

Mercury analysis from biological and environmental samples

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outline

- Burkina Faso
 - hair samples from *AGM* area (miners and controls)
- Pakistan
 - hair samples from workers in two chlor alkali factories
 - hair samples from dental practices and controls
- Chile
 - soil samples from one waste dump in a gold mine area including two controls
- Cambodia
 - hair and nail samples from two *AGM* areas
 - soil and sludge samples from hospitals and waste dumps

Quality Controls

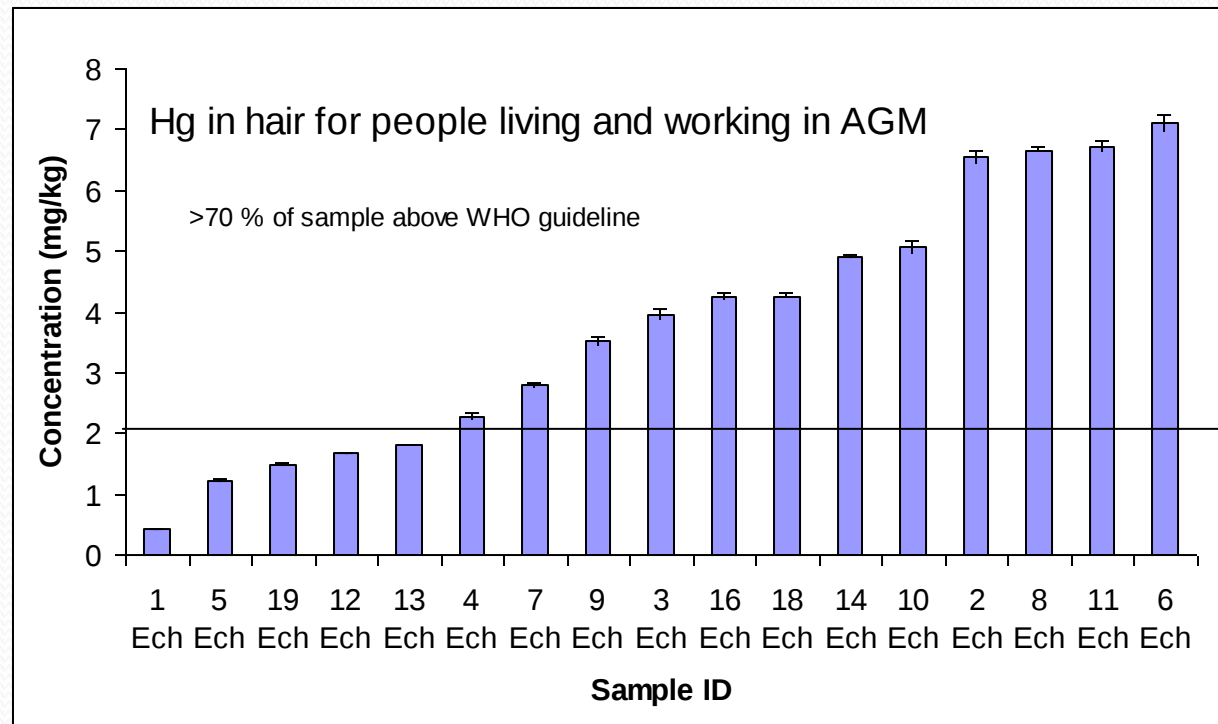
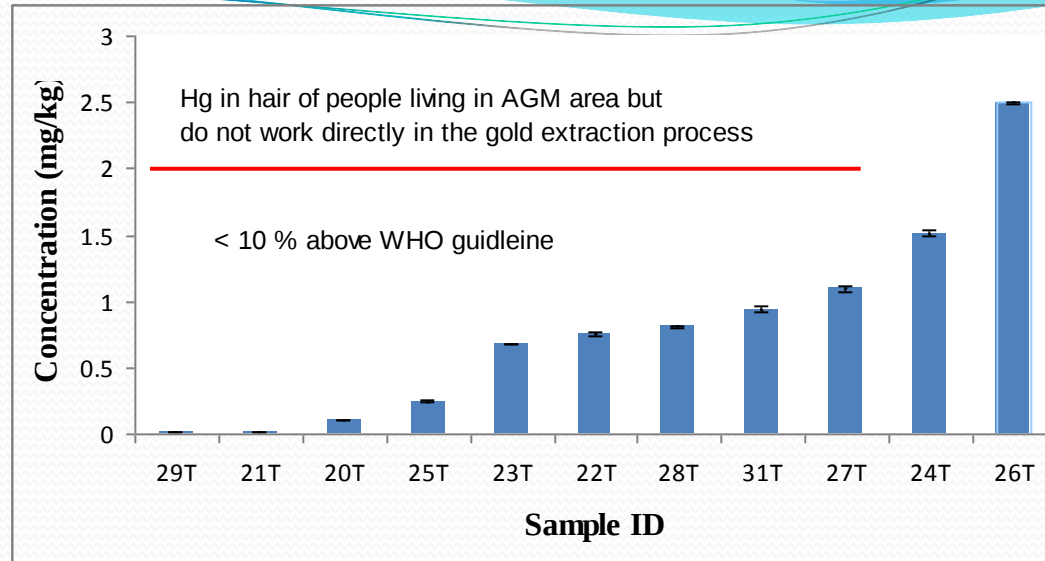
- Certified references materials used
 - NIES 13
 - IAEA 085
 - both contain methylmercury and inorganic mercury
 - recovery > 97 %
- Spiked soil samples with
 - methyl mercury and inorganic mercury
 - recovery > 95 %

