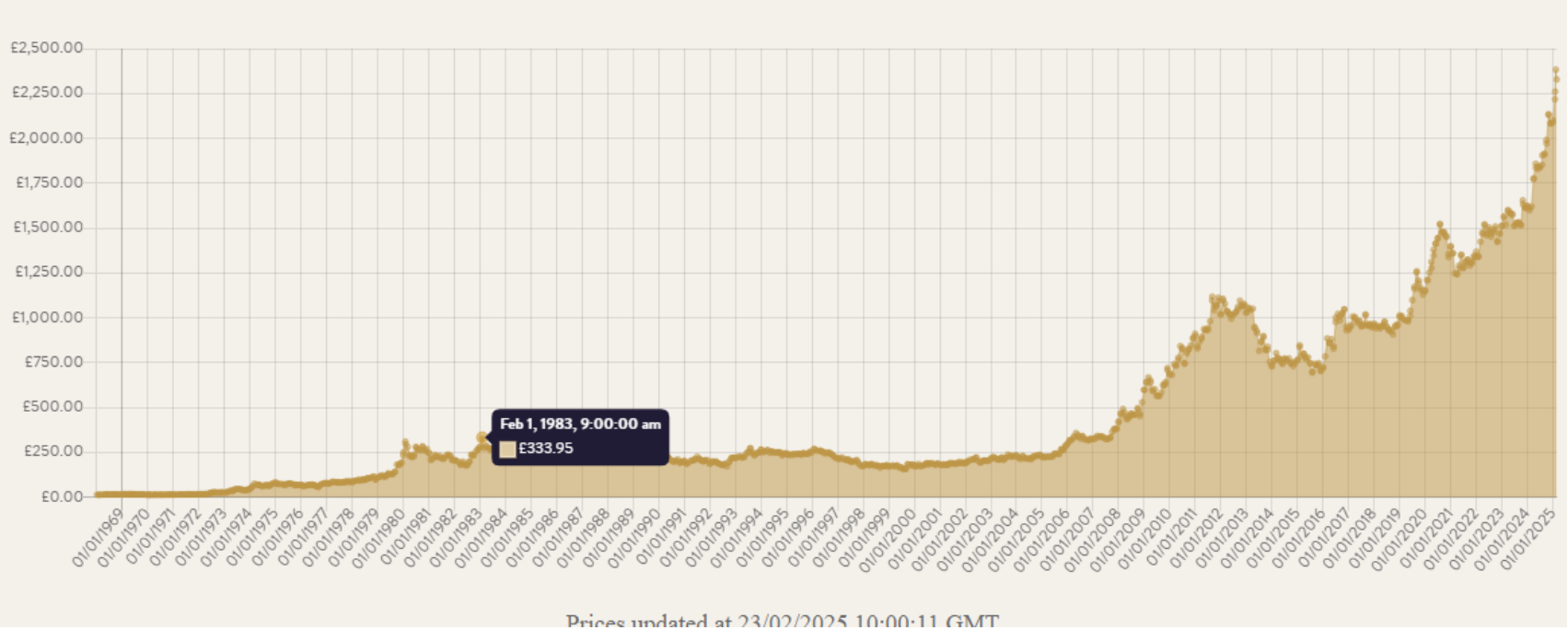
Lack of safety laws, enforcement, training and education



