

# IH Topics

- 1 - OSHA and Introduction to Industrial Hygiene
- Chapter 2 - Human Systems
- Chapter 3 - Toxicology
- Chapter 4 - Hierarchy of Controls
- Chapter 5 - Evaluation and Sampling
- Chapter 6 - Personal Protective Equipment (PPE)
- Chapter 7 - Confined Space
- Chapter 8 - Airborne Contaminants
- Chapter 9 - Biohazards
- Chapter 10 - Noise
- Chapter 11 - Heat and Cold Stress
- Chapter 12 - Ergonomics
- Chapter 13 - Radiation
- Chapter 14 - New Technologies
- Chapter 15 - Occupational & Environmental Safety Programs





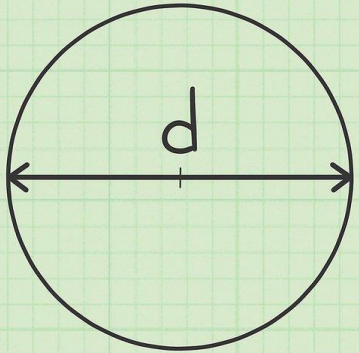




# Laboratory experiment

- **Activity 4-2:** Calculation of Air Flow
- **Time:** 15 minutes
- **Objective:** Calculate Q.
- **OSHA Objective:** Module 2 ELO 2.1 Conduct a leak test.
- **OSHA Objective:** Module 4 ELO 2.1 Recognize key terms regarding ventilation systems
- **OSHA Objective:** Module 4 ELO 2.3 Calculate A. the volume flow rate.
- **Materials:** PVC pipe and low velocity ventilating fan.
- **Task:** Read and calculate Q. How would you use this to determine air flow requirements for other types of operations?
- **Flow rate equals velocity multiplied by area**
- $Q = VA$
- Where:
- Q = air flow rate in cubic feet per minute
- V = air velocity in feet per minute
- A = hood or opening area in square feet

# Laboratory calculations



A diagram of a circle with a horizontal diameter line passing through the center. The diameter is labeled with the letter 'd' above it. The line has arrows at both ends pointing to the circumference of the circle.

$d = 20 \text{ in}$   
 $r = d/2$   
 $r = 20/2 = 10$   
 $A = \pi r^2$   
 $A = \pi (10^2)$   
 $A = 100\pi \text{ in}^2$

wiki How to Calculate the Area of a Circle

# Flow calculations

- Visualization
- Nozzle diameter 1 inch = .084 ft     $r = .042$  ft
- Nozzle velocity 100 ft/min scale to 1000 ft/min
- 1 cubic meter box === 35.315 ft<sup>3</sup>       $\frac{1}{4}$  meter cubed === 9 ft<sup>3</sup>

# calculations

## Visualization

Air Velocity (V, ft /min)	Pipe Area (A, ft <sup>2</sup> )	Volumetric Flow (Q ft <sup>3</sup> /min)
100	.006	0.6
200	.006	1.2
300	.006	1.8
400	.006	2.4
500	.006	3.0
600	.006	3.6
700	.006	4.2
800	.006	4.8
900	.006	5.4
1000	.006	6.0







