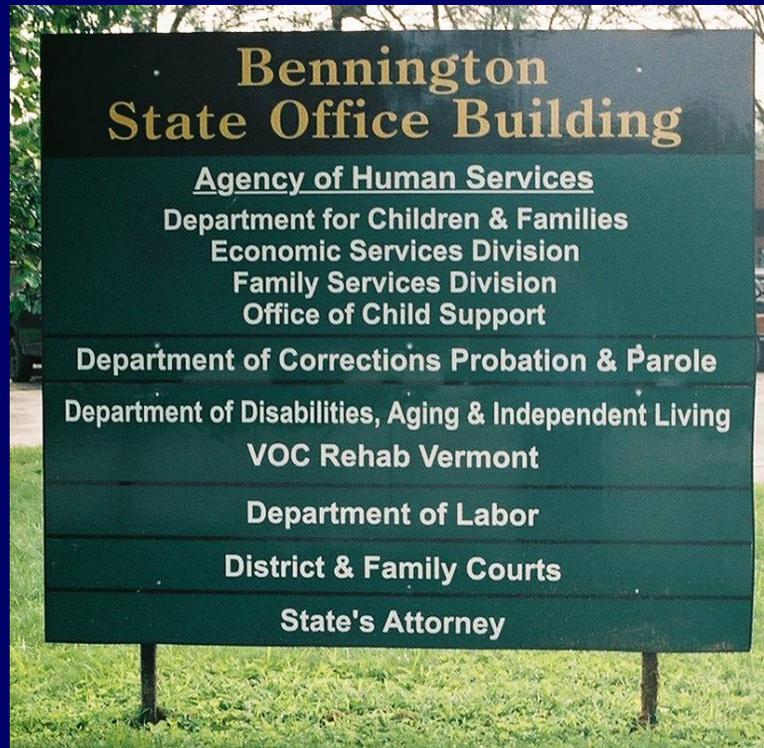


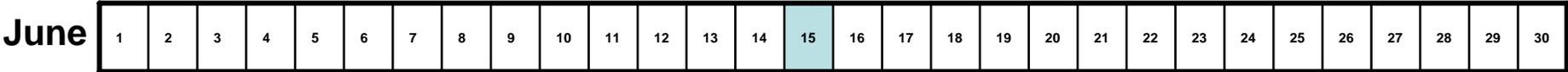
# Update to the Investigation into Health Concerns - Bennington State Office Building



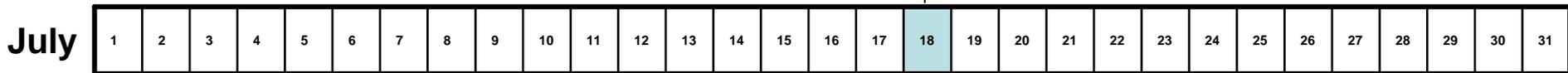
**Findings from VDH health survey and  
NIOSH Pulmonary Function Testing**

# Investigation Timeline

VDH Notified of Sarcoidosis Cases in Bennington State Office Building



Meeting with Concerned Building Occupants



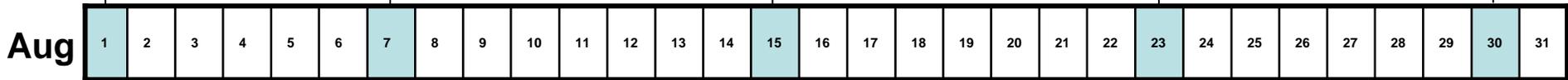
Meeting with VSEA

Building Inspection Walk through

Health Survey Administration

Initiation of Environmental Testing

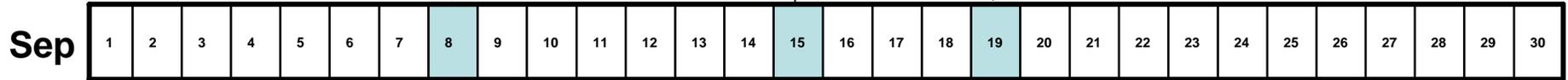
NIOSH Technical Assistance Request



CDC EPI-AID Request Approved

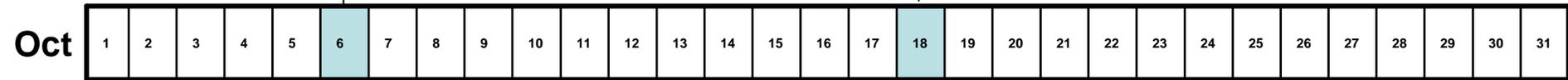
Former Building Occupant Survey's Mailed