TECHNICAL PAPER #1: ENVIRONMENTAL AND OCCUPATIONAL HEALTH HAZARDS ASSOCIATED WITH ARTISANAL AND SMALL-SCALE GOLD MINING

World Health Organization

The Price of gold GBP per Troy Ounce

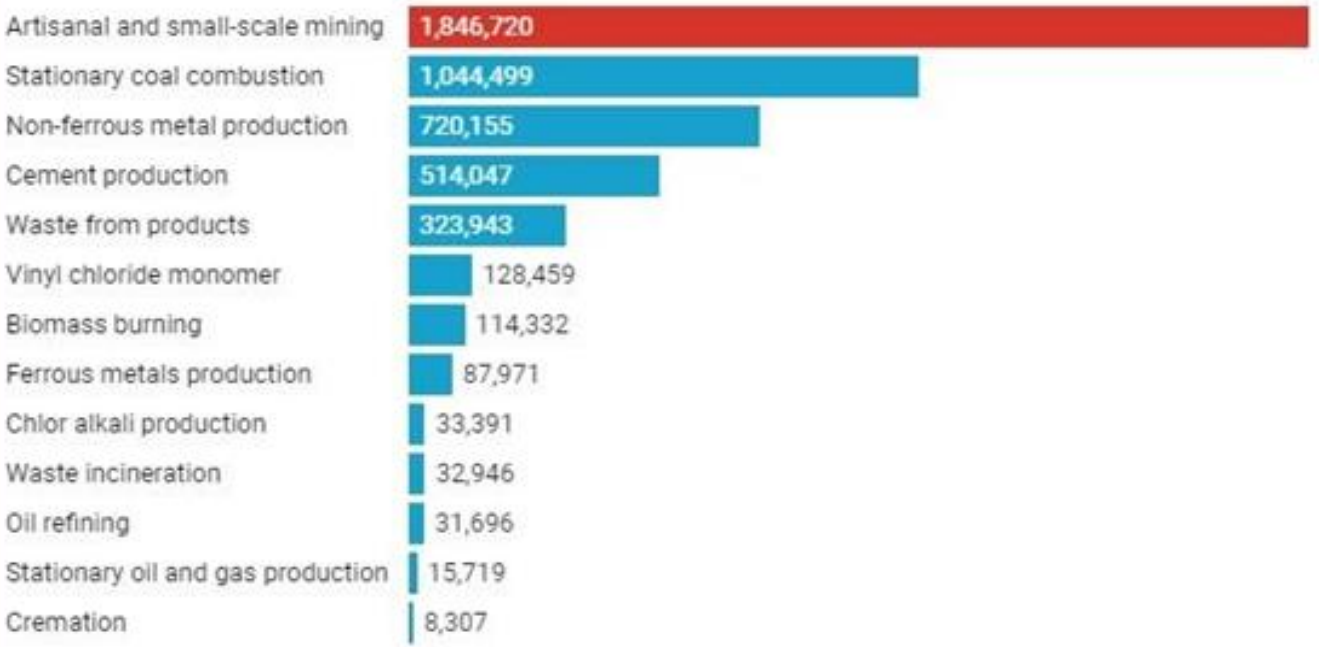


'We are poisoning ourselves': Ghana gold rush sparks environmental disaster

- Mercury is increasingly being used to extract gold by miners digging on a massive scale in forests and farms, degrading land and polluting rivers to such an extent that the charity WaterAid has called it "ecocide". BBC News 20.10.24 Mark Wilberforce & Favour Nunoo In London & Accra

Artisanal and small-scale gold mining is the world's largest source of mercury pollution

Estimated global mercury emissions by sector, 2018 (pounds). Artisanal and small-scale gold mining accounts for 38% of total emissions, surpassing well-known sources such as coal-fired power plants and waste incineration.



ASGM and linkage to Minamata Convention

The Minamata Convention

In January 2013, governments agreed to legally binding text for the Minamata Convention on Mercury.

- Article 1 “to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds”. It includes measures to prevent release of mercury and compounds or to substitute or eliminate mercury
- (Article 16), which specifically calls for the development and implementation of strategies and programmes to identify and protect populations at risk from exposure to mercury and mercury compounds, including through the adoption of science-based health guidelines, health promotion and health education activities.
- Article 7 and Annex C of the Convention focuses on ASGM.
- Annex C addresses the development of national plans for ASGM including a public health strategy that addresses the gathering of health data, training for health-care workers and awareness-raising through health facilities.

ASGM Mining Process

- Extraction
- Processing
- Concentration
- Amalgamation
- Burning
- Refining

Characteristics of ASGM

Can be seasonal often very informal

While men work primarily in the mines, women and children can work both in and around the mines and at home, balancing mining and household responsibilities.

This blend of mining and household work results in an array of health problems for miners, family members and surrounding communities.

Many of these health problems can be exacerbated by:

- the absence of regulation in the ASGM sector;
- lack of miner education about health hazards;
- limited access to protective equipment and limited technical knowledge due to lack of access to technical training,
- low levels of education or low literacy rate

ASGM Workforce

- Men usually make up the majority do most of the heavy underground work. Usually have most control
- Women make up 10% of the artisanal and small-scale mining population in Asia, 10-20% in Latin America and 40-50% in Africa
- Women are usually excluded from extraction but have roles inside and outside the mine
- Women gather and process ore often by hand
- Involved in amalgamation and burning of ore
- Often have domestic duties
- Sometimes provide sex services

ASGM Child Labour

- Child Labour in ASM is an area of focus for the ILO
- Almost all work performed by children in artisanal and small-scale mining is hazardous and has characteristics that fit the definition of a “worst form of child labour” under ILO Convention No. 182 (International Labour Organization, 2005).
- ILO estimates there are 1 million children between 5 and 7 working in ASM
- Involved in extraction, processing, burning. Running errands carrying messages taking equipment food and water underground
- It is difficult to eliminate because of the family nature of ASM

ASGM Chemical Hazards

- Mercury
  - Substitution and Reduction
  - Treatment of mercury Poisoning
- Cyanide
- Silica
- Iron Arsenic Sulphide
- Lead Sulphide
- Hypoxia
- Carbon monoxide

ASGM Biological Hazards

- Although ASGM communities are susceptible to a variety of infections, very common biological hazards affecting them are waterborne and vector-borne diseases, sexually transmitted infections, HIV/AIDs, and tuberculosis.
- Water and sanitation infrastructure is frequently lacking, and frequently contaminated by the mine-workings
- Stagnant water provides breeding opportunities for mosquitoes
- “Men with money” can result in an influx of sex workers
- The triad of HIV, silicosis and TB caused increased morbidity and mortality among miners

Biomechanical and Physical Hazards

- Musculoskeletal
- Over-exertion
- Trauma
- Noise
- Heat & Humidity
- ? Vibration

