



# High Performance Sensing with Aircuity Technology for Indoor Air Monitoring and Control

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# The IAQ Challenge at UVM

- Number of calls
  - 2 to 3 per week to Risk Management
  - An unknown number to Physical Plant
- Types of calls
  - Perception
  - Occupant Activities
  - Facility Performance
  - External Sources



# The Context

- UVM 2004 - 2005
  - Three College of Medicine problems
    - New building challenges
    - Renovations challenges
    - Space intensification and maintenance challenges
  - Several high-profile EHS emergencies led to additional resources
- Vermont
  - Early carpet concerns
  - State office building issues
- Program changes
  - Additional resources allow shift from reactive to proactive approach
  - Emergency response protocols are further developed



# Our Response Tools

- **People**
  - Raise service technicians' awareness
  - “Aggressive” EHS response
  - Visible mold is “outsourced” to the asbestos shop
- **Monitoring tools**
  - Local consultants for sampling specific contaminants (usually for dust identification or Summa canisters)
  - Q-Trak
  - Aircuity





# The Aircuity System

- **Technical aspects**
  - Comfort parameters: temperature, relative humidity, CO<sub>2</sub>
  - General contaminants: large particles, small particles, VOCs
  - Specific concerns: ozone, radon, carbon monoxide
  - Biological indicator: dead mold, outside vs. inside
  - Quarterly calibrations are included in the service price
- **Data collection and delivery**
  - Building and space information collected before sampling
  - All parameters (except mold) are sampled every minute
  - Data is uploaded via wireless modem, either “live” or after sampling
  - Reports are provided in 30 page text templates
- **Cost**
  - \$20,000 for instrument and 3 years of service
  - Ongoing cost of about \$5000 per year



# Our Protocol

- **Goals**
  - Provide information to address perception concerns
  - Track events that could be related to facility or external issues
  - Demonstrate ongoing concern with data-based, interactive communication
- **In Practice**
  - Visit before any sampling to look for facility or mold issues
  - Default sampling period is one week
  - Depending on the concern, either comfort or contaminants are focus on analysis
  - Complete report provided to occupants without editing
  - Background sampling is done when no other work is in progress; this is not a common situation



# Results after Two Years

- **Level of Use**
  - In two years, the instrument has been in the field essentially full-time, except for calibration periods
  - It has occasionally answered questions about specific events, but this is not common
  - It has been very helpful in addressing perception issues
- **Occupant Response**
  - The sampling and follow up report has resolved many perception issues
  - Proactive response has limited “upgrading” of concerns
- **Cost**
  - While our consultant costs have not gone down, their work is much more specific and easier to manage
  - Savings in EHS staff time is clearly more than the cost of the service



# Demonstration and Notes

- Building and Space information
- Report Inventory
- Sample Report
  - Text summary
  - Data review
- There is also an Aircuity system available to control a HVAC system