NIOSH PFT Initiated



Announcement of Relocation of Employees

VDH Town Meeting



# Investigation Timeline

Meeting with VSEA

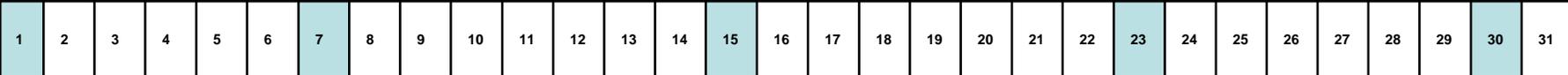
Building Inspection Walk through

Health Survey Administration

Initiation of Environmental Testing

NIOSH Technical Assistance Request

Aug

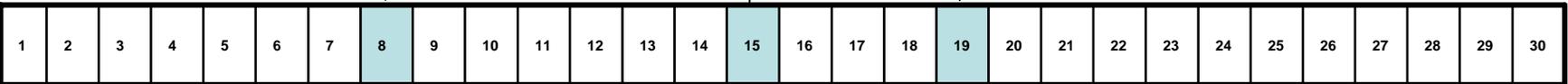


CDC EPI-AID Request Approved

Former Building Occupant Survey's Mailed

NIOSH PFT Initiated

Sep

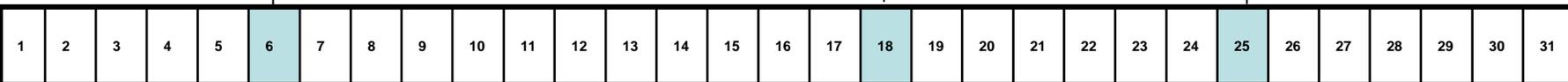


Announcement of Relocation of Employees

VDH Town Meeting

NIOSH PFT Results Sent to Participants

Oct

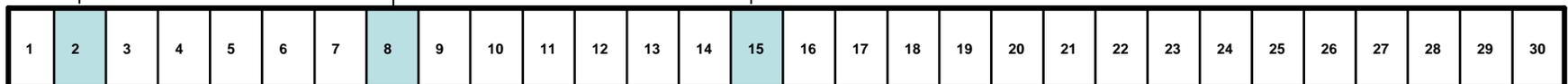


Human Resources On Site

Modular Units Arrive

Relocation Recommendations Released by BGS

Nov

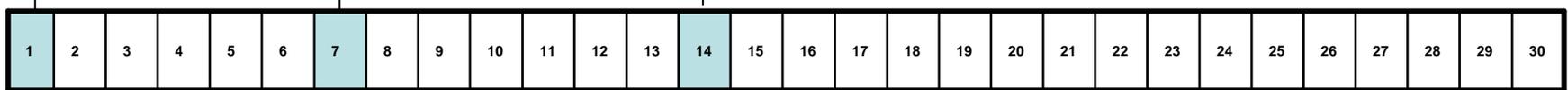


Former Occupant Survey Released

Community Assessment Released

Update to Bennington State Office Workers

Dec



# Health Survey and Pulmonary Function Testing

Bennington Questionnaire—August 2006

## PERSONAL DATA SHEET

### I. Demographics

- Today's date: \_\_\_\_/\_\_\_\_/2006  
Month Day
- Name: \_\_\_\_\_  
First MI Last
- Date of Birth: \_\_\_\_/\_\_\_\_/\_\_\_\_  
Month Day Year
- Gender: 1. \_\_\_\_ Male  
2. \_\_\_\_ Female
- Race (Please choose all that apply):

