Developed World

- Occupational health is recognized concern.
- US is not the leader in all aspects.
- Working conditions are better than they were.
US History

• Gauley Bridge Tunnel.
  – Workers dug through silica rock.
  – Black workers brought in to do most dangerous work.
  – During the depression.
  – http://video.google.com/videoplay?docid=1959229903647318262

• Dangerous Dust: Silicosis Hazard in American Industry (1936)
  – http://xroads.virginia.edu/~MA01/Davis/survey/articles/health/health_dec36_1.html

US History

• Within 5 years of leaving work, many died of acute silicosis.
  – 581 of 2197 black workers.
  – 183 or 1690 white workers.
  – 35 % of black workers in dustiest areas.
  – 22 % of white workers in dustiest areas.
US History

- Fire in a NYC sweatshop is another ‘classic’ industrial tragedy.
  - Triangle Shirtwaist Fire
  - (http://www.ilr.cornell.edu/trianglefire/)
  - Videos
    - http://www.youtube.com/watch?v=rf9GVbzf7Q4&NR=1
    - http://www.youtube.com/watch?v=wfU6kN2NCA4
      - (edgy – language)

Occupational Health in the Developed World

- Regulations exist.
- Enforcement.
- Professional Recognition.
Control of Health Hazards

• Body of regulations exist.
• US has national system.
• European nations also control hazards.

Certification of Industrial Hygienists

• Professional recognition.
• Demonstrated knowledge.
• Certification vs. Registration.
• US system established in 1956
  – American Board of Industrial Hygienists established in 1960.
  – CIH: Education, 5 years work, examination.
• Over 6500 in active practice today.
Certification of Industrial Hygienists

• Following the US lead, 6 nations have established certification plans (professional groups do this)
  – United Kingdom
  – Japan
  – Australia
  – Canada
  – Italy
  – The Netherlands

Developing World

• Poverty.
• Need for money.
• National debt.
Population Living on < $1 / Day

Poverty and Health Indicators (Gapminder.org)
Trends in poverty, health around the world.

- [http://www.youtube.com/watch?v=RUwS1uAdUcI](http://www.youtube.com/watch?v=RUwS1uAdUcI)
- Interesting site on visualizing world economic and health data. [www.gapminder.com](http://www.gapminder.com)
  - See the interactive graph: [http://www.gapminder.org/downloads/applications](http://www.gapminder.org/downloads/applications)

Latin America

- Columbia
- Columbia
  - 71% of workers in battery factory blood lead above 50 µg/dl.
- Bolivia
  - 40% of 8500 miners had silicosis
- Peru
  - Up to 37% of miners and metalworkers had silicosis.
China

• Rapidly expanding industrial production.
• Push to move to more developed status.

China

• Mines: major producer of coal.
  – Many are not state-run, but illegal or local government.
  – 1993: 10,000 workers died in mine accidents.
  – Recent regulation addresses this issue.
  – Accidents continue.
Small-scale Mines World Wide

• 13 million people work in small mines.
  – 4 million women.
• Unregulated, under funded.
• Little safety and health protection.
• Silicosis and metal poisoning.
• Fatality rate 90 X large mines.
• Growing 20 % annually.

India

• Leptospirosis as an occupational disease.
  – 976 cases in the mid-1980s.
• Tannery work.
  – Low back pain 61 %.
  – Dermatitis 23 %.
  – Bronchitis 14 %.
  – Accident 17 %.
India

- **Brucellosis** in an abattoir.
  - Up to 100 % (blood collectors).
- Lead poisoning among paper mache workers applying paint.
  - Blood lead average 68 ug/100 ml blood.

India

- Byssinosis in textile mills.
  - Up to 1992: no cases reported by government.
  - Independent study:
    - 17 – 30 % byssinosis.
    - 45 % if > 30 years work.
    - 40,000 cases in Bombay.
Africa

• South African Carpet Weaving
  – Abnormal PFT 37.3 %
  – Nasal symptoms 62.8 %.
  – Cough 58.1 %

• South African Gold Mines
  – TB 0.9 % - 3.9 %
  – Silicosis 9.3 % - 12.8 %.

The Informal Sector

• Worldwide issue, particularly developing nations.
• A large part of the economy. Up to 61 % of work force is in the informal sector.
• Few formal jobs available.
• Escape regulation.
• Wages are low, workers easily exploited.
The Informal Sector

• Home workers.
  – Done in the home.
  – Contract work common.
  – Mostly female.
    • Child care.
    • Household work.
    • Lower cultural value.
  – India beedi workers.
    • 90% of 2.5 million female.
  – Child labor very common.

The Informal Sector

• Advantages to workers.
  – Flexible hours.
  – Available work.
  – Personal control.

• Disadvantages to workers.
  – Low pay.
  – Delayed pay.
  – Broken contracts.
  – Poor working conditions.
The Informal Sector

- Familial exposures.
- Long work hours.
- Poor workplace design.
- Piece work is common.
- Ergonomic hazards likely.
- Low mechanization.

The Informal Sector

- Acute effects recognized.
  - Acids in jewelry making.
- Protective equipment rare.
- Training rare.
- Knowledge of hazards limited.
The Informal Sector

- Survey in Zimbabwe.
- 130.6 / 1000 overall injury rate.
- 19 % resulted in permanent disability.
- No compensation for injuries.
- Illnesses attributed to work:
  - 12 % of workers.
  - Respiratory.
  - Musculoskeletal, headaches, eye problems.

Child Labor

- 250 million children.
  - 5 – 14 year old.
- 120 million full time.
- 70% hazardous work.
- Slavery is common.
- Video
Child Labor

- International Labor Organization convention 182.
- Ban “the most intolerable forms of child labor”.
- Slavery / indenture.
- Dangerous or hazardous work.
- Sexual exploitation.
- War or illegal activity.

World Occupational Health

- ILO Estimates for 2002
- 2.3 million deaths worldwide.
- 626,000 communicable disease.
- 100,000 due to asbestos.
- 250 million lost-time accidents.
- 355,000 accidents and violence.
- Video
World Occupational Health

• Fatality rates
  – European Union 5.89 / 100,000 workers
  – India and China 11.0 / 100,000 workers
    • (under reported)
  – Asia and Islands 23.1 / 100,000 workers
  – Latin America 13.5 / 100,000 workers
  – World average 14.0 / 100,000 workers

Resources

• Maquiladora Health & Safety Network
  – http://mhssn.igc.org/

• International Labor Organization
  – World of Work magazine is published online
  – www.ilo.org