

BBS Newsletter



Bob Taft
Governor
Gerald O. Holland
Chairman

'Sick Building Syndrome': A Diagnosis in Search of a Disease?



Dr. Ronald E. Gots (The International Center for Toxicology and Medicine) - Ten years ago, in 1988, I spoke at an international meeting of indoor-air specialists. There were 200 attendees. Six years later, when I spoke at a similar meeting held by the same organization, 10,000 people attended. Does this explosive increase in interest reflect an increase in our understanding of a new disorder, as has occurred in AIDS research? I would argue that this exponential increase in interest is related less to an increase in understanding than to the misperception, characterization, and exaggeration of a problem. Suggestive of this is the gold rush of entrepreneurialism devoted to indoor air "solutions." Duct cleaners, makers of air-cleaning devices and vacuum cleaners, and purveyors to physicians and industrial hygienists of air testing, mold

cleaning, carpet analysis, and newly formulated paints—all have brought their particular expertise to this burgeoning marketplace. Most remarkable is that this chaotic industry, with its motley army of providers, is an industry in search of a problem that occurs only rarely. But all too often, the awareness of a "problem," coupled with a legion of "problem solvers," is enough to trigger complaints about indoor air. A February 1997 incident at National Airport in Washington, DC, illustrates the degree of our fear of indoor environmental dangers. When someone reported smelling a "noxious gas" in a terminal, evacuation was ordered. Hundreds of people fell ill. A hazardous-materials crew in protective suits combed the building and found the culprit—bananas rotting in a trash can.

Such occurrences are not unusual; odors and fears are common causes of health-related indoor-air complaints. In 1992 air-quality consultants forced immediate evacuation of a Florida courthouse, proclaiming that the mold therein placed occupants at risk of cancer. The 1989 construction of the building had cost \$11 million; its renovation, overseen by the same consultants, cost \$9.5 million. In legal actions, pre-renovation occupants of the courthouse have alleged that they were injured. The building had indeed contained mold. All buildings in South Florida contain mold. But the mold in the courthouse had not been an unusual or immediate danger to employees. Such irresponsible misuse of "expertise" could cost hundreds of millions of dollars in inappropriate expenditures. In 1992 several dozen

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In the News Around Ohio



MEDINA—Medina County Building Department requires that all new residential construction obtain a certificate of occupancy before the owners move in.

But since the Department isn't required to be notified when a home is sold, (most mortgage companies don't require them) the home are occupied without them.

In Medina County, the building department issues about 900 new-home permits annually.

The building department has about 600 construction permits issued that were expired or close to expiring and had never received final-inspection approvals.

There are no state requirements for residential construction, according to Thomas Jamieson, president of the Ohio Building Officials Association. Building codes vary from community to community.

The problem is not isolated to Medina County. Similar problems have been reported in Geauga County, Summit County, and other counties in Ohio.

TOLEDO—The City of Toledo will accept over \$70,000 in federal grants to install residential fire sprinklers in 14 homes.

Two recent fires in recent days which have resulted in the deaths of seven children have been brought up as justification for proposing a city-wide requirement for residential sprinklers.

City Council voted Tuesday to accept the \$73,500 from the FEMA and the Northwest Ohio Development Agency to sprinkle the new homes.

Later this year City Council will probably consider a proposed ordinance from Toledo fire service that would require all new homes and homes with major renovation to have sprinklers installed. Unfortunately, any new requirement would probably exempt older existing homes. The types of homes where most of the fires and fire deaths occur. These regulations also tend to make suburban locations more desirable than urban locations for new development.

The cost of installing sprinklers is about \$3,000 for a 2,000 ft² home. Builders report that homeowners generally dislike the appearance of these systems and do not want to pay the premium in construction and insurance dollars to have them installed.

WAUSEON - A historic apartment building that burned June 28 in a fire which killed two people was in compliance with the applicable codes.

Existing buildings must be brought into compliance with the code if they are altered, there is an addition, or if there is a change of occupancy.

The building was retrofitted with exit lights, smoke detectors, and fire extinguishers in 1992. It was not required to have a sprinkler system installed.

The building was valued at \$76,800. The structure has subsequently been demolished.

COLUMBUS - The city will pay about \$38,000 to four firefighters to watch over a haunted house at the state fairgrounds that the Fire Department says might not be safe.

A Columbus fire-prevention officers said the castle at the Ohio

State Fair doesn't have sprinklers or an automated alarm system; city code requires haunted houses to have both. The owner has agreed to assist in paying for the firefighters.