### II. Health History

- 8.1 In the past 12 months have you had wheezing or whistling in your chest? 1. Yes \_\_\_ 2. No \_\_\_  
IF YES:

- 8.2 Have you had wheezing or whistling in your chest one or more times per week in the last 4 weeks? 1. Yes \_\_\_ 2. No \_\_\_

- 8.3 When you were away from the building was the wheezing or whistling:  
1. Same \_\_\_ 2. Worse \_\_\_ 3. Better \_\_\_

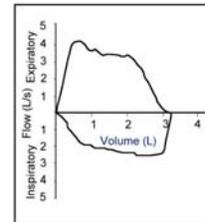
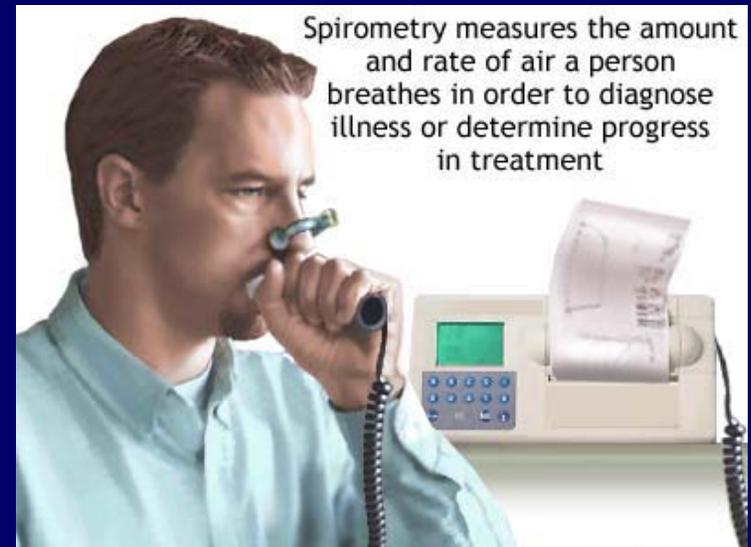
- 8.4 In what month and year did you first have wheezing or whistling in your chest? \_\_\_\_/\_\_\_\_  
Month Year

- 9.1 In the past 12 months have you been awakened by an attack of breathing difficulty? 1. Yes \_\_\_ 2. No \_\_\_  
IF YES:

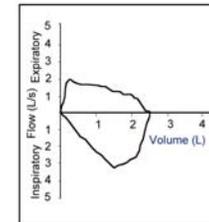
- 9.2 Have you been awakened by an attack of breathing difficulty one or more times per week in the last 4 weeks? 1. Yes \_\_\_ 2. No \_\_\_

- 9.3 When you were away from the building (e.g., vacations, weekends) was the awakening by attacks of breathing difficulty:  
1. Same \_\_\_ 2. Worse \_\_\_ 3. Better \_\_\_

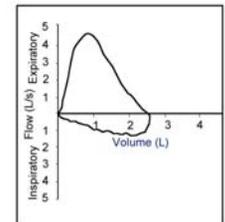
- 9.4 In what month and year were you first awakened by an attack of breathing difficulty? \_\_\_\_/\_\_\_\_  
Month Year



