

# 2017 MOLD/IAQ SEMINAR

HVAC/Environmental Factors/Critical  
Measurements  
July 19, 2017

# Introduction

- **Presenters**

- Jill Asch, MPH, CIH

- Hillmann Consulting, LLC

- Annina Hogan, PE, RA, LEED-AP, Engineer of Record

- Remington & Vernick Engineers and Affiliates

- Bob Schoenfeldt, Operations Manager

- Washington Township Public Schools, Sewell, NJ

- **Goals**

- Understanding IAQ Factors

- Understanding Mold & Humidity

- Helpful Hints for Mold Protection



*"An ounce of prevention is worth a pound of a cure."*

- Benjamin Franklin

# Importance of HVAC in mitigating or instigating IAQ/Mold issues

- **Ventilation problems stem from:**
  - Improper design
  - Installation
  - Operation
  - or maintenance of the ventilation system
- **ASHRAE Standard 62-2010, "Ventilation for Acceptable Indoor Air Quality"**
  - Recommendation, not law

# Monitoring the building environment-key elements

- Temperature/humidity
- Dew Point
- Carbon Monoxide
- Carbon Dioxide
- Particulates
- Volatile Organics

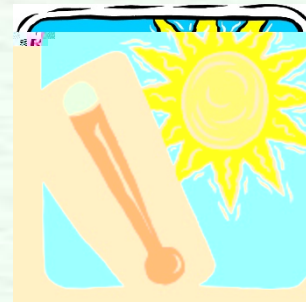
# Temperature/Humidity

## The PEOSH Indoor Air Quality (IAQ) Standard:

- 68 °F to 79 °F

## EPA recommendation for humidity:

- Provide adequate ventilation to maintain indoor humidity levels between 30-60%.



# Water Intrusion

- Clean and dry any damp or wet building materials and furnishings within 24-48 hours of occurrence to prevent mold growth.
- Keep foundations dry
- Avoid roof work during rainy periods.

# Common causes of IAQ issues in schools

- Unvented bathrooms and kitchens
- Leaky roof areas
- Wet foundations
- Floods
- Items brought into school
  - Plants
  - Cleaning materials

# Prevention methods

- Conduct regularly scheduled inspections of heating, ventilating, and air-conditioning (HVAC) systems and promptly correct any problems.
- Respond to water damage within 24–48 hours to prevent mold growth, which depends on moisture.



# UNDERSTANDING MOLD & HUMIDITY

Desired Range



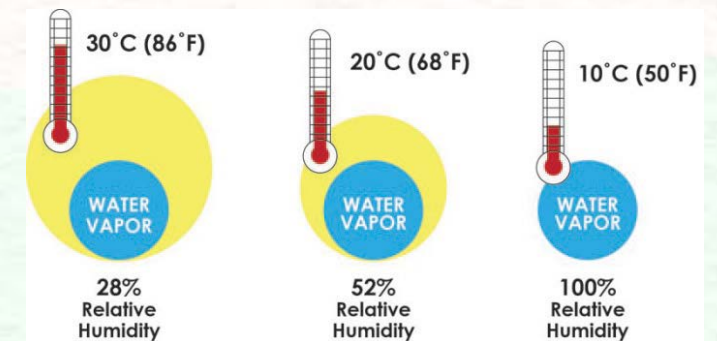
# UNDERSTANDING MOLD & HUMIDITY

- **Relative Humidity**

- Ratio of the actual water vapor content of the air to the amount of water vapor needed to reach saturation.

- **Absolute Humidity**

- The mass of water vapor contained in a given volume of air. Relative humidity increases as you cool the same air.



# Helpful Hints – AN OUNCE OF PREVENTION

- **Moisture Control and Air Circulation are Key**
  - Control moisture during high humidity maintenance events
    - Waxing, painting, carpet cleaning, etc.
  - Don't bring in humid air unless it will be conditioned
  - Mold likes stagnant conditions
  - Maintain ventilation in space with water sources and typical moist conditions
- **Take Note of Improperly Working Air Conditioning**
  - Short cycling air condition = DANGER
  - Bigger is not always better



# Helpful Hints – AN OUNCE OF PREVENTION

- **Watch for Thermal Differentials/Condensation**
  - Watch between spaces
  - Floors, table tops, etc.
  - Stagnant plenums
- **Take Care in Understanding how Buildings are Conditioned over the Summer/Unoccupied Humid Times**
  - Cooling loads have changed
  - Outside air humidity conditions are typically at their worst

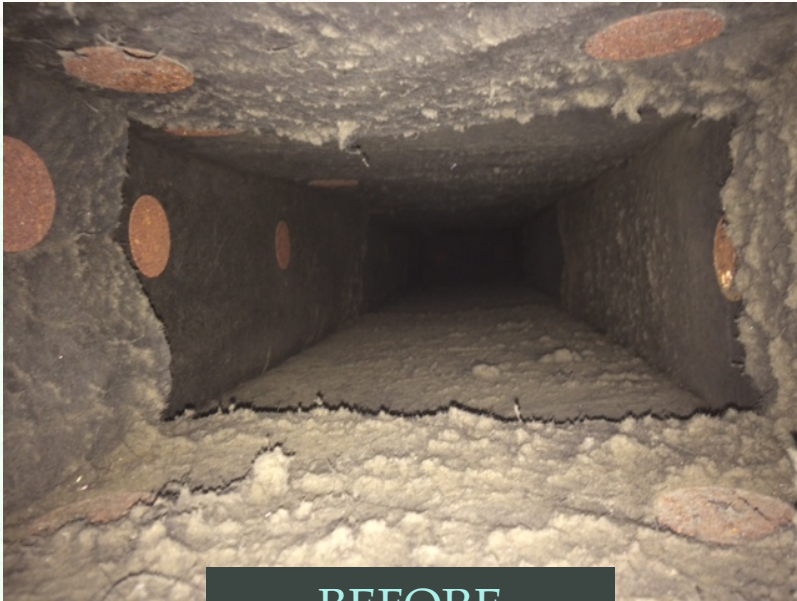
# Helpful Hints – AN OUNCE OF PREVENTION

- **Seek Professional Help Early**
  - Don't wait for mold amplification
- **Take Care During Maintenance & Cleaning Operations**
  - Commercial Dehumidifiers
  - Portable AC Units (i.e., spot coolers)
  - Thermometers & Relative Humidity Meter
  - Maintain Calibration



# The Importance of Maintenance & Filter Changes

- Sample of Urban School Pre- and Post-Duct Cleaning



BEFORE



AFTER



# Questions and Answers