Health conditions and services in arsanal small-scale gold mining settlements and public health strategy

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Second Forum on Artisanal Small Scale Gold Mining - Lima, Peru - September 3rd 2013

Contents

- Brief overview of social, health and environmental impacts of ASGM
- Mercury and health
- Health in the Minamata convention
- Public health in the national strategic plan for ASGM

Mining settlements social conditions

- Migrant workers/camps
- Alcoholism
- Prostitution
- Corruption
- Crime and Violence
- Gender concerns
- Child labour

Photo: Carlos Garcia Rawlins / Reuters

Health issues overview

- Gastro intestinal diseases - lack of adequate water and sanitation – housing conditions
- Malaria, Dengue
- HIV/AIDs and other communicable diseases
- Chemicals: mercury, cyanide, lead, DDT etc
- Ergonomics, nutrition
- Access to health care facilities
- Uninformed access to medicaments

Dust

- Underground mining - rock dust
- Crushing ore in mills - fine dust
  - occupational lung diseases
    - Pneumoconiosis
    - Silicosis
    - Tuberculosis <-> Silicosis
- Example: mining in Mongolia
  - Dust induced bronchitis and pneumoconiosis main cause of occupational lung diseases. Accounted for 67% of cases reported from 1967-2004.

Bottom Photo courtesy of Dr. Stephan Boese-O´Reilly 1998-2013

Slide 5

RA1 I presented this in Mongolia so I used a local example. If you can find a relevant regional one, go ahead and change this.
ADMINISTRATOR; 13.08.2013

Accidents

- Diving in water river with unsafe air supplies and overcrowd in the “fofocas”
- Bank rivers falls & bottom river impacts
- Underground mining in unsafe tunnels
- Unprotected open pits
- Explosives
- Explosives

Fatal accidents – often poorly recorded

Noise

- River dredges and boats machines
- Crushing rocks in ball mills and stamp mills
- Working in open pit mines or tunnels
- Power generators
- Few use personal protection
- Hearing impairment

Stamp mills in Zimbabwe and Tanzania

Madeira river, Brazil

Upper photo courtesy of Dr. Stephan Boese-O´Reilly 19

Children more vulnerable to environmental risks

- Higher body metabolic rate (not little adults)
- Different exposure, because of places they spend time, activities and behaviors
- State of continual cellular division and growth
- Longer time to develop health adverse effects
- Politically powerless by themselves

Madeira river and Tanzania

WHO

Environmental impacts

- Release of waste materials from extraction process
  - Impacts on quality of air, water and soil
- Magnitude of land use changes
  - impacts on local ecosystems
  - water resources
  - biodiversity
  - availability (and utility) of land for agriculture

Mercury as a pollutant of global concern

Global scope

- long-range transport in the atmosphere
- persistence in the environment
- ability to bio-accumulate in ecosystems
- negative neurodevelopment effect on human health (at relatively low doses of exposures during prenatal life) and the environment

Different forms and compounds

- Metallic mercury - Hg^o
- Inorganic mercury - Hg++
- Organic mercury – Methyl Hg (CH_3Hg^+) *and* Ethyl Hg ($CH_3CH_2Hg^+$)

Mercury exposures in ASGM

Crushing ore

Liquid mercury

Panning

Pollution from ASGM:

