

ASHRAE Standard 62: Turmoil, Politics Roil Already Muddy Waters

ASHRAE Standard 62-1989, once the "gold standard" for IEQ investigators, is facing an uncertain future. The central question is whether the document will continue to be the benchmark against which building operations are measured or whether it will become a "toothless tiger" that takes the path of least political resistance.

Warning signs that the standard may be in trouble are numerous: an appeals challenge to addenda already approved by the board for Standard 62.1, which regulates commercial buildings; a grass-roots petition attempting to limit the standard committee's ability to establish contaminant guidelines and set ventilation rates; and a stalling action on the long-awaited residential portion, Standard 62.2. All of this is set against a backdrop of dissatisfaction among some committee members over what they see as political meddling and pressure tactics which come from various special interest groups and find fruition at ASHRAE headquarters.

Appeals Challenge

The appeal, which was scheduled to be heard by a special ASHRAE committee just after the deadline passed for this month's issue of *IEQS*, was targeted at the first set of addenda to make it through the committee after two years of so-called "continuous maintenance" — the piecemeal revision of the standard that has become an agonizingly slow process. In two years of regular meetings, the committee revising Standard 62.1 has approved 14 addenda for public review. Of those, only 5 have made it all the way to final approval — and 4 of those are under appeal. Meanwhile, the committee is still studying several other addenda, ranging from minimal changes in wording to controversial and far-reaching proposals (see "Standard 62 Addendum Revises Ventilation Rates" on page 7).

While the appeal, brought by eight people according to ASHRAE, focuses on the four addenda, the main complaint centers on the removal of the words "a moderate amount of smoking" from the standard's Table 2, the part of the standard that sets ventilation rates for various public spaces. According to an ASHRAE spokesperson, the reasons for the complaint vary. Some appellants said removing the phrase takes away valuable guidance, others claim ASHRAE is taking a "piecemeal approach" to dealing with environmental tobacco smoke (ETS), and still others claim that since too many questions about ETS remain, ASHRAE should leave the standard as is.

At the time ASHRAE decided to abandon the overall revision of Standard 62, we predicted that the piecemeal approach would work to the benefit of the tobacco industry. The proposed revision would have eliminated smoking entirely in any building wishing to meet the standard. Using this approach, we said, would allow the tobacco lobby to focus solely on the one or two phrases that affect the industry, leading to the sorts of challenges we are now seeing.

Among those bringing the appeal are members from R.J. Reynolds and Philip Morris, as well as from the Neighborhood Pub Owners Association of British Columbia; hospitality groups often side with the tobacco industry on smoking-related issues. The ASHRAE committee that was scheduled to hear the appeal will make its recommendations to the board of directors, which will consider the matter and vote on it at the annual meeting later this month in Seattle, Washington.

Steve Taylor, current chairman of the Standard 62.1 revision committee, tells *IEQS* that while responding to the appeal took considerable

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IEQ Strategies is published monthly by Cutter Information Corp., 37 Broadway, Suite 1, Arlington, MA 02474-5552, USA. Tel: (781) 641-5118 or, in North America, (800) 964-5118; Fax: (781) 648-1950 or, in North America, (800) 888-1816. E-mail: info@cutter.com, Web site: www.cutter.com/energy/.

Subscriptions: \$297 per year; \$357 outside North America. ISSN 1094-2769.

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time, he doesn't expect ASHRAE to overrule the addenda. However, he adds, "You can never tell." Taylor says the complaints range from procedural matters to technical issues.

Member Petition

Also on the agenda of the June meeting will be the results of a member petition that went out for voting to the full ASHRAE membership with four provisions ostensibly aimed at Standard 62.1, although the wording seems to affect Standard 62.2 as well. The petition, which originated with Gil Avery of Technical Committee 9.1 and the 62.1 committee, specifies that "any and all" future ASHRAE IAQ or ventilation standards:

- Shall specify control of only those contaminants for which a nationally recognized authority has established a maximum permissible concentration and for which standardized test procedures have been established.
- Shall specify concentration limits and conditions only for contaminants that can be measured using standardized test equipment and procedures in accordance with existing or future ASHRAE standards and using equipment normally available in the HVAC&R industry to test and balance technicians.
- Shall not require compliance by application of complex algorithms that contain factors such as mixing efficiencies and air change effectiveness unless they can be measured and verified by field test using standard equipment described in ASHRAE standards and which are normally available to test and balance technicians.
- Shall, as a goal, have to provide general dilution ventilation of occupied spaces; the standard shall not make claims for health, comfort, or occupant acceptability.

This petition has been in the making for some time (see *IEQS*, March 1999), and, while Taylor says his committee agrees with the concept behind the petition's provisions, it has concerns over some of the wording. According to Taylor, committee members worked with petition backers to hammer out some compromise wording that would satisfy both groups. Even though they thought they had reached an agreement,

Avery rejected the compromise at the last minute and submitted the original language. For the statements from each side in the petition matter, see the sidebars that follow.