Fixed Upper Airway Obstruction



Variable Intrathoracic Upper Airway Obstruction



Variable Extrathoracic Upper Airway Obstruction

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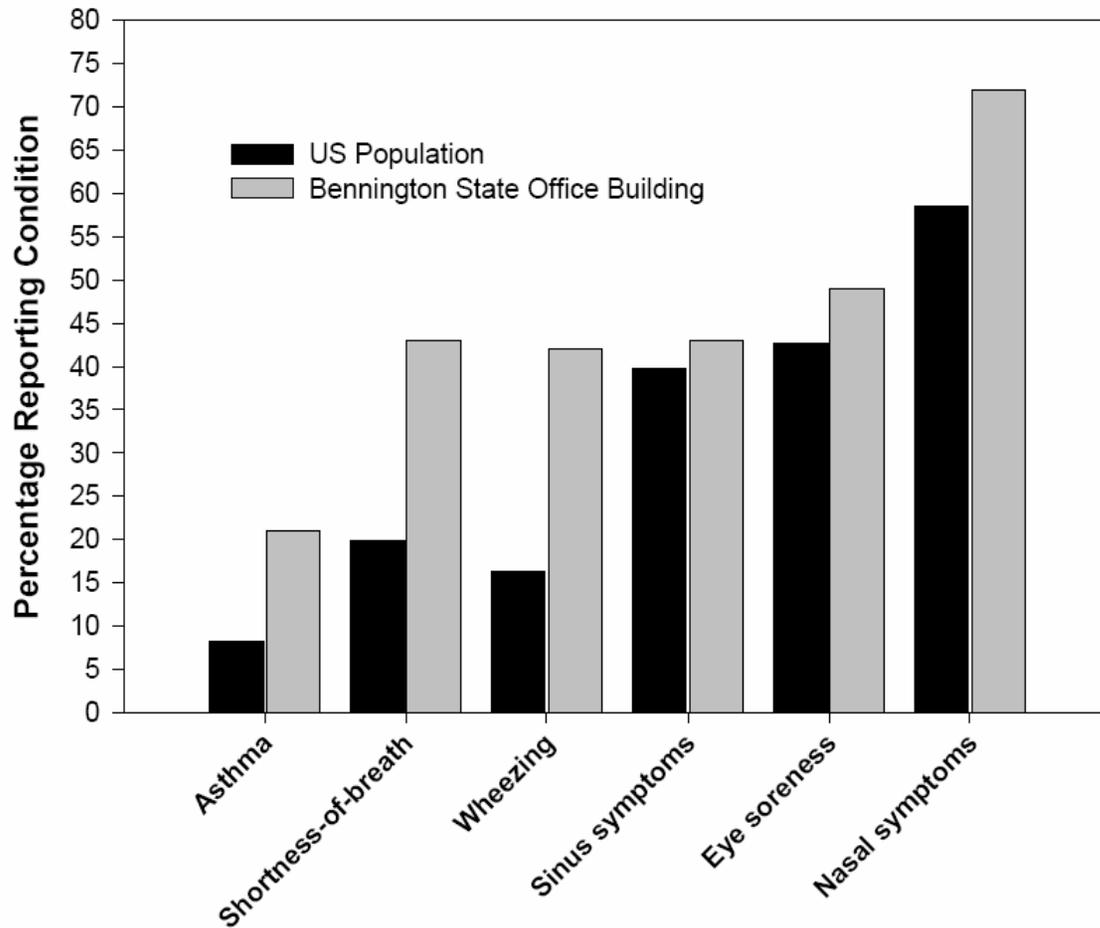
**Table 1. Symptoms occupants reported experiencing in the last 12 months**

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Wheezing or whistling in chest	40.4%(42/104)
Shortness of breath	43.3%(45/104)
Coughing attacks	49.0%(49/100)
Chest tightness	29.9%(29/97)
Headache	73.1%(76/104)
Sneezing	65.0%(65/100)