The city's cost is the cost to keep the four firefighters at the fair for 17 days.

The owner thought the problem was solved when they worked out a compromise in July with state fire officials by agreeing to place employees above the maze, watch for problems, and have fire extinguishers on hand if any fire started.

The idea won the approval of State Fire Marshal but didn't appease Columbus firefighters because they couldn't see the whole maze.

A final agreement called for firefighters to be stationed at the haunted house and for employees to walk the maze floor to serve as a type of fire watch.

BOWLING GREEN - Individuals planning to build homes in Wood County can get information about the building permits procedures in a new brochure about residential construction.

The brochure is available from the Wood County Building Department, the county engineer's office, or the county planning commission.

NEW YORK - Experts said Tuesday that code requirements for high-rise buildings should be revised to require wider emergency stairways and stricter protections against heavy fires.

Consultant Jake Pauls told the city's World Trade Center Buildings Codes Task Force that the city's code is outdated by 30 to 40 years. He encouraged make them

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H.B. 337 revises sealing requirements; regulates electronic seals



A revision to Ohio R.C. 4733.14 contained in H.B. 337 - which became effective August 7, 2002 - revises the requirements for the sealing of documents by a Professional Engineer (PE) or Professional Surveyor (PS) and regulates the use of electronic seals. Under the new law, a PE or PS must seal, sign and date all of their engineering or surveying work products (e.g.; plans, plats, reports, etc.). The signature and date must be handwritten. The document may be sealed manually or with a com-

puter-generated seal, but documents transmitted electronically must have the computer-generated seal removed before transmission and must contain, in place of the seal, the following language: "This document was originally issued by [name of registrant] on [date]. This document is not considered a sealed document." The new requirements will allow for electronic transmission of engineering or surveying documents for review, comments, approvals, bids, etc. while providing appro-

priate safeguards to assure that the official work products are those actually issued by the PE or PS instead of documents which may have been altered by third parties.

Due to passage of H.B. 337, all public agencies in Ohio will have the authority and responsibility to reject engineering plans not prepared by a Professional Engineer (PE) or surveying plans not prepared by a Professional Surveyor (PS)

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Legally Speaking — John Brant

Have you ever been asked by a general contractor or a subcontractor about a notice of commencement? What it is, what it does, where does one find it, and where is it to be filed? These are questions frequently asked of the Board of Building Standards staff. Probably, building officials and the office staff of many certified building departments have also been asked these questions.

In 1991, the General Assembly radically revised the Ohio Mechanics' Lien Law with the changes applicable to construction projects that were started after January 1, 1992. A mechanics lien is a court order that encumbers real property and improvements of the property until the lien is released. Basically, mechanics' liens are designed to help an individual or company which provides construction services or materials to receive payment for their work or materials. The law provides for three different types of mechanics' liens and the procedures for perfecting them; they are for residential, commercial, and public projects. The

only one discussed in this article is mechanics' liens relating to commercial construction projects built under the Ohio Building Code.

The law enacted in 1991 is based upon a notice theory and provides that the owner of the property where a construction project is starting is required to prepare and file a Notice of Commencement (NOC) prior to commencement of the work. This notice of commencement is meant to provide all lower tiered subcontractors and material suppliers with information as to who the property owner is and who the general contractor is. Additionally, all subcontractors and material suppliers are required to serve Notice of Furnishing upon the owner and the general contractor. These notices provide the owner with information as to who is working on the construction project and who might be potential lien claimants if the general contractor fails to pay subcontractors and material suppliers. The owner is then able to monitor the situation to see that parties are

paid. If the owner does this, he can realize the protections provided by the statute.

The Notice of Commencement is a legal affidavit that must meet the requirements of Section 1311.04, Revised Code. The notice requires certain specific information such as the legal description of the property, a description of the improvement to be made on the property, the name and address of the owner(s), the name and address of the general contractor, the name and address of any lending institution(s), the name and address of any surety bond providers, and a specific notice that any one providing construction services or materials has to timely record and affidavit pursuant to Section 1311.06, R. C.

The Notice of Commencement must be timely recorded in the county recorder's office where the building is located.

To help parties impacted by the notice of commencement requirement, the Board of Building Standards is providing a Notice of Commencement form on its internet website and on its faxback service. If you have requests for the form, please send them to our site.



NES Reports Update:

NES reports are available online at www.nateval.org. Once you get there and you click on Evaluation Report Listing, you will be able to search for any report you're interested in. The following reports, for example, are ones that have been removed for various reasons and should not be accepted (list also available online).

