

BUILDING HEALTH SCIENCES, INC.



A Division of The NMAS Group



White Coats and Hard Hats...Bringing Medical and Scientific Principles to Building Diagnostics

HEALTH EFFECTS OF CORROSIVE DRYWALL: PRELIMINARY HUMAN HEALTH DATA



November 6, 2009

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Status of Indoor Air Testing Research

- CPSC indoor home air testing data not yet released
- Limited indoor air testing data from FL and LA
 - Limited findings of reduced sulfur compounds
 - Hydrogen sulfide same in test homes, control homes and outdoors. Outdoor sources appeared to be contributing to indoor levels
 - Test homes, in general, had more odor-active sulfur compounds
 - All levels below known toxicological levels
- Probably less relevant than air corrosivity studies which are underway by private entities, including our group

Government Studies' Conclusions about Health Impacts

- Reduced sulfur compounds, sulfur dioxide, and inorganic gases generally below health guideline levels set by EPA, ATSDR and others.
- Formaldehyde and acetaldehyde, at times, at levels which exceeded maximum health guideline levels; might produce irritation, but no difference between control and test homes
- Not likely that aldehydes have anything to do with corrosive drywall

Government Studies and Irritant Effects

- Possible irritant effects involving Trigeminal nerve and nerve endings in nose
 - *Neurogenic inflammatory response*
- Expected to be transient
- Might affect eyes and upper airways

Neurogenic Inflammatory Response

- Sneezing
- Nasal stuffiness
- Rhinorrhea (runny nose)
- Eye irritation
- Headache
- Sinus congestion
- Cough
- Throat irritation
- Wheezing

Symptoms / Conditions Reported In Our Study Population

- **18** Subjects Evaluated
- Reported Complaints
 - 9 Cough
 - 5 Sinus Problems (congestion; PND; pressure)
 - 7 Headache
 - 3 Red Eyes
 - 9 Fatigue
 - 2 Asthma
 - 2 Nosebleed
 - 2 Frequent respiratory infections

How the Clinical Evaluations Were Done

- Complaint form
- Physician interview
- Physical examination
- Differential Diagnosis
- Laboratory testing

Symptoms Reported by Study Population

- EYES: red, tearing
- RESPIRATORY TRACT: runny nose, nosebleeds, cough, chest congestion, sinus problems, asthma (new; exacerbation), frequent infections
- HEADACHE
- FATIGUE
- OTHER: corneal erosions, growth retardation, memory impairment, sleep disturbance

Exposure History of Study Population

EXPOSURE DURATION	NUMBER
Two Months	3
Eighteen Months	4
Two Years	6
Three Years	1
Five Years	2
Eight Years	2

Correlations Between Complaints and Physical Findings

LOCATION	NUMBER WITH COMPLAINTS	NUMBER WITH OBJECTIVE FINDINGS
Eyes	4/18	2/4
Cough	8/18	5/8
Headache	8/18	0
Chest/respiratory congestion	3/18	0
Sinus Problems	5/18	1/18
Asthma	2/18	1/2
Fatigue	8/18	0

Correlation of Symptom Frequency/Type with Odor Intensity

	No Odor [one home]	Odor: 2+ [four homes]	Odor: 3+ [three homes]
AVERAGE NUMBER OF SYMPTOMS PER OCCUPANT	3	2	3
TYPES OF SYMPTOMS	Respiratory Fatigue	Respiratory Headache	Respiratory Headache Fatigue

Symptom Improvement After Leaving Home

Individuals	Time out of Home	Total Exposure
8	Less than one week	5 years [2] 8 years [2] 1.5 years [1] two months [3]
10	One to two weeks	1.5 years [3] 2 years [6] 3 years [1]

Evaluation of Subject Homes

- Physician visited homes of subjects
- Observations made of
 - Corrosion: Amount and location
 - Odor: Intensity rated by physician and occupants
 - 0-3 scale
 - Characterization of the odor described by occupants

Findings in Subject Homes

NUMBER OF HOMES	EVIDENCE and LOCATION OF CORROSION	PRESENCE and INTENSITY OF ODOR [1-3]
EIGHT	8/8 A/C COILS FAUCETS/KNOBS SILVER OBJECTS	1: 0 4: 2+ 3: 3+

Preliminary Classification of Medical Findings

- Symptoms/conditions potentially caused or aggravated by corrosive drywall:
 - Largely involve the mucous membranes of the upper respiratory tract and the eyes.
 - Some pre-existing conditions pre-dispose individuals to adverse health effects:
 - Symptomatic allergies to aero-allergens
 - Sinus problems
 - Dry Eye Syndrome
 - Asthma
 - Most effects were transient and resolved fully soon after exposure ceased

Anecdotes/Case Reports Versus Epidemiology

- Thus far, 18 occupants have been evaluated
- This provides a roadmap for further studies
- Formal studies require
 - **Environmental data** Corrosivity and odor-active compound measurements seem ideal
 - **Matched controls** Affected and unaffected homes and occupants
 - **Blinding** of examining physicians
- A proposed outline of a formal epidemiological study is delineated in our poster presentation.

Special Thanks to:

- Howard Weiner, MD, Medical Assessment Institute, Inc., Boca Raton, FL
- Ed Light, CIH, Building Dynamics, Ashton, MD
- Chuck Stefan, Mitchell Homes, Mobile, AL