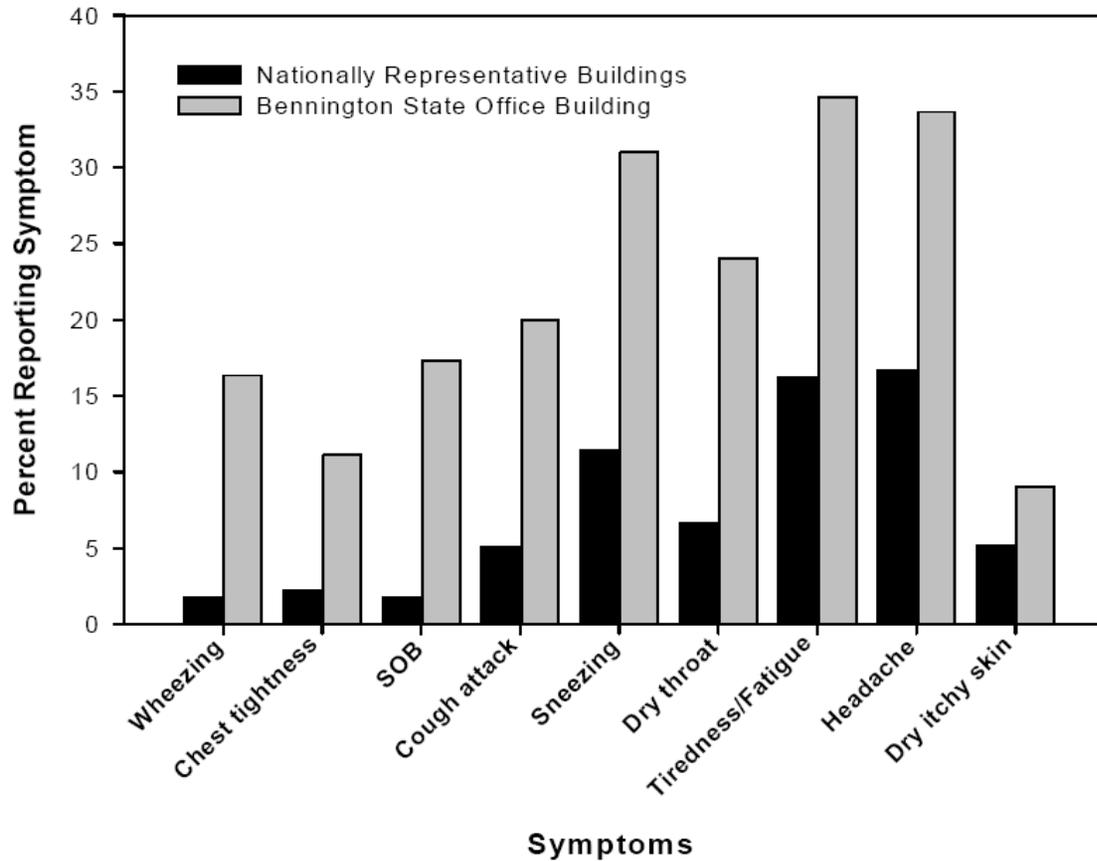
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**Figure 2.2 Bennington Building Compared to the General US Population**