The report number column represents, obviously, the number assigned to the product or agency evaluated. NER stands for "National Evaluation Report" and the PCR is an acronym for "Product Category Report". A Product Category Report is an interim category reserved for certain products (usually plumbing) that comply with a specific standard or

code section. It is given the same status as an evaluation report.

The next column is the company name which is followed by the close date. The close date column represents the date that the report expired. The section numbers represent the category within a system of divisions where the reports are located. Each division is organized in a system similar to the system CSI uses

<u>Report No.</u>	<u>Company</u>	<u>Close Date</u>	<u>Section</u>
NER-610	Celotex Corporation	August 1, 2002	07195
NER-531	MATRIX Precast Autoclaved Aerated Concrete, L.P	July 25, 2002	04200
NER-558	MATRIX Precast Autoclaved Aerated Concrete, L.P	July 25, 2002	04200
NER-367	Broan-Nutone LLC	April 1, 2002	15850
NER-TL526	Celotex Corporation	March 7, 2002	01410
NER-192	Ytong, Inc.	March 7, 2002	03410
NER-590	Willamette Industries, Inc.	March 1, 2002	06195
NER-301	Lifetile Division/Boral Concrete Products	January 30, 2002	07320
NER-102	Jancor Companies, Inc.	January 7, 2002	07460
NER-539	United States Brass Corp.	January 1, 2002	15510
PCR AV103	Studor, Inc. (Replaced by NER-592)	November 1, 2001	15100
NER-406	James Hardie Building Products, Inc.	October 1, 2001	07310 & 07320
NER-320	McDonald's Corporation	October 1, 2001	11425
NER-524	Building Components Manufacturing Inc.	July 1, 2001	06170
NER-149	CertainTeed Corporation	March 1, 2001	07200
NER-410	Corev America, Inc.	March 1, 2001	07240
PCR FF102	Moen Incorporated	March 1, 2001	15440
PCR PP101	United States Brass	March 1, 2001	15060

Around the Code World with Mike Brady



THE MISSING BUILDING OFFICIAL

Section 103.2, paragraph 4 of the Ohio Building Code (OBC) allows any municipal corporation, township, or county with a certified building department to contract with qualified persons, firms or corporations to exercise code enforcement on their behalf. Of the approximately 228 active certified building departments in Ohio, about half of them contract for the services of certified persons or firms.

One of the recurring problems we've noticed is that, while building departments are required to

maintain a physical presence in their jurisdiction, access to the contract building official, plans examiner or inspector is nearly non-existent. Why? Because, in many cases, contract personnel are working full-time in other jurisdictions and they don't have enough time to devote themselves to their "second jobs."

Meanwhile, back at the building department, the clerical staff sometimes has no clue who the building official is because he or she never talks to them and, worse yet, they sometimes send the customer to another department or another office instead. Section 103.2, paragraph 7 and

Section 109.1 of the OBC require that certified building departments be staffed so that all inspectors are available for requested inspections and that failure to inspect the work within four business days allows the work to proceed. For most building departments, however, this is not a problem and most complete their inspections within 24 hours of a request. But for those departments where it can take several days to track down the building official, meeting this requirement can be all but impossible.

There is an unmistakable message
(Continued on page 6)



Getting Mechanical - Debbie Ohler

Can you feel the energy?

No, this is not an article about New Age metaphysical stuff like auras, chakras, etc. Although I would love to talk for hours on the philosophy of being and of reality, Steve would probably prefer that I relate my thoughts somehow to code issues! So, in this article, I hope to enlighten readers on the current state of **energy** code issues.

You may have noticed that Chapter 13 of the 2002 OBC changed very little from Chapter 13 in the 1998 OBBC. The only change that you should have immediately noticed was that we now are referencing the *International Energy Conservation Code* in lieu of the *CABO Model Energy Code*. If you dug a little further back into Chapter 35, you would have noticed that the reference to ASH-

RAE 90.1 changed from the 1989 codified edition to the 1999 edition.

It has always been a little confusing to me and I have fielded many calls in which I have had to clarify the many energy compliance alternatives available to owners. Therefore, I thought it might be beneficial to put together the following flow chart that outlines the many options available to show compliance with the energy provisions of the building code.

You will notice that the chart lists several software packages that can be used to show compliance with the energy requirements of the Ohio Building Code. Although, COM-check, MEC-check, and the other free software packages developed through the U.S. Department of Energy (available at www.energycodes.gov) may be

the most popular tools for showing compliance, they are not the only software tools permitted to be used.