727 (410 - 1040) tons of mercury/year released to the environment

Amalgamation

Smelting

Gold

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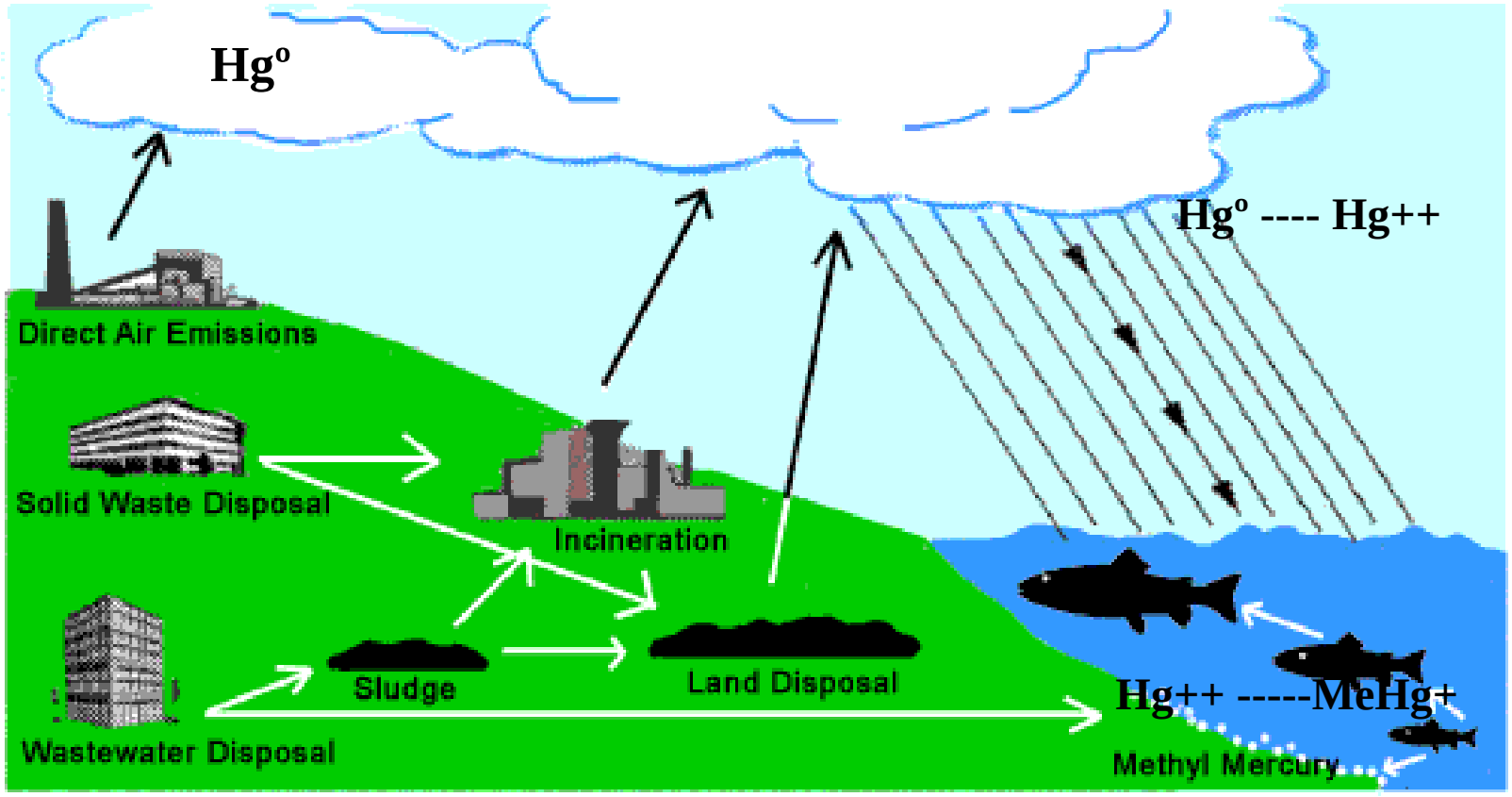
Environmental fate and distribution



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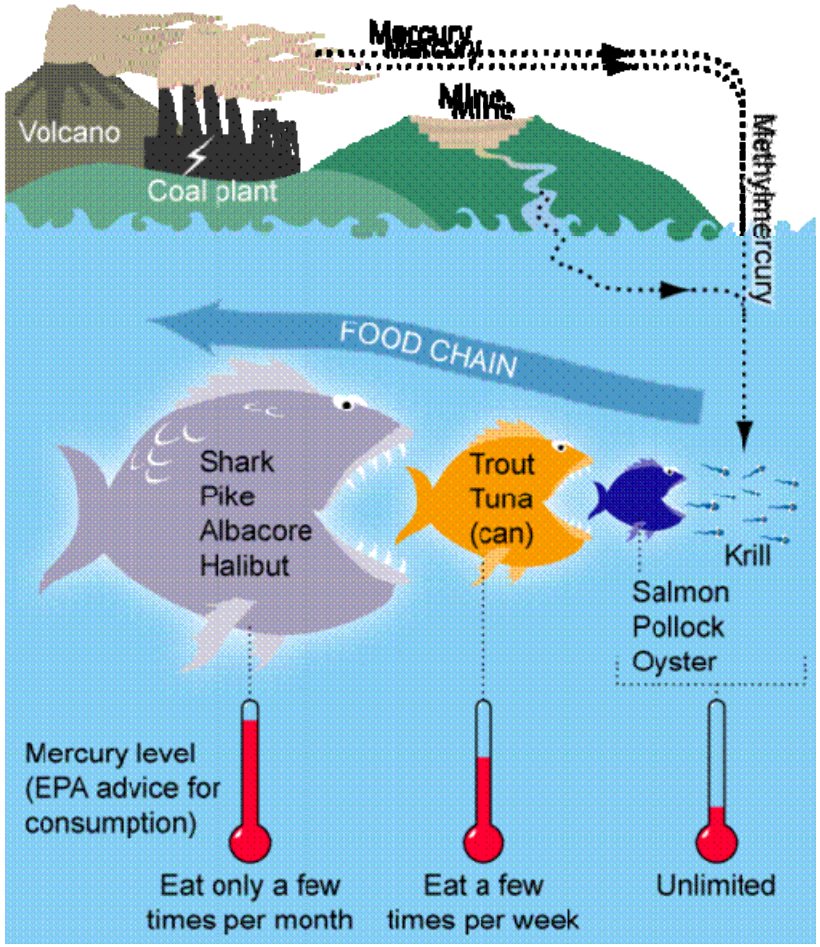
Metallic mercury health effects