**Note:** Data are compared to US population data (NHANES III) and are adjusted for age, sex, race and smoking status.

**Figure 2.1 Bennington Building Compared to 100 Nationally Representative US Buildings**

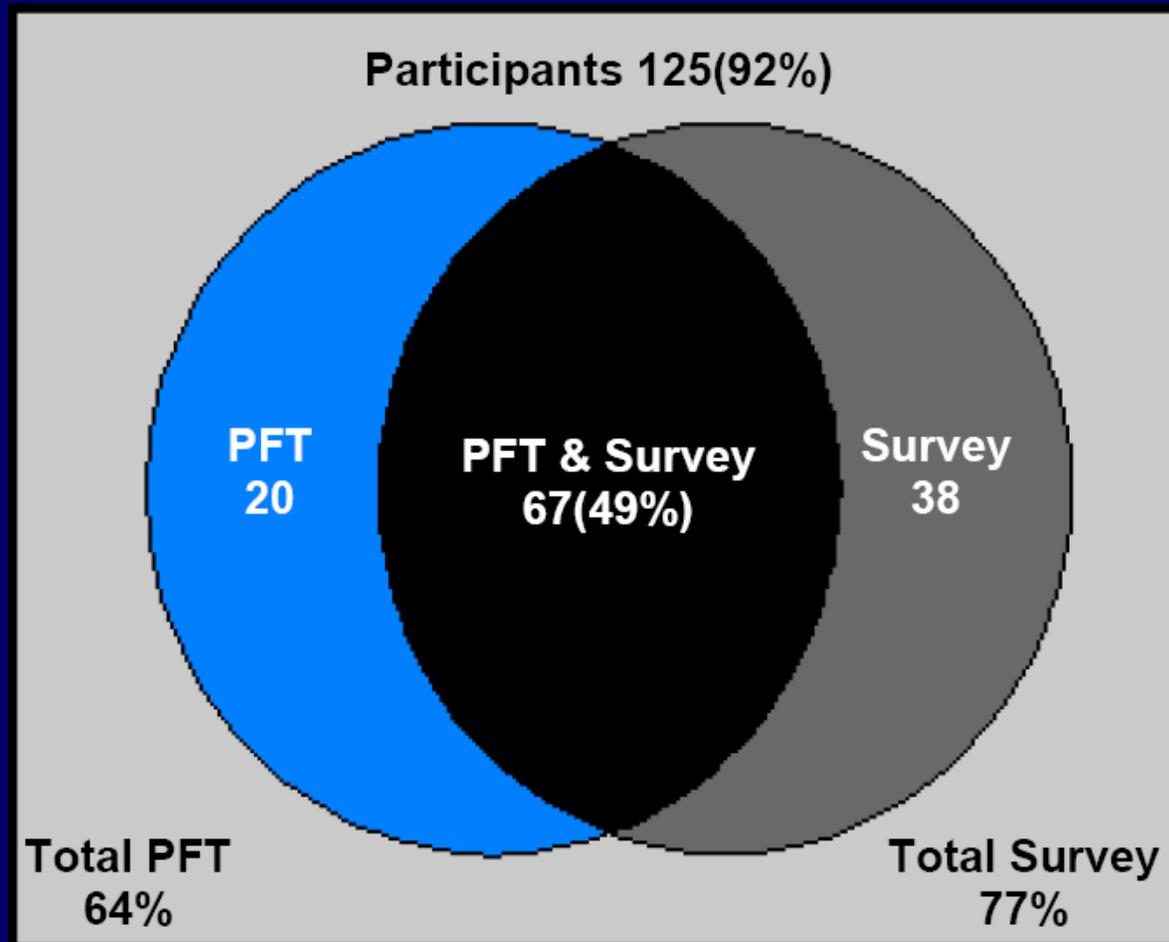


**Note:** Comparisons are among building occupants who experienced symptom in the last 4 weeks and stated feeling better when away from the building. Comparison data are from EPA study referenced in section 2.1.

# NIOSH – Pulmonary Function Testing (PFT)

- Spirometry
  - Amount and speed air can be exhaled
    - Asthma, cystic fibrosis, COPD
- Methacholine challenge
  - Hyperresponsive airway test
    - Asthma
- DLCO
  - Measures difference between inspired and expired carbon monoxide
    - Emphysema, cardiac insufficiency, pulmonary hypertension