This article will not get into the specifics about the technical differences between the referenced standards (I will save that for an article in the next newspaper). However, I will mention that we are planning to work again with the Ohio Department of Development, Office of Energy Efficiency and other parties with whom we have worked in the past to update and revise the prescriptive packages that were developed for Ohio prior to the adoption of the 1998 OBBC.

I hope that the following flow-chart helps you to weave your way through the many compliance options. As you can see, the topic of **energy** is very dynamic!

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Code World

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to all contract building officials, plans examiners and building inspectors: “Don’t bite off more than you can chew.” If you are supposed to be serving another building department and you don’t have enough time to perform your duties, then leave now before someone files a complaint.

This is also a clear message to all certified building departments with contract personnel: “Use it or lose it.” If you aren’t educated about the process or if you aren’t connecting your customers with your certified personnel in a timely manner, you also risk complaints, subsequent investigation, and possible decertification action.

If you are considering entering into a contract with a certified building department, make sure you will have the time to properly enforce

the code. It would be wise to spend a little time of your own checking out their operation before you make such a commitment. Above all, be careful, because if a complaint is filed against the building department, you might also get dragged into the subsequent investigation. If you are already a building official under contract with a certified building department and you know you have the time, make sure you communicate with your staff on a daily basis, set up a process (if there isn’t one already) whereby people in your jurisdiction can contact you. Building officials, make sure you communicate with and exercise oversight over your plans examiners and inspectors. Make sure all the proper procedures are in

place and that the correct documents are available and are being used.

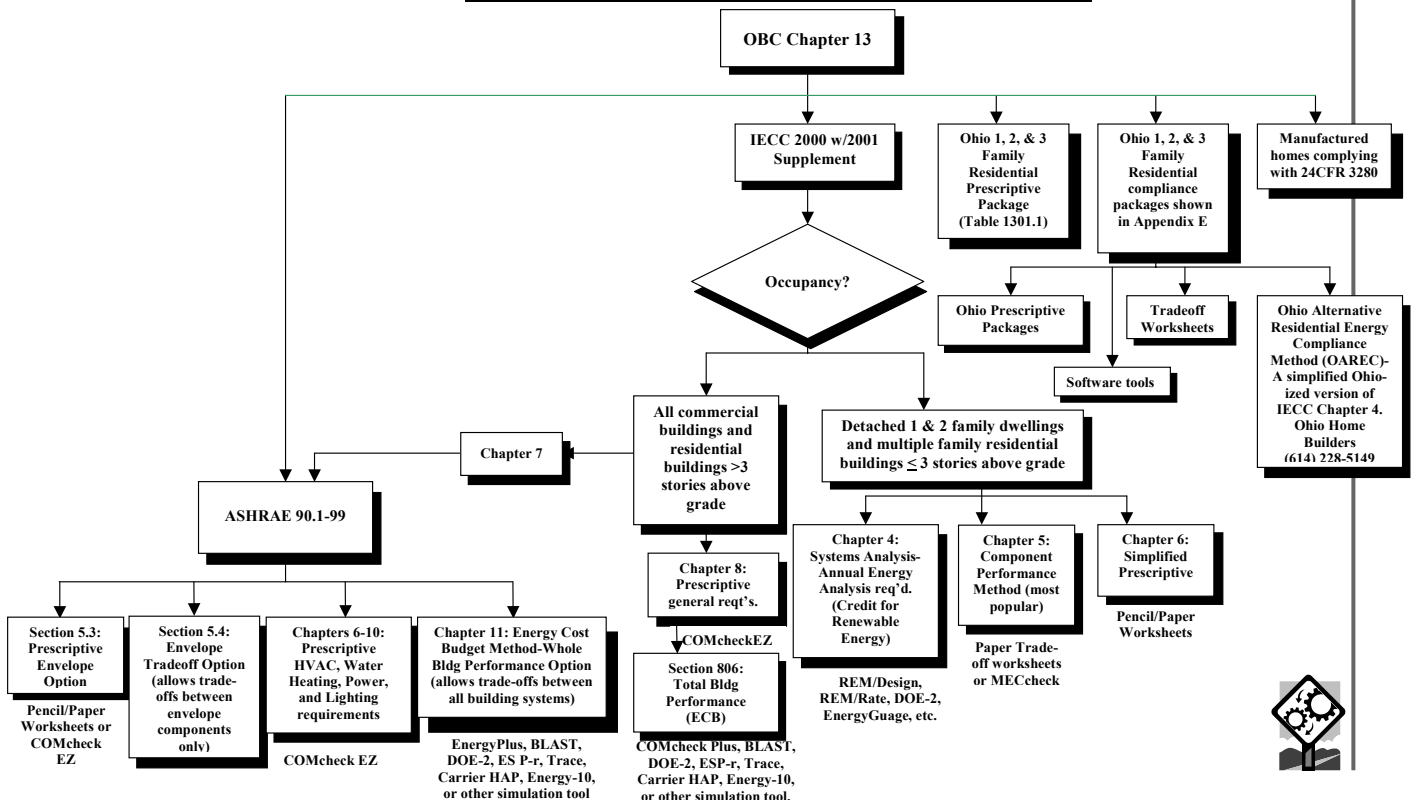
If you are in a back-up position with a department make sure you have discussed the situation with your department’s legal counsel or have an agreement in place authorizing you to provide services to another jurisdiction. Some cases have occurred in which the back-up personnel do not even know that they are listed in a backup position for another jurisdiction. Paying attention to the details can have a great impact on your success in the profession of code enforcement.