- Metallic mercury - Hg^{o}
  - Inhalation
  - Central Nervous System - Tremor, nausea, irritability (had matter), skin & eye effects, gengivites
- Inorganic mercury - Hg++
  - Kidneys functions

Methyl mercury health effects

- Methyl Hg (CH_3Hg^+) unevenly bioaccumulated in food chain – fish consumption
  - Numbness of extremities, impairment of gait, speech and hearing; constriction of visual fields – hair Hg 50 – 120 ppm
  - Delays/impairment on neurodevelopment- motor function, attention, manual dexterity, visual constrast sensitivity (maternal hair Hg 10 – 20 ppm)
- Maternal hair Hg increase of 1 ppm will correlate with 0.18 points IQ loss*
  - Teratogenic – high maternal exposures – Minamata*

Mercury bio-accummulation and fish advisories



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Health in the Minamata Convention

- **Article 1.** Objective - To protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds;
- **Article 7.** Artisanal Small Scale Gold Mining – **Public Health Strategy included in the National Action Plan**;
- **Article 16.** Health aspects;

Tomoko Uemura in Her Bath

Minamata Convention
Article 16 – Health Aspects

- Development & implementation strategies and programs - identify and protect populations at risk & vulnerable people;
- Strategies and Program on Occupational Exposures;
- Setting targets for mercury exposure reductions and public education, with public health and other sectors;
- Health care services for prevention, treatment and care of people affected by mercury exposure;
- Capacity building for prevention, diagnosis, treatment and monitoring health risks of mercury and mercury compounds;
- COPS to consult, collaborate, cooperate and exchange information with WHO, ILO and other intergovernmental organizations.

ASGM in the Minamata Convention

- Specific obligations of countries to address ASGM related health issues:

- Annex C 1 (h)
  - (h) A public health strategy on the exposure of artisanal and small-scale gold miners and their communities to mercury. Such a strategy should include, inter alia, the gathering of health data, training for health-care workers and awareness-raising through health facilities

Health sector capacity needs assessment

- Core competencies of primary health care service in mining settlements
- Poisoning control centers* for diagnosis (including analytical toxicology infra structure), treatment with informed use of medicaments/antidotes
- Monitoring and surveillance systems in place for evidence base decision makings
- Adequate data records and reporting for planning purposes
- Emergency response capacity
- Links with other health services and research

Key elements of health for ASGM National Strategic Plan

- Background policies and legislation related to health, mining, chemical safety, environment and other related sectors
- Health conditions in ASGM – evidence based plans
- Composition of health sector – roles and responsibilities
- Health activities: monitoring, surveillance, health services (primary health care and facilitated access to other health service levels), reporting of critical hazards (chemical, physical, biological, ergonomics, other); awareness raising among key stakeholders
- Stakeholders – institutions, civil society, professional associations, programs
- Networking resources

WHO and PAHO

1. Systematic review of health impacts of mercury use associated with ASGM*; specialized publications**
2. National health preparedness for the convention implementation
3. Training modules for health care providers on how to identify and address health impacts of ASGM
3. Rapid survey tool to assess health situation of ASGM miners and their families
4. Model public health action plan for addressing health impacts of ASGM

Pilot in Mongolia in 2013/14 and possibly in Indonesia - model for replication elsewhere

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Thanks for your attention

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