# Participation



## Pulmonary Function Tests and Self-Reported Characteristics

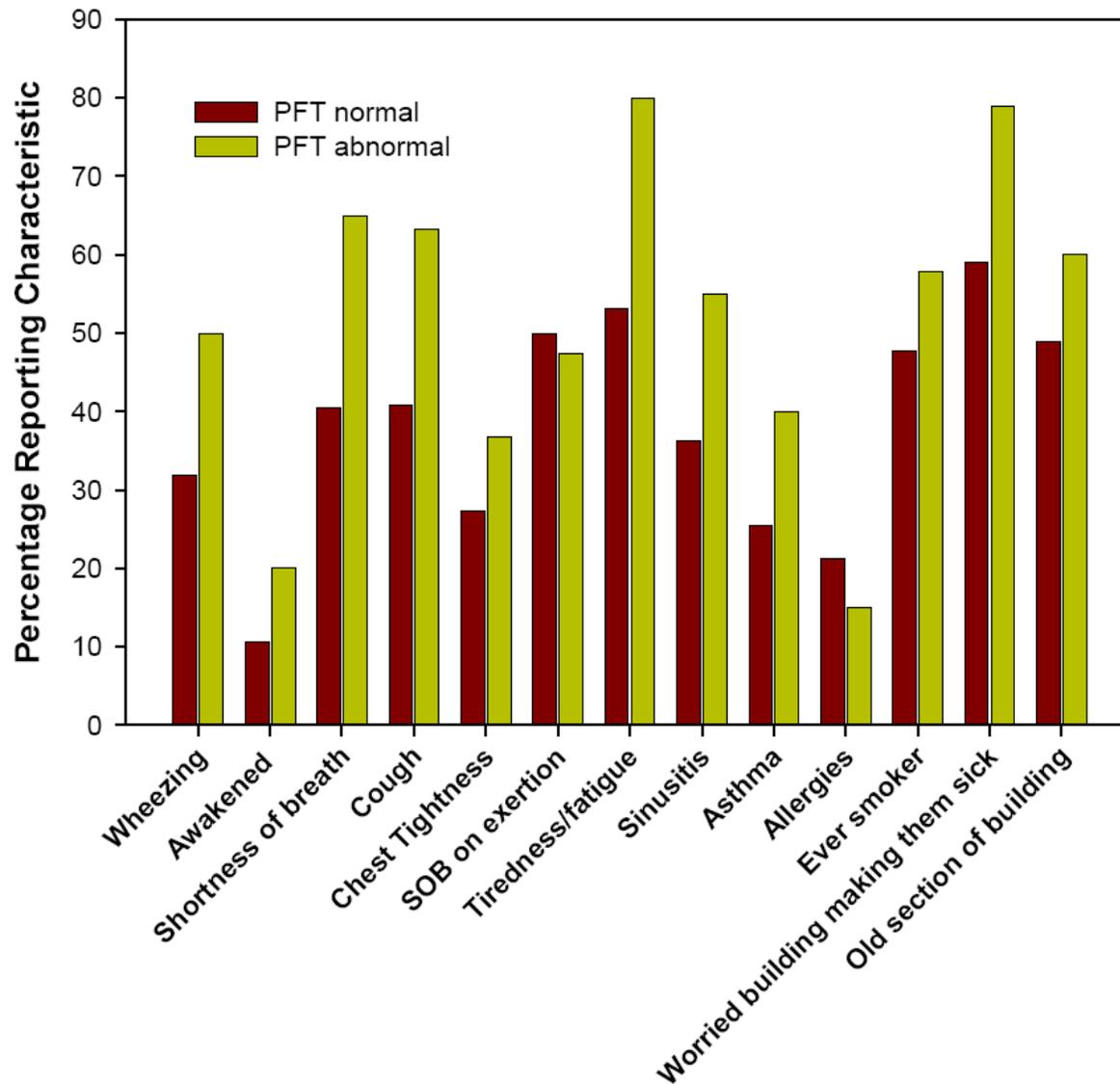
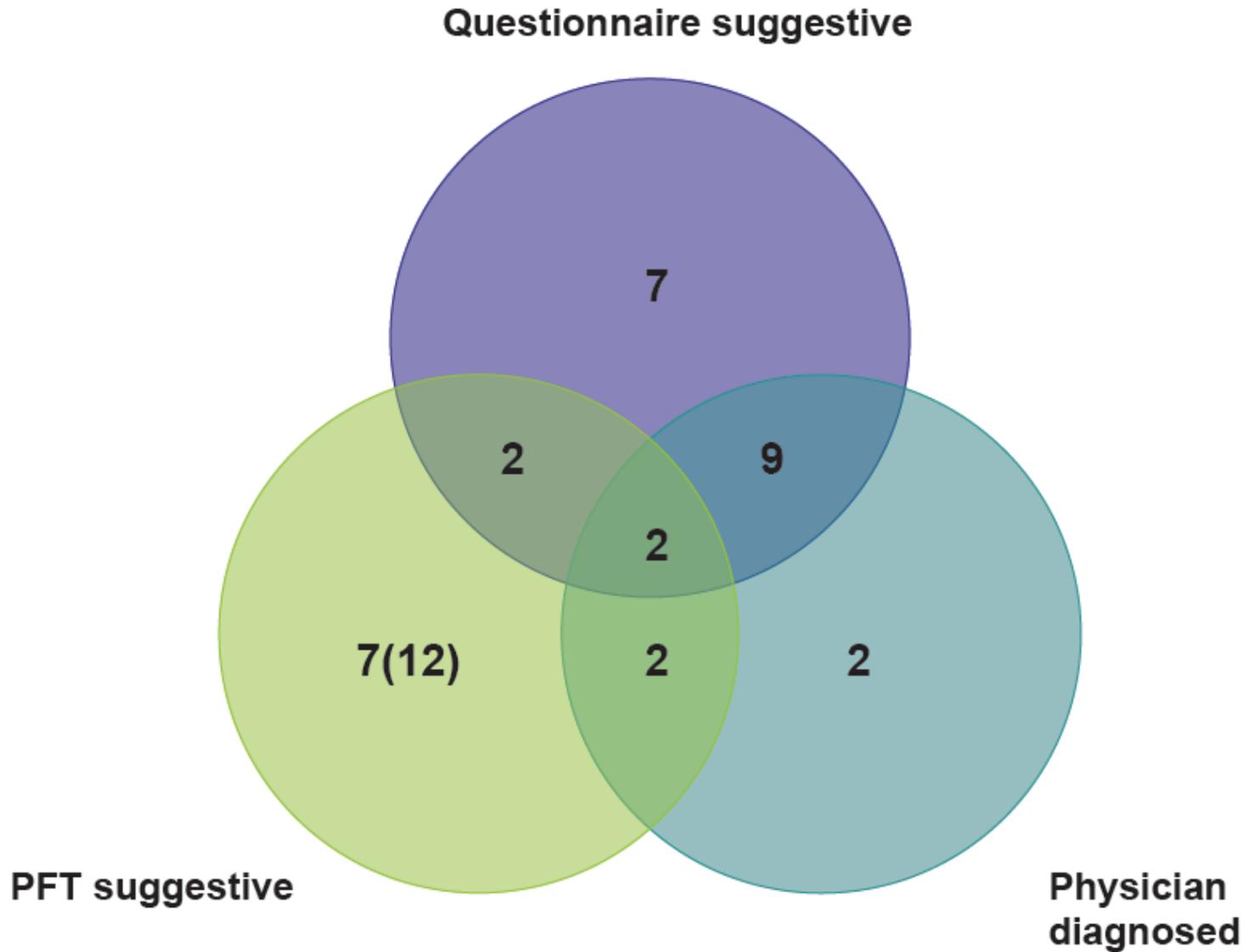