Doing your job correctly doesn’t take that much time and it can save a lot of trouble for you in the future.



Getting Mechanical

OHIO ENERGY COMPLIANCE FLOWCHART



Making it Accessible - Jan Sokolnicki



Applying the New OBC Accessibility Provisions for Residential Occupancies

After numerous calls asking for clarification on how to correctly determine what projects and types of dwellings must have accessible or adaptable units.

NON-TRANSIENT OCCUPANCIES GROUP I or R

Small Structures

Residential structures exempt from the OBC do not require accessibility under Ohio law. However, when there are more than 3 units in a structure, or if any unit has more than 5 lodgers, boarders, or persons being provided with care, more questions must be answered to determine what, if any, accessibility provisions apply. It is critical to understand that this question applies to the structure, not to a building separated from another by a fire-wall.

Elevators

The level of accessibility required is also dependent on whether or not the building has an elevator. Elevators are required in:

- R-1 occupancies > 2 stories in height when each story is 3,000 ft² or more in area.
- R-1 occupancies > 3 stories in height.
- R-2, R-3 & R-4 occupancies > 3 stories in height.
- I-1 occupancies > 2 stories in height when each story is 3,000 ft² or more in area.
- I-1 occupancies > 3 stories in height
- All I-2 occupancies > 1 story
- Any multi-story I or R-1 occupancy owned or leased by a public entity

Accessible, Types A & B units

There are three types of units:

“Accessible” - a sleeping or dwelling unit with features designed & constructed in accordance with ADAAG.

“Type A Unit” - a dwelling unit with features designed & constructed in accordance with Section 1002, ICC/ANSI A117.1-98. (This criteria is similar to an accessible unit but with some adaptable details.)

“Type B Unit” - a dwelling or sleeping unit with features designed & constructed in accordance with Section 1003, ICC/ANSI A117.1-98. (This criteria is less restrictive, more adaptable.)

The configuration of the building determines what type(s) of units are required.

Residential Buildings with Elevators

- All R-1 occupancies are required to have the number of accessible dwelling & sleeping units specified in OBC Table 1107.6.11.
- All units in R-2 buildings of 20 or fewer shall be Type B units.
- R-2 buildings with more than 20 units require 2% to be Type A units. The remainder shall be Type B units.
- When R-2 buildings have units with multiple levels, only the level served by the elevator must have a bathroom and comply with the Type B criteria.

(R-3 & R-4 occupancies typically only occur in non-elevator buildings)

Residential Buildings Without Elevators

- All R-1 occupancies are required to have the number of accessible dwelling & sleeping units specified in OBC Table 1107.6.11.

- R-2 buildings with more than 20 units require 2% to be Type A units.
- Multi-level units in R-2 & R-3 non-elevator buildings are not required to be Type B units.
- When R-2 & R-3 buildings have unit(s) with all the living space on one floor/level, at least one floor/story must be connected via an accessible route to the exterior access and all units on that floor (other than Type A units) must be Type B units.

R-4 occupancies typically occurring in a separate, single dwelling unit are required to be accessi-



Training News

(Continued from page 9)

able to secure an average discount of over 45% savings under list price due to bulk purchasing.

The Board has also made special arrangements with the West Group for the purchase and distribution of the JULY 2002 Supplement to the Ohio Building Code and other Related Codes. The Board's arrangements with the West Group will result in the shipment of the JULY 2002 Supplement directly to each certified building department that attended the Board's training. The Board has provided the addresses for each department and the West Group will ship the supplements to each department beginning the first week of September. If you attended the Board sponsored training and do not receive a 2002 Supplement, please contact our office. The 2002 Supplements were also purchased using the Board's 3% assessment fund at a substantial savings and will also be provided, at no cost, to each certified building department.



