



BERNHARD NOCHT INSTITUTE FOR TROPICAL MEDICINE

# Health and Safety issues related to ASM in Ghana

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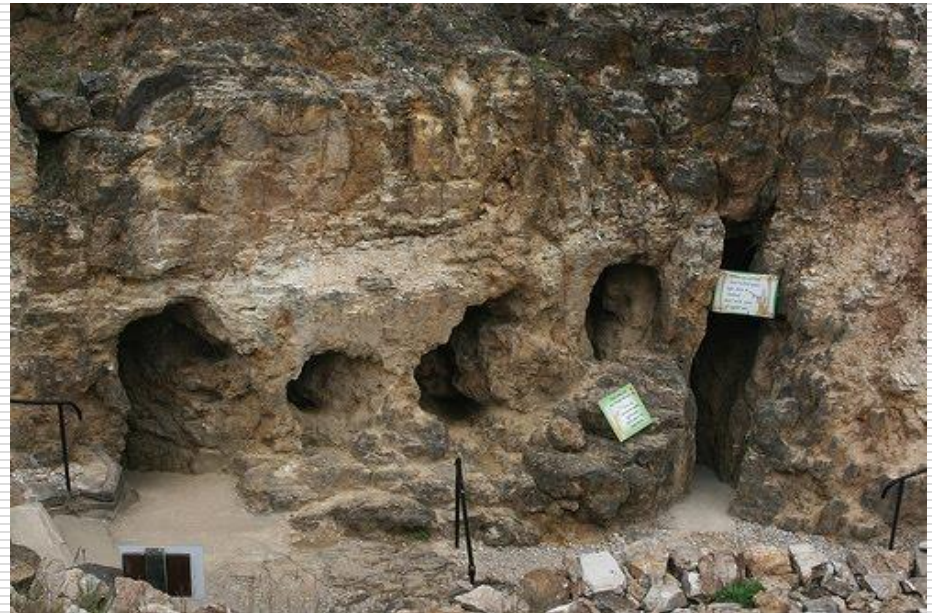
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# HISTORY

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- AGE OF ANTIQUITY (PREHISTORIC), MIDDLE AGES AND RENAISSANCE
  - Unique health and safety challenges



# MINING IN ANCIENT TIMES

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- ❑ Mining is one of the oldest industries and has always been hazardous.
  - ❑ Conditions in gold, silver and lead mines of ancient Greece and Egypt reveal an almost complete disregard for miners' health and safety.
  - ❑ Ancient miners were slaves, prisoners or criminals.
  - ❑ No need to improve conditions because punishment was often the objective
  - ❑ Ample reserves of manpower to replace those killed or injured.
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# MIDDLE AGES

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- ❑ Growth of trade created a demand for currency and capital which was filled by increasing the supply of gold and silver.
- ❑ Mines made deeper thereby worsening conditions.
- ❑ Mining changed from a backyard enterprise to a skilled occupation.
- ❑ The status of the miner changed and there was more freedom.

# MIDDLE AGES

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- Apart from improvements in ventilation, miners remained without any significant means of protection
- Agricola (1494-1555), a town physician of Joachimstal; a flourishing metal mining centre in Bohemia.
- Described the diseases that prevailed in the mining community.

# MIDDLE AGES

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- Though mortality rates from pulmonary diseases were not recorded, they must have included silicosis (silica dust in siliceous rock), tuberculosis, and lung cancer (radioactive ore in siliceous rock)
- In his book 'The mines of the Carpathian mountains, Agricola said "women were found who had married seven husbands, all of whom this terrible consumption has carried off to a premature death".

# MIDDLE AGES

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- Paracelsus (1493-1541) made his observations on mine and smelter workers on his experience as town physician in Villach, Austria.
- Attributed lung diseases to toxic air in mines.
- His textbooks on health were regarded as the established knowledge on the subject for two hundred years.

# RENAISSANCE – DAWN OF CIVILIZATION

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- ❑ Miners organized themselves into societies which provided sickness benefits and funeral expenses, giving them some security and preventing the extremes of poverty.
- ❑ Protest against bad conditions in the mines



# MODERN CIVILIZATION

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## ☐ Humanist's and Public Opinion:

- Indifference towards the poor in society began to change in the eighteenth century with the introduction of liberal ideas by men like Rousseau, Voltaire, Kant and Thomas Jefferson.
- Society was also influenced by the action of humanists:
  - ☐ William Wilberforce led the campaign for the abolition of slave trade;

# MODERN CIVILIZATION

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## □ Humanist's and Public Opinion:

- Anthony Cooper, an aristocrat, an evangelist and an MP promoted legislation which reduced hours of work and improved the condition of work for women and young people in factories and mines.
- Sir Robert Peel, a mill owner, introduced the first Factory Bill to the British house of commons, which later became the Health and Morals of Apprentices Act of 1802.
- It limited hours of work to 12 a day, provided for religious and secular education, and demanded ventilation and lime-washing of workrooms.

# MODERNIZATION OF MINES

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## ❑ Medical Influence:

- Charles Turner Thackrah published the first British work on occupational diseases which earned him recognition as one of the pioneers in occupational medicine.



# MODERNIZATION OF MINES

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- In the mid nineteenth century Dr. William Farr introduced measurements of occupational mortality in England and Wales.



He used census population figures and recorded deaths in certain occupations to calculate mortality rates

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# HEALTH & SAFETY ISSUES

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- Health and safety challenges depend on:
  - Mine type
    - Surface vs underground
    - Small scale/artisanal vs mechanized/commercial





# HEALTH & SAFETY ISSUES

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## ☐ Cont:

- Methods extraction
  - ☐ Rudimentary vs heavy machinery
  - ☐ Unprotected vs protected/safety measures
  - ☐ Use of chemicals



# HAZARD TYPE

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- ❑ Physical (cuts & falls)
- ❑ Biological (e.g. BU disease)
- ❑ Chemical (Hg, Cn)
- ❑ Gaseous (silica dust, Hg vapour)



# HAZARD TYPE

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- ☐ Environmental
- ☐ Social





# THANK YOU

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