Figure 2. Percentage of symptom reporting by normal or abnormal PFT test. Any abnormal PFT findings are included in the abnormal category (green bars) compared to all normal findings (red bars).

# Asthma



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**Table 9. Current asthma prevalence with changing case definition**

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Physician-diagnosis	15.4%(16/104)
Questionnaire suggestive (>3 resp. symptoms)	19.2%(20/104)
Methacholine challenge abnormal	15.4%(10/65)
PFT suggestive (MCH or obstructive abnormal)	20.7%(18/87)
Questionnaire and PFT <sup>a</sup>	46.3%(31/67)
Questionnaire or PFT <sup>b</sup>	28.8%(36/125)
Questionnaire or PFT <sup>c</sup>	26.5%(36/136)
<hr/>	
United States	7.9%(7.7-8.0)
Vermont	9.9%(8.9-10.9)
Bennington county	10.3%(8.5-12.5)

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# Former Occupant Survey

- Response rate  
39%(119/303)
- Physician diagnosed asthma  
22%(26/119)
- Asthma onset during occupancy  
39%(10/26)
- No additional sarcoidosis cases identified

# County and State Comparisons

- 5 major insurers covering 70% Vermonters

## Sarcoid Rates Per 100,000 population 2001-2005

– Vermont	169
– Bennington county	203
– Bennington building	1,600 - >2,200

# Conclusions

- Elevated rate of sarcoidosis
- Elevated rates of asthma and asthma-like illness
- Elevated rate of asthma onset post-building occupancy
- PFT testing generally confirmed health survey findings

# Next Steps

- Relocation of employees – mobile unit preparation
- Building diagnostics underway
- PFT retesting prior to reoccupancy

# Acknowledgements