In the News Around Ohio

(Continued from page 2)

to make changes such as increasing the minimum 44-inch wide stairwells by a foot.

A structural engineer said codes should require building planners to consider the effects of a fire similar to the way they design for earthquakes and wind loads. A federal report (reported on in the June issue of the BBS Newsletter) by FEMA in conjunction with the Structural Engineering Institute of the American Society of Civil Engineers, recommended no changes in building codes but called for new training to save lives of rescue workers in future terrorist attacks.

The city task force was gathering opinions from government agencies, architects, engineers, witnesses and the families of victims of the attack. It will submit a report by December. **LORAIN** - Lorain's Mayor plans to ask city council to pass an ordinance that forbids new manufactured homes from being placed in the city.

The intent is to see no more manufactured homes into the city.

The ordinance is being drafted by the city's Safety Service Director with input from Council and Planning Commission.

The executive director of the Ohio Manufactured Homes Association said an Ohio Supreme Court decision in May affirmed Canton's right to ban the homes. The decision also stated that townships and counties cannot ban the homes.

The community development director said all but one of the dozen homes the city has built recently for its infill housing pro-

gram have been built on-site.



ICC Codes on Internet

The International Code Council (ICC) has recently launched its eCodes® Online Subscription Service, making access to the latest codes easier than ever.

Subscribers to the new service may download an array of codes in Adobe eBook Reader format on to a desktop or laptop computer. After downloading, they may search quickly throughout the complete code, highlight passages, make annotations, create bookmarks, or have the text read aloud. Subscriptions vary in duration and price, and provide users with 24-hour-a-day access to the following codes:

- International Building Code
 - International Residential Code
 - International Fire Code
 - International Plumbing Code
 - International Mechanical Code
 - International Fuel Gas Code
 - International Energy Consv. Code
 - International Pri. Sewage Code
 - International Prop. Maint. Code
 - International Zoning Code
 - Florida Building Code (Building, Fuel Gas, Plumbing, Mechanical, and Test Protocols)
 - New York State Code (Building, Residential, Fire, Plumbing, Mechanical, Energy Consv, Fuel Gas, and Property Maintenance)
 - North Carolina Building Code
- ICC plans to release more eCodes shortly. Code users can visit www.ecodes.biz for complete subscription information, updates on the latest code additions, and free downloads of related documents. For more information please call, (205) 591-1853, ext. 268.

Sick Buildings



(Continued from page 1)

employees of the U.S. Environmental Protection Agency (EPA) claimed that their building had made them sick. They forced the closing of the building and the relocation of their headquarters. Yet no tests have confirmed their alleged illnesses, much less a building-related cause. In the legal action that ensued, it was found that most of the litigant employees had symptoms of mental or emotional origin.

How did this widespread state of high anxiety over indoor air develop? It may have begun with the death of 29 members of the American Legion who attended a 1976 convention at the Bellevue Stratford Hotel in Philadelphia. Mysteriously, 182 of the conventioners contracted a form of pneumonia that was later called "Legionnaires' disease." Eventually the disease was traced to a bacterium (*Legionella pneumo-phila*) in the hotel's air-conditioning system. Whenever the system was on, it spewed bacteria through the building's air vents. In this case, both the identity of the culprit and the identity of the disease became clear-cut. At the time of the 1976 American Legion convention, the Bellevue Stratford Hotel was indeed hazardous.

When people die from contaminated indoor air, as did 29 of the American Legion conventioners, the clinical end point is

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Training News—Billy Phillips



BOARD PROVIDES JULY 2002 BUILDING CODE SUPPLEMENTS TO CERTIFIED BUILDING DEPARTMENTS.

During the past couple of months the Board of Building Standards provided valuable training and distributed important codes and standards to approximately 228 certified building departments throughout the State. The Board distributed 17 different codes and standards to each certified building department that attended the training sessions provided by BBS staff in Reynoldsburg. The codes and standards distributed included the following: Ohio Building Code, Overview of the Ohio Building Code, IBC Commentary, 2002 NFPA 70 NEC/ Handbook, 2002 NEC Analysis of Changes, ASHRAE 90.1, ASHRAE 90.1 User's Manual, NFPA 13 Handbook, NFPA 72 Handbook, 2000 International

Energy Conservation Code, 2000 International Fuel Gas Code, 2000 International Residential Code, ASCE 7 – Minimum Design Loads, Seismic Design Parameters CD, ASCE 24 – Flood Resistance Design & Construction, ANSI A117.1 Accessibility Guidelines and code tabs for the IRC, IFGC, & IECC.