ASGM other hazards

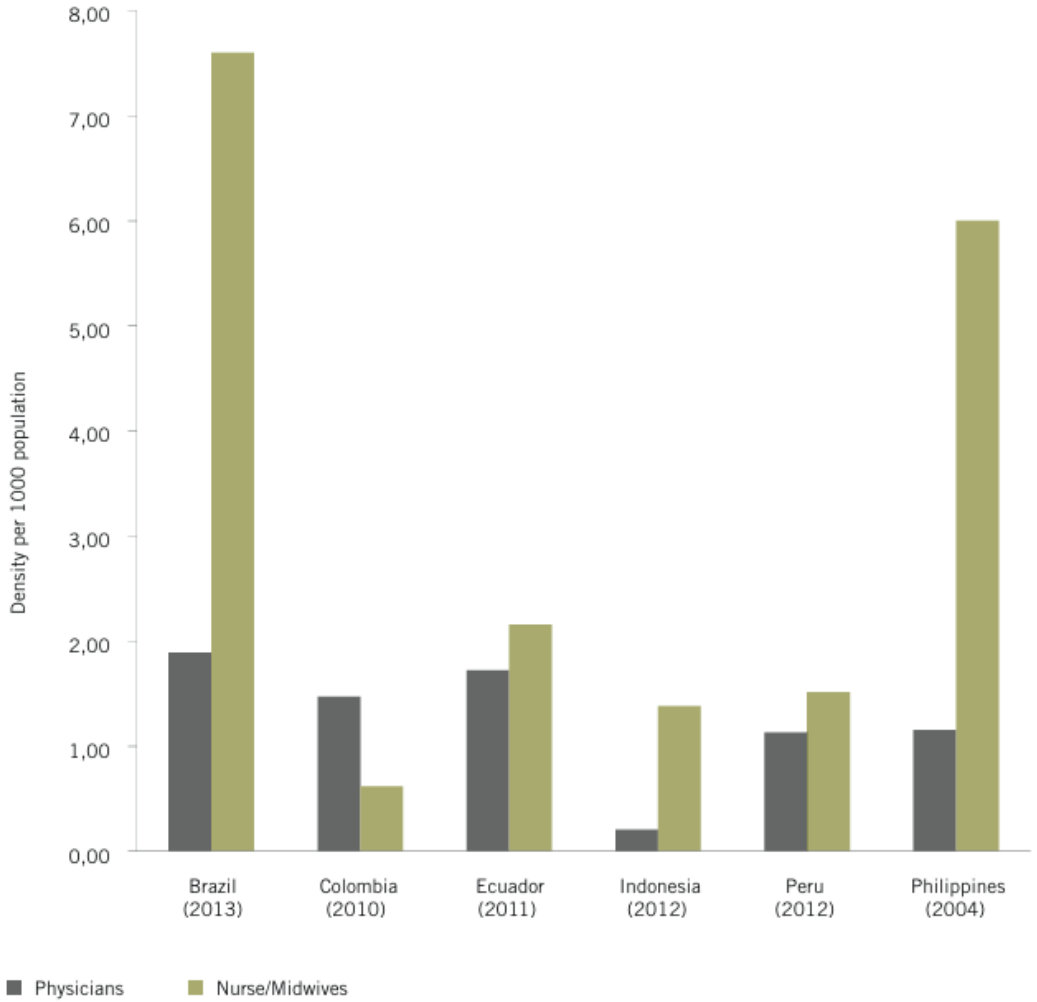
- Violence
- Malnutrition
- Drug and alcohol abuse

Training Primary Health-Care Providers

- 2007 World Health Assembly endorsed a plan to improve health services and surveillance of communities where mining and other industry was occurring
- Aim was to educate primary health-care providers to enhance their knowledge of occupational and environmental health
- Enabling identification and treatment of illnesses among artisanal miners
- WHO has developed training resources in countries which have active ASGM

Training Primary Care Providers to address health issues in ASGM

Fig. 1. Health workforce in selected countries with ASGM in their territories[a]



Source: WHO Global Health Workforce Statistics (http://www.who.int/hrh/statistics/hwfstats/en/, accessed 14 September 2014).

Training ASGM Miners

Very little material currently exists to train the miners

Training will enable the introduction of new technologies so miners can manget their own health and safety

IOMSC ASM Project

Project Goal

To protect and improve the health, safety, livelihoods and wellbeing of people who work in Arisanal and Small Scale Mining (ASM) and who live in communities affected by their operations

Project steering group

includes ASM specialists, Academics, International Cyanide Management Institute

Society of Occupational Medicine

IOMSC ASM Project Pilot Phase

- Uganda, Zimbabwe, Colombia, Brazil
- IOMSC members supported with training, resources and guidelines to carry out research
- To work with stakeholders to identify major health related issues and prevalence of occupational issues
- Academic Partner to carry out a literature review of OH and ASM
- Compile a questionnaire to gather data in 4 countries
- Data collection workshops in each country
- Reports to be written up and delivered to sponsors by January 2026


AUSSIE GOLD
HUNTERS

SOM Resources; on learning area/ webinars

On SOM website at https://www.som.org.uk/occupational-health-learning/

Regular SOM webinars – details at https://www.som.org.uk/som-webinars

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