What will this mean for the committee? Taylor says he's not sure. "No one has ever done this before," he tells *IEQS*. "One issue at stake is whether you can have something decided by a petition that puts a constraint on an ANSI [American National Standards Institute] standard." The idea behind putting the standard on continuous maintenance is that it would allow Standard 62 to be incorporated as a standard by ANSI. "Just because there is a ballot, it doesn't necessarily mean it will be binding on the committee," Taylor says. "There is a difference between a policy statement and a technical constraint. There's a chance the board will say that the ballot is illegal."

Another question is whether a few hundred people can set a definitive policy for an organization as large as ASHRAE. According to Taylor, only a few hundred members have returned their ballots to ASHRAE as of mid-May — although they have more time to respond —

Statement in Favor of Petition

We are concerned about the mission of ASHRAE and the HVAC industry in the new millennium and how the revisions to the IAQ standard (Standard 62-1989) will impact the engineers, contractors, and building owners in this era.

Standard 62-1989 was written ostensibly to protect the occupant. Providing satisfactory ventilation is a laudable policy and is consistent with the charge of the engineer. Beyond being in the public interest, a standard must be defensible for everyone involved in the project including the HVAC engineer, contractor, and building owner, as well as the occupant. Many of the requirements of the current standard are beyond public interests creating burdensome requirements, incurring excessive expenses, and defying field verification. The fact that these requirements cannot be verified with conventional test and balance instrumentation is the heart of the issue. Under such circumstances, compliance determination is left entirely up to the courts. Therefore, we are petitioning the ASHRAE membership to act now in the interest of the society.

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and he says his understanding is that the petition is ahead by a margin of 2-to-1. The bylaw under which the petition was brought is obscure, Taylor says. "It probably comes from ASHRAE's old days when there were only a few hundred members. It's a good question whether it's even appropriate."

Taylor doesn't see the petition having a major effect on the way the committee works. He says that committees now have to submit a work plan to ASHRAE establishing the basic principles behind writing the standard. His committee is now working on its plan and intends to incorporate the concepts behind the petition, although it is tweaking the language to remove some of what the committee sees as inconsistencies.

Residential Standard

An even more uncertain future awaits Standard 62.2, the ventilation standard for single-family and low-rise residential construction, originally part of the now-abandoned 62R. A separate committee, headed by Max Sherman of Lawrence Berkeley National Laboratory (LBNL — Berkeley, California), formed to take over that task after ASHRAE split the proposed revision into two separate standards.

Now, two years later, the committee voted to send its proposed standard to public review, but was stymied by a subcommittee at ASHRAE headquarters. That group voted by mail ballot to keep the proposal under wraps. Meanwhile, both proponents and opponents of the standard are arguing their case in the open, even though the public hasn't seen just what it is they are arguing about.

Sherman has published a booklet under the aegis of LBNL, produced a shorter version of the work for the May issue of the *ASHRAE Journal*, and has put the whole document on the Internet where it can be viewed or downloaded in Adobe Acrobat format (see www.epb.lbl.gov/Publications/ and click on "lbnl-42975.pdf").

For its part, the National Association of Home Builders (NAHB) has also been vocal. The main opponent of the proposed standard, NAHB's views are well known since they have a representative on the standard committee.

However, the association has also gone public. In a lengthy letter to *IEQS's* sister publication *Energy Design Update*, Dick Morris, senior adviser to NAHB's standards department, claims that the standard, if adopted, could add between \$1,000 and \$5,000 to the cost of a new home and could, by NAHB's calculations, drive 435,000 first-time homebuyers from the market.

While it is hard to independently validate NAHB's estimate because the standard itself

Statement Opposed to Petition Issue

While we recognize the concerns that exist, related to how the revision of ASHRAE Standard 62-1989 is perceived, and know that the signers of the petition have the best interests of ASHRAE at heart, we recommend voting against the petition.

The primary reason for our recommendation is that the petition is not necessary. With respect to the first two requirements of the petition, the current standard and all proposed revisions under discussion contain no requirement that indoor contaminants be maintained below specific limits. Any contaminant limits are offered only as guidance, not requirements, and are based on cognizant health authorities. Also, the current standard and all proposed revisions do not require the measurement of contaminant concentrations in buildings, unless one elects to employ the optional IAQ procedure. The optional IAQ procedure is a performance approach; therefore contaminant concentration measurement is totally appropriate to use.

With respect to the third requirement of the petition, no revisions are being proposed that require the application of complex algorithms or the measurement of the listed factors. Standard 62-1989, on the other hand, is quite vague in terms of how these various factors are to be addressed, which is in fact one of the prime motivations for revising the standard. Finally, the standard makes no claims or guarantees that meeting the requirements of the standard will provide for health, comfort, or occupant acceptability. Instead, it acknowledges these factors as motivations for ventilating buildings.