During the 2 hour training session staff member Steven Regoli provided building officials with an overview of the codes and standards and also provided insight into the many changes throughout the new codes. The technical documents were distributed and the training was provided, at no cost, to the certified building departments that attended the training. The total cost of the package to purchase the technical documents exceeded \$200,000 and was paid using the Board's 3% assessment fund. The Board was

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H.B. 337

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New language in Ohio's Revised Code 4733.23 states in part that "... no public authority, as defined in division (A) of 153.65 of the Revised Code, shall accept or use any engineering or surveying plans prepared by any person not registered as a professional engineer or professional survey under this chapter."

As the Board recommended for Architect's seal requirements, if engineering documents are submitted to a certified building department for review which are not properly sealed, the department should not review the documents but notify the State Board of Registration of Professional Engineers & Surveyors at 614-466-3650. Building departments can check the Engineer Registration Board's web site at www.peps@state.oh.us to determine whether they are registered in Ohio and subject to these rules.

Also, there is no embossed seal requirement in this bill for engineers' construction documents.



Reader Comment Form

Please send us any comments or questions you would like to have answered by the Board or its staff in an upcoming issue.



Information provided in newsletter:

- Great
- O.K.
- Don't call yourselves journalists but keep the good work.

Should the Board give an award for the recognition of excellence in code enforcement?

- Yes
- No

Would you like to see interviews/features with Ohio's "elder statesmen" of code enforcement?

- Yes
- No

Have you ever attended a Board of Building Standards meeting or hearing?

- Yes
- No

Comments and suggestions:

Name _____

Address _____

Phone _____

Ohio Board of Building Standards

#406—AFFIDAVIT OF NOTICE OF COMMENCEMENT (SEE PAGE 3 FOR INFORMATION)

#356—SUMMER 2002 IU DOCUMENT REVIEW PROCESS

6606 Tussing Road
P.O. Box 4009
Reynoldsburg, Ohio 43068-9009

Phone: 614-644-2613
Fax: 614-644-3147
Email: dic.bbs@com.state.oh.us

Board Calendar—1st Quarter FY 2002

SEPTEMBER 2001

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

02 Sept.—Holiday - Labor Day

09 Sept.—ESI Exam

13 Sept.—ESI Advisory Committee Meeting

20 Sept.—Board of Building Standards Conference Meeting

29 Sept.—ICC Conference begins

OCTOBER 2002

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

4 Oct.—ICC Conference ends

14 Oct.—Holiday - Columbus Day

31 Oct.—BBS Committee meetings

NOVEMBER 2002

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

01 Nov.—Board of Building Standards Public Hearing/Conference Meeting

05 Nov.—Election Day

11 Nov.—Veterans Day

28 Nov.—Thanksgiving Day

Sick Buildings



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unequivocal: death. But most health phenomena associated with indoor air are far less well defined. They center on non-specific health problems, such as headaches, tiredness, difficulty in concentrating, and dryness of the eyes and mouth. Hundreds of conditions—ranging from hay fever and other run-of-the-mill allergies to everyday stress, personality traits, and even job dissatisfaction—can cause the nonspecific health problems associated with indoor air. The number of potential factors can be daunting. Limiting one's atten-

tion only to those potential factors that are airborne can be expedient—and profitable.

Perhaps no industry better exemplifies the adage "If all you have is a hammer, everything looks like a nail" than does the indoor-air industry. Purveyors of indoor-air "solutions" invariably ascribe problems to things they can "solve." Viewed together, two studies published in peer-reviewed journals illustrate how investigators can reach very different conclusions about similar problems. In one study, occupational-medicine specialists correlated workers' complaints and chemicals in indoor air. The researchers concluded that lighting and volatile

organic compounds were responsible for the workers' complaints. In the other study, psychologists considered a comparable group and concluded that the workers' complaints depended not on the quality of the indoor air but on the degree of job satisfaction. Thus, what questions are asked and which variables are considered can determine whether bad air or a stressful occupation is deemed the culprit.

