

# NEED TO KNOW CRITERIA

## I. INTRODUCTION

- A. Local Backflow cases and incidents

## II. HYDRAULIC AND BACKFLOW PRINCIPLES

- A. Give definition and show example of:

1. Pressure
  - a. atmospheric
  - b. absolute
  - c. negative
  - d. gauge
  - e. static
  - f. fluctuating
  - g. column of water
  - h. gradient
2. Venturi effect
3. Aspirator effect
4. Backflow
  - a. backpressure
  - b. backsiphonage
5. Cross Connection
  - a. indirect connection
  - b. direct connection
6. Degree of hazard
  - a. pollutant / non-health hazard
  - b. contaminant / health hazard
7. Service protection
8. Internal protection

## III. THEORY OF BACKFLOW AND CROSS CONNECTION

- A. Hydraulics of water in piping
- B. How backflow occurs
- C. Types of actual cross connections
- D. Degrees of hazard

#### IV. CODES AND REGULATIONS IN A CROSS CONNECTION CONTROL PROGRAM

- A. Federal regulation
- B. State regulation
- C. Local regulations
- D. Adopted plumbing code

#### V. AGENCY'S RESPONSIBILITIES AND ACTIONS IN A CROSS CONNECTION CONTROL PROGRAM

- A. Water purveyor
- B. Health authority
- C. Plumbing inspector
- D. Tester/contractor
- E. Consumer

#### VI. MECHANICAL EQUIPMENT FOR CROSS CONNECTION CONTROL

- A. History of assembly development
- B. Approval and the approval process
  - 1. USC Foundation for Cross Connection Control and Hydraulic Research (USC FCCCHR)
  - 2. American Society of Sanitary Engineering (ASSE)
  - 3. International Association of Plumbing & Mechanical Officials (IAPMO)
  - 4. Canadian Standards Association (CSA)
  - 5. American Water Works Association (AWWA)
  - 6. Underwriters Lab/Factory Mutual (UL/FM)
  - 7. Local
- C. Air Gap
  - 1. design and operation
  - 2. application and specific uses
  - 3. installation requirements
  - 4. inspection

D. Atmospheric Vacuum Breaker (AVB)

1. design and operation
2. component breakdown
3. application and specific uses
4. installation requirements
5. troubleshooting and repair
6. inspection

E. Pressure Vacuum Breaker Assembly (PVB)

1. design and operation
2. component breakdown
3. application and specific uses
4. installation requirements
5. field test procedure
6. field test reporting
7. troubleshooting and repair

F. Spill Resistant Pressure Vacuum Breaker Assembly (SVB)

1. design and operation
2. component breakdown
3. application and specific uses
4. installation requirements
5. field test procedure
6. field test reporting
7. troubleshooting and repair

G. Double Check Assembly (DC) and Double Check Detector Assembly (DCDA)

1. design and operation
2. component breakdown and different styles
3. application and specific uses
4. installation requirements
5. field test procedure
6. field test reporting
7. troubleshooting and repair

H. Reduced Pressure Assembly (RP) and Reduced Pressure Detector Assembly (RPDA)

1. design and operation
2. component breakdown and different styles
3. application and specific uses
4. installation requirements
5. field test procedures
6. field test reporting
7. troubleshooting and repair

I. Special conditions that can affect operation of assemblies

1. hot water
2. thermal expansion
3. pressure fluctuation
4. freezing conditions
5. manifold installations
6. critical services
7. accessibility
8. location

J. Other devices

1. Non-testable backflow preventers
2. Unapproved/unlisted assemblies

K. Field test equipment

1. different types
2. periodic check of accuracy
3. calibration

L. Tester responsibility

1. tester safety procedures during test and repair
2. test report distribution and record keeping
3. educational groups and organizations
4. local cross connection control program