The role of the H&S professional

- Science of Occupational Hygiene is about the interaction between the person and the environment
- Traditionally viewed as
  - Recognition – of hazards
  - Evaluation – of individual or group exposures
  - Control – of hazards to prevent overexposure

Routes of exposure

- Ingestion
- Dermal
- Inhalation
  - Many agents transported via air
  - Ventilation can alter airflows and control exposures
Evaluation requires identification of exposure factors

- Sources – what’s released, where, how much, duration, physical properties
- Transport – how the agent is dispersed
- Worker – job practices & activities
- Exposures – typically recorded as full shift TWA’s or as short term peaks

Overheads…
Evaluation and inspection

- What should we look for?
- What are common issues?

Measurement & Errors

- What are typical ventilation measurements?
- What are some sources of errors?
- Are the errors random or systematic?
What is the difference?
Marked Pitot Tube

[Diagram of a marked Pitot tube with annotations SP and VP]

Flow → SP + VP → SP + VP → SP
See anything wrong?

Insertion depths for rectangular ducts

Unequal increments, equal arc
(air flows in the x direction) rotated about the z-axis
rotated about the y-axis rotated about the x-axis

Velocity contours, “plain” duct opening (Guffey and Booth, 1998)
Velocity contours, single elbow (Guffey and Booth, 1998)

Typical ventilation units!!!

- Standard density 0.075 lbs/cuft at NTP
- Temp range 40 to >100 F
- Altitude: -1000 to >8000 ft
- Humidity: ???
- Pressures: ~ 0 to 20" of water gauge
Sensor Calibration

sensor being calibrated

inclined manometer

hand pump or syringe

valve