



# Cananea Copper Mine: is it safe for workers?

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# Outline

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- Background
- Methods
- Results
- Walk-through Inspection
- Mexican Response
- Conclusions
- Recommendations

# Background

- Open-pit copper mine in northern Mexico owned by Grupo Mexico
- 1200 miners + 300 contractors. Miners went on strike in July 2007
- OHS volunteer team organized by Maquiladora Health and Safety Support Network (MHSSN) in October 2007



# Background

## Operations at Cananea

- Mine – Large rocks
- Concentrator – Crushing process
- QUEBALIX – Extract copper from low-grade ore  
(Crusher - Conveyor belt - Lixivate)
- ESDE – Copper coated plates  
(Solvent Extraction by Electrolytic Deposition)

# Mine – Large Rocks



# Concentrator – Crushing Process



# QUEBALIX



# ESDE – Copper coated plates



# Methods

- IH questionnaire
- Health survey/Lung function test (Spirometry)
- 68 miners interviewed in two days
- Walk-through inspection



# Results

## Based on IH interviews

### □ Exposures

Chemical Hazards	Silica: 32% Solvents: 24% Diesel fumes: 22%
Physical Hazards	Noise: 90% Vibration: 78%
Safety Hazards	Falls: 94% Machine operation: 73% Machine guarding: 62%