Some scientists claiming that indoor-air problems pose a serious public-health risk have used flawed survey techniques in attempts to increase the plausibility of their claims. For ex-

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Sick Buildings



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ample, in a nationwide telephone survey conducted in 1987, 24 percent of the 600 office workers interviewed said that there were air-quality problems in their offices, and 10 percent said that such problems interfered with their productivity. The researcher extrapolated these figures to the nation, suggesting that 800,000 to 1,200,000 commercial buildings in the United States were breeding grounds for "sick building syndrome." The researcher further suggested that 30-70 million occupants were affected.

This leap from workers' opinions to epidemic threat is indefensible. Yet the telephone survey is what underlies the assertion that there are multitudinous "sick buildings"—and this assertion has been cited widely and has been accepted not only by indoor-air specialists but also by federal and state agencies. Indeed, it has been the impetus for the making of major and expensive regulatory policies.

What Is Sick Building Syndrome?

In the scientific literature, health conditions associated with buildings are commonly categorized as: (a) building-related diseases, (b) tight building syndrome or sick building syndrome, and (c) building-associated symptoms. The expressions "tight building syndrome," "sick building syndrome," and "building-

associated symptoms" may soon be replaced by a new term, however: "building-related occupant complaint syndrome," or "BROCS."

The category "building-related diseases" comprises disorders due to specific, identifiable contaminants of indoor air. As noted above, a specific bacterium causes Legionnaires' disease. Certain other organisms that live in heating and air-conditioning systems—fungi, for example—can cause various disorders, ranging from mild, hayfever-like allergies to asthma and hypersensitivity pneumonia. Building ventilation systems can also spread cold and flu viruses; thus, even the common cold can be a building-related disease. But to categorize a disorder correctly as a building-related disease, one must have clear and convincing evidence that something in the building caused the disorder. And, preferably, one should identify the agent. Generally, building-related diseases have clear-cut clinical end points: influenza, lab-test-confirmed asthma, or death, for example. In contrast, the expressions "sick building syndrome" and "tight building syndrome" have been applied to situations in which workers reported many and varied symptoms. The sheer range of potential causes of the alleged symptoms renders both expressions misleadingly narrow.

These expressions were not in use in the 1960s. It has been

argued, perhaps rightly, that the energy-efficient buildings constructed in the U.S. after the early 1970s substantially decrease the migration to the outdoors of contaminants—and thus increase their indoor accumulation. But while it is clearly true that modern buildings are more airtight than their predecessors, it is not clear whether today's indoor air is worse than pre-1970 indoor air. In 1965, for example, there were vastly more smokers in the U.S. than there are today. Then, office-building conference rooms were filled with smoke—containing hundreds of irritant chemicals—from cigarettes and cigars. Today, in contrast, chemicals present in parts per billion of indoor air—chemicals unseen and often unsmelled—are the focus of intense concern.

Because "sick building syndrome" (SBS) is associated with nonspecific symptoms and is identified on the basis of subjective responses to questions, it is difficult to determine whether air contaminants are more causative than psychological factors, or vice versa. Moreover, as reports of "indoor air problems" multiply, reporting biases will intensify. There have been few attempts to vary indoor air covertly and then to question occupants about symptoms—and these attempts have yielded mixed

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Sick Buildings

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findings.

The prevalence of reports of "sick building syndrome" does not in itself establish that poor air quality is the cause. SBS could, for example, be due to a high outdoor pollen count, viruses responsible for the common cold, or workforce discontent. Moreover, the symptoms associated with SBS—because they are nonspecific and typically differ from person to person—do not establish that the cause of SBS is building-related.

Reasons for the Confusion over SBS

Several factors are major contributors to the confusion regarding SBS:

- Indoor-air issues are addressed

by many disciplines, including medicine, public health, industrial hygiene, toxicology, engineering, architecture, and building-products manufacturing. Thus, expertise is diluted, the "explanations" and "solutions" offered are dissimilar, and no one is in charge of monitoring the SBS phenomenon.

- There is more fear than data concerning the health effects of indoor-air contaminants. Beliefs outpace data. Fear of invisible dangers tends to grow even if confirmatory data is lacking or the fear has been refuted (as by measurements of contaminants).
- More things can be measured than can be explained. Our ability to detect biological and

chemical contaminants has increased tremendously over the last 50 years. But to those who expect a problem, the mere detection of a contaminant—even at unequivocally innocuous levels—can suggest danger.

- The symptoms that bring indoor air to the attention of building managers are generally common and nonspecific: fatigue, headaches, and eye and nose irritation. Because almost anything can cause these symptoms, they are not tip-offs of SBS. And patients' belief that a particular building is the culprit can impede medical investigation.

The answer to SBS lies in mindful, deliberate medical practice, including thorough physical examination.



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