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=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.
  - [http://www.iso.org/iso/iso14001_video](http://www.iso.org/iso/iso14001_video)

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.
    - 2008: 410 tested, 154 passed, 37.6 % pass rate
- 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 < $1.25 / Day

- Map from Wikipedia commons:

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

- [http://www.youtube.com/watch?v=RUwS1uAdUcl](http://www.youtube.com/watch?v=RUwS1uAdUcl)
- 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 at 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
• US: sex trade (LA Times editorial 11/14/2009)
  – 900 children rescued in six years; 52 in an October sweep (World Series)
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 diseases.
- 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