# Results

## Based on IH interviews

### □ PPE

Inadequate respirators,  
Ear plugs

### □ Air and Noise monitoring

Seldom, no changes

### □ Medical surveillance

Physical exam at hiring

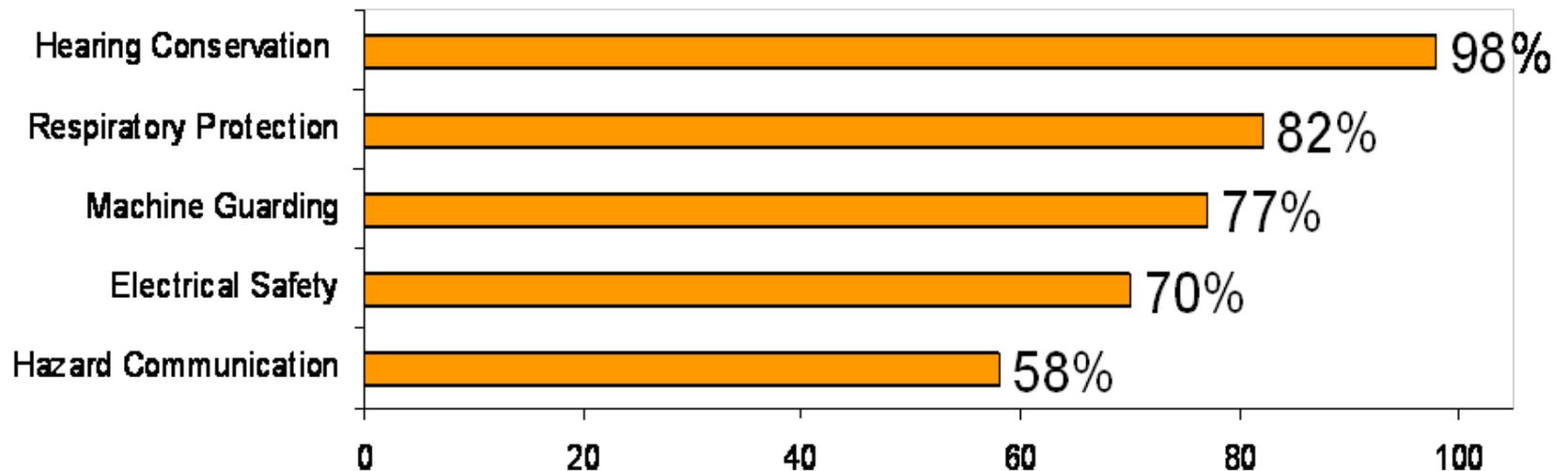
No pulmonary or audiometric test

### □ Accidents

From broken fingers to one fatality

# Results

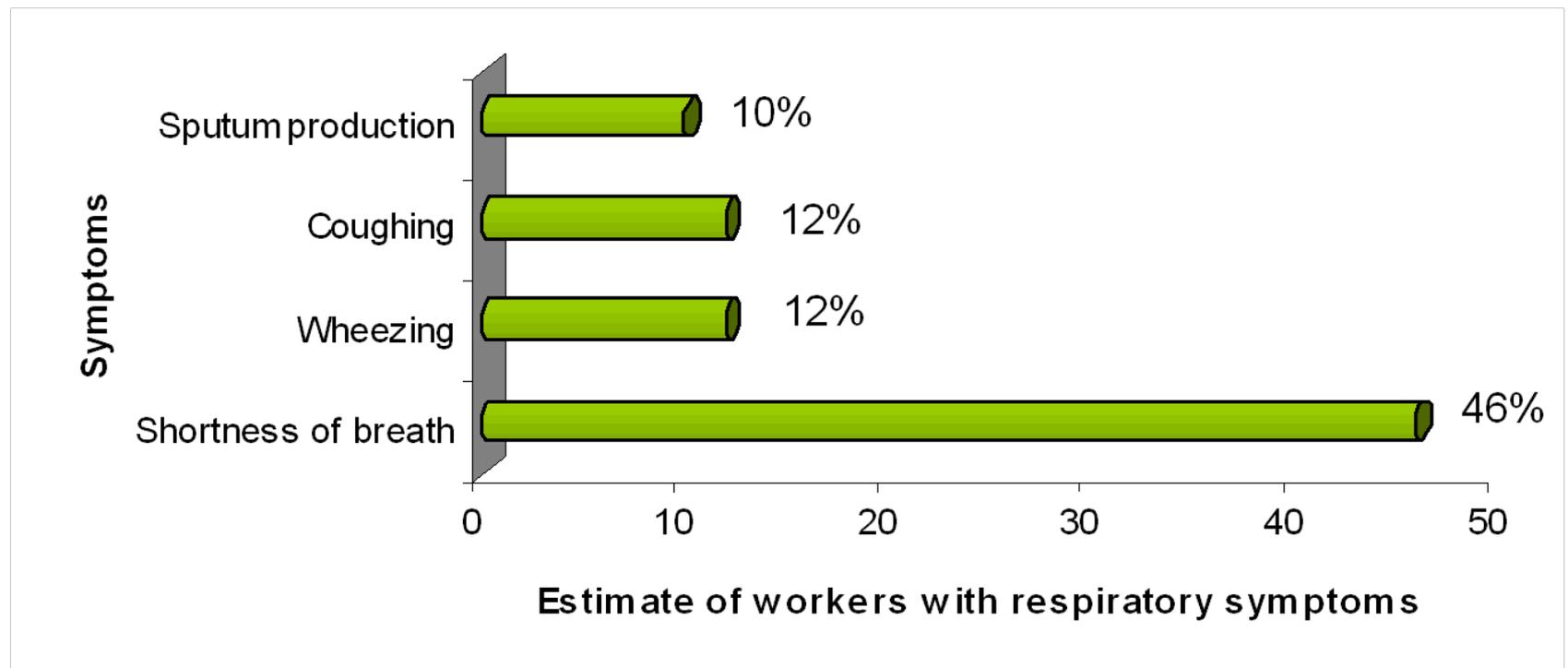
## □ Lack of Training Programs



**Workers reporting NO training in these specific areas**

# Results

## Based on Health Survey



# Walk-through Inspection

- Four areas visited
  - ▣ Mine
  - ▣ Concentrator
  - ▣ Quebalix
  - ▣ ESDE
  
- Main observations
  - ▣ Chemical hazards
  - ▣ Electrical hazards
  - ▣ Safety hazards
  - ▣ Physical hazards
  - ▣ Poor housekeeping

# Walk-through Inspection

## Based on bulk sample (accumulated dust)

- 23% quartz silica
- 51% of the dust – respirable range
- 75% of the dust – thoracic range

## What does it means?

- Workers are exposed at least to **1.2mg/m<sup>3</sup>** respirable silica
- Mexican Permissible Exposure Limit **0.1mg/m<sup>3</sup>**