Burkina Faso

- 31 Hair samples in plastic bags were sent to TESLA
- mass was very limited (often less than 30 mg)
- Information given
 - group of gold miners
 - group of people living in the vicinity of AGM area
- washing followed by oxidative acid digestion
- total Hg analysis was carried out in duplicates each one analysed three times using AFS

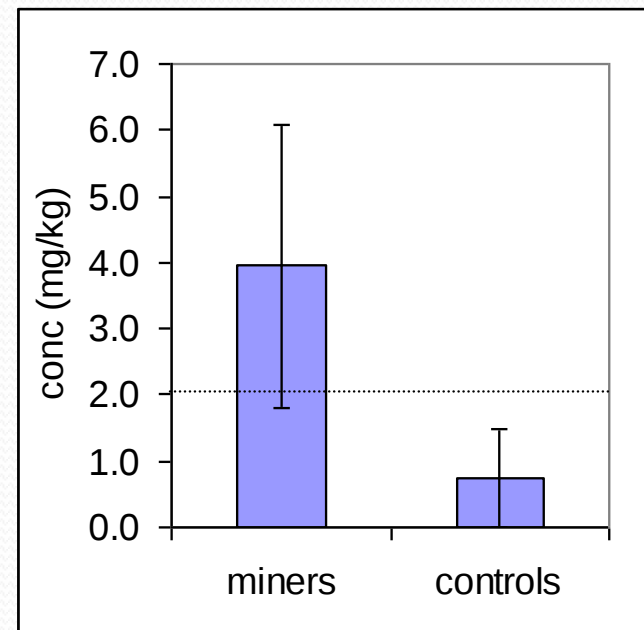
Burkina Faso

AGM



Burkina Faso (summary)

- some samples too low in mass to conduct an analysis
- exposure to mercury minimal in AGM area
 - hair (median: 0.75 mg/kg)
 - min/max: 0.01 - 2.50 mg/Kg)
- exposure to mercury for miners significant
 - hair (median: 3.95 mg/Kg)
 - min/max: 0.01 - 7.10 mg/Kg)



t -test: $p < 0.0001$

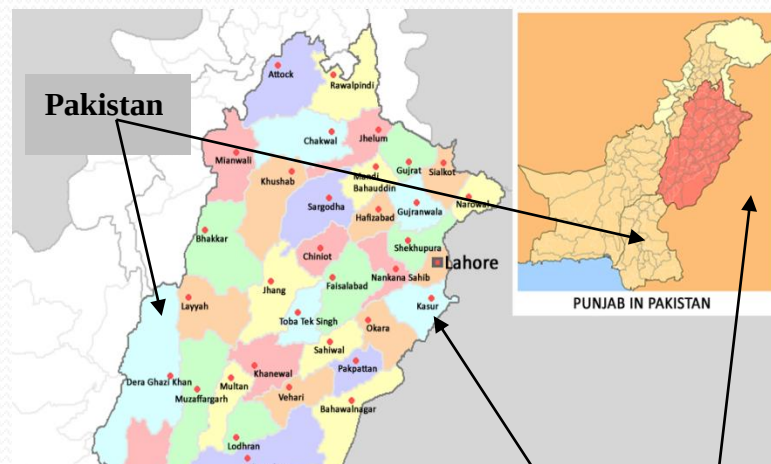
F -test: $p < 0.01$

Pakistan

- 72 Hair samples in plastic bags were sent to TESLA
- Questionnaire provided by TESLA was filled out and provided information about diet, age, amalgam fillings, working tasks, etc..
- Groupings:
 - workers at two chlor-alkali electrolysis
 - workers dental practices and hospital
 - control group (students and staff at university)
- washing followed by oxidative acid digestion
- total Hg analysis was carried out in triplicates and measured by ICPMS

Hair analysis of workers in Pakistan's Hg hot spots

- ✓ 72 hair samples were obtained from Pakistan by UNEP from four (4) groups as follows:
- G. No (1): 23 Human hair samples were collected from Chlor-Alkali factory workers (Participants) by UNEP.
- G. No (2): 10 Human hair samples were collected from Chlor-Alkali factory workers (Participants) by UNEP.
- G. No (3): 21 Human hair samples were collected from dental and health workers
- All the human hair samples were collected from the Lahore area of Pakistan as shown in this **Fig.**



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https://www.yunbaogao.cn/report/index/report?reportId=5_14271