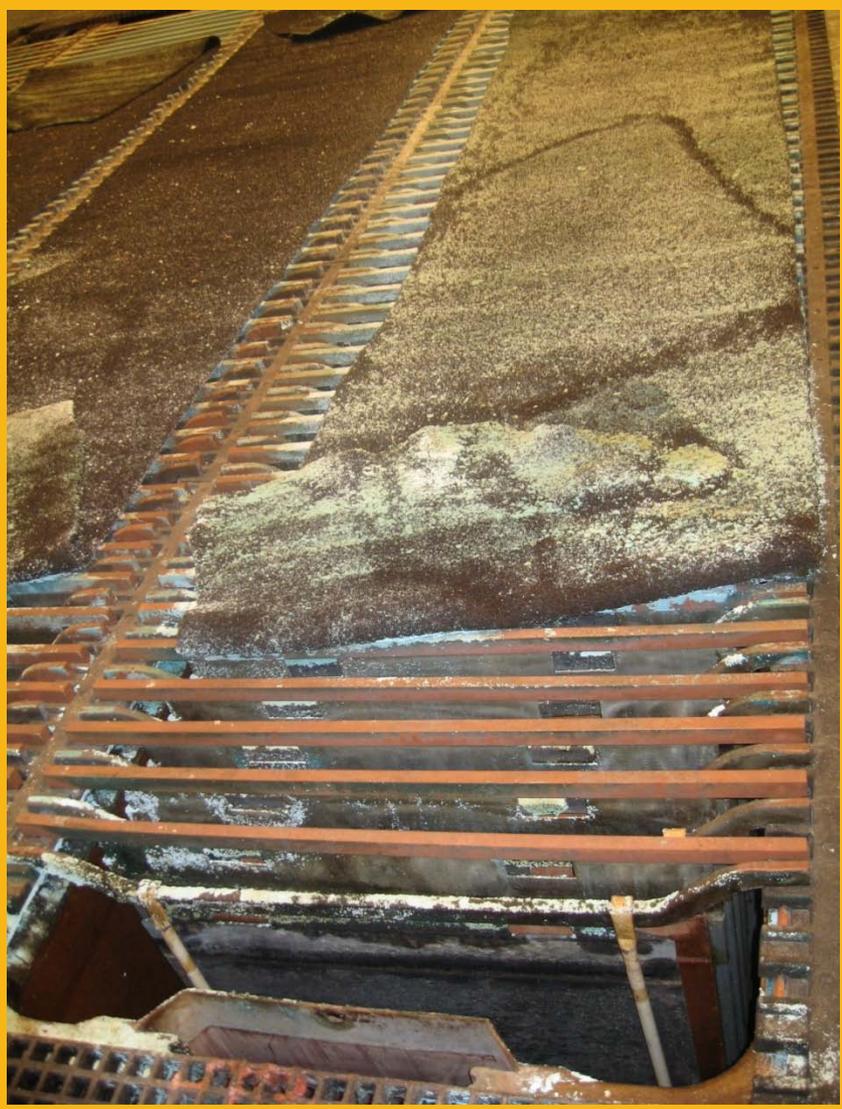
# Job Hazards



# Job Hazards



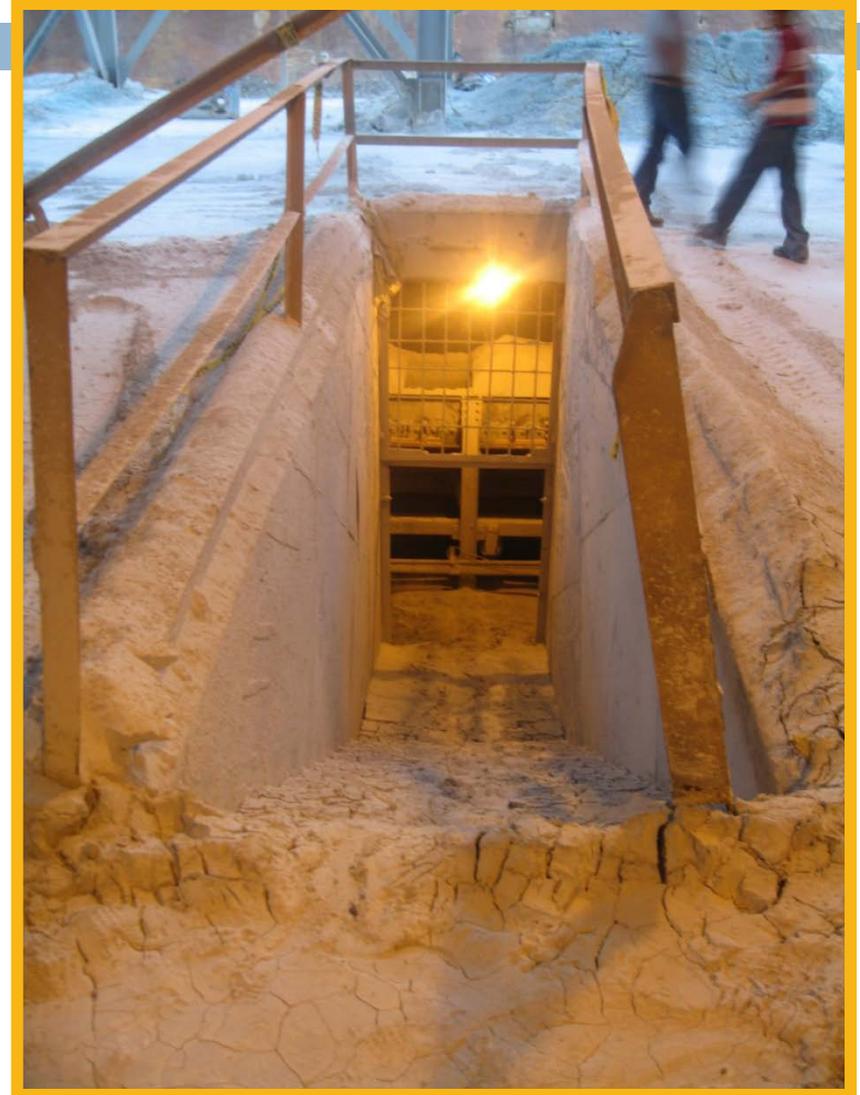
# Job Hazards



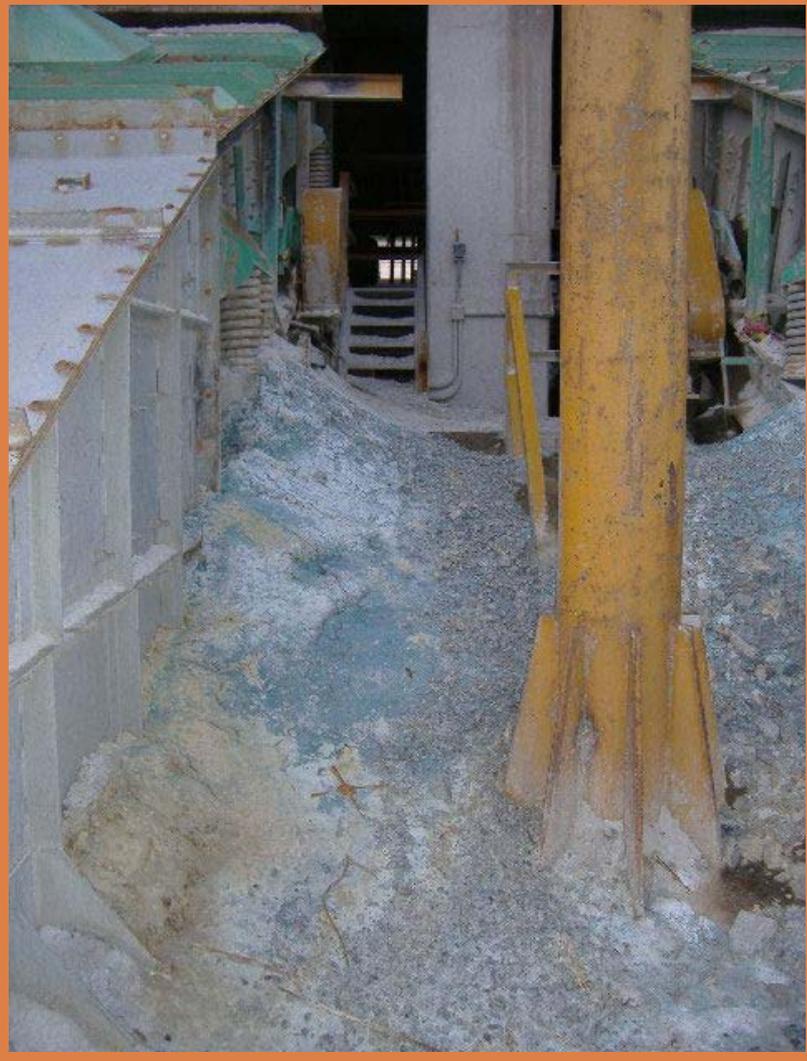
# Job Hazards



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# Job Hazards



# Mexican Response

- STPS did a walk-through inspection  
April 2007 – **72 required corrective actions**
- OHS team released a report  
November 2007
- STPS said the report is not valid
- STPS did a second walk-through inspection  
January 2008 – **200 required corrective actions**
- **“Nada de Gravedad”**

**Secretariat of Labor and Social Security = STPS Spanish-language**

# Conclusions

- Grupo Mexico has **failed to provide** a safe and healthful workplace for the miners, **to comply** with health and safety Mexican regulations.
- Serious health and safety hazards that require immediate and long-term corrections to guarantee **basic workers' health and safety rights**.
- The **safety program** has not resulted in effective hazard corrections, accident investigations, and worker training.

# Recommendations

- A **massive clean-up operation** to eliminate the most immediate hazards to workers' health and safety.
- Grupo Mexico must initiate a **comprehensive health and safety remediation plan** for the facility.
- Grupo Mexico should initiate a **comprehensive medical surveillance program**.
- Mexican government **must ensure** that workers at the Cananea mine are protected against all regulated hazards.



**SOUTHERN COPPER**  
**MEXICANA DE CANANEA**

**GERENCIA DE MINA**



**BIENVENIDOS**

**SE ENCUENTRA USTED EN LA MINA MAS GRANDE  
Y SEGURA QUE TIENE MEXICO**

**DEPARTAMENTO DE SEGURIDAD E HIGIENE**

# Publications

Report – <http://mhssn.igc.org>

Article – An International Effort to Improve Hazardous Working Conditions in Mexico.

Zubieta, I.X., Brown, G., Cohen, R., Medina, E.

IJOEH 2009; 15:14-20