Therefore, our recommendation to vote against the petition is not based on disagreement with the concepts expressed, but on the lack of need for using this mechanism for formalizing their implementation by the committee. We invite the signers of the petition and all interested parties, both within and outside of ASHRAE, to participate in the continuous maintenance process by submitting proposed changes and comments on public reviews of proposed addenda.

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isn't public, Sherman says NAHB's estimates mischaracterize the impact. "In some cases, they're making unintentional mistakes in describing the standard," he tells *IEQS*. "In other cases, they're taking the absolute worst-case scenario and making it sound like that's what everybody would always have to deal with. However, it's very hard for people to make a judgment on that without seeing the document."

Sherman says he tried to answer many of NAHB's concerns in his publication, but feels hampered by the public's lack of access to the actual document. "We've already heard most of their objection. There's nothing short of gutting the standard that will make NAHB happy," he tells *IEQS*.

Why the committee voted to suppress the document is another matter altogether. Sherman says that some members on the committee had concerns about technical issues in the standard — even though the function of the committee is to decide whether the committee has followed proper procedure. This is similar to complaints we have heard from the 62.1 committee.

Taylor told us several months ago (see *IEQS*, March 1999) that he felt stymied by the standard committee, which he thought was voting on technical rather than procedural issues. At that time he said, "It's hard to make any progress; it's just one battle after another. With all the politics, I think we've lost sight of the standard, and our momentum is waning."

Some members of the 62.2 committee conveyed similar feelings, expressing the opinion that some people in ASHRAE don't like the idea of the society being involved in IAQ. Some members tell *IEQS* that the standard committee is taking an "I know better" approach, deciding not to let the public even see the document, rather than soliciting public comment on the standard's content.

Sherman hopes that the tide will turn at the annual meeting later this month in Seattle. Admitting that he has a battle on his hands, Sherman tells *IEQS* that he thinks pleading his case in person will make a difference. He sees two possibilities: The first, he says, is that the reasons the committee voted against it aren't within ASHRAE policy. In other words, the

committee can base its vote only on procedural, not substantive, issues. "I think if that's clearly stated to them, they may change their minds," Sherman says. The second possibility is that because the dissenting committee is only part of the standard committee, the entire committee could take up the matter and override the vote to suppress.

If the standard does make it to public review, the earliest it could appear would be in the August *ASHRAE Journal* as an announcement, although the society could put the standard on its Web site earlier than that. However, the public review period wouldn't actually begin until publication in the journal.

Potential Controversy

As if the standard doesn't have enough controversy, the 62.1 committee has just voted out another addendum which is almost certain to draw fire from numerous quarters. Although it still needs to jump through the hoops at ASHRAE headquarters, this addendum — designated 62n — deals with minimum ventilation rates.

At the heart of the addendum is the ventilation rate table, which is designed to replace the current Table 2 in the standard. It differs from the current version in that it contains ventilation rates based on both an occupant component and a building component. This accounts for the phenomenon — which the current standard does not — that building materials and not just the occupants contribute contaminants to the space. For a more complete explanation of the addendum, see "Standard 62 Addendum Revises Ventilation Rates" on page 7.

This addendum could create controversy on several fronts. First, it contains a provision that the minimum rates in the table cannot be used in a building where smoking is allowed, setting the stage for an assault from the tobacco lobby. Second, it includes the "complex algorithms," involving such things as ventilation efficiency, which seem to bother the drafters of the petition now out for a vote. So we might expect to see a protest from this contingent as well.

However, it remains to be seen whether the addendum will see the light of day in a public

review or whether it will be short-circuited at ASHRAE headquarters by the standards subcommittee and suffer the same fate as the residential standard.

Background

While the early warning signs of this current turmoil have been around for years — the most notable of which was Congressional rumblings about government employees on the standard revision committee — matters came to a head just two years ago when the board of directors surprised everyone, including committee members, by jettisoning the draft revision just after it had gone out for public review.

The board was reacting, it said, to "concerns" of some members that the society was overstepping its boundaries and that the proposed standard was getting into areas beyond its expertise. When it took that move, it placed the existing standard on "continuous maintenance," meaning that each revision to the standard had to be considered.

At the time, **IEQS**, among others, wondered whether the tobacco industry had a hand in the board's action. Big Tobacco had been strangely silent during the public review, which was especially curious because the proposed standard took such a strong anti-smoking stance and because the tobacco industry had been so vociferous in its opposition to the now moribund IAQ regulation from the US Occupational Safety and Health Administration (OSHA). The tobacco lobby generated tens of thousands of responses to the OSHA regulation and dragged out the public hearings for nearly half a year.

Discussion

The current rumblings about political meddling are disturbing because they seem to threaten the public image of a group that has established itself as a technical professional society. If its standards come to be seen as politically motivated — as has happened to other groups — it would have the unfortunate result of diluting the effectiveness of the standard and could actually work against those ASHRAE members who have expressed concern over liability.

Some members have said they feel that by making actual or implicit claims about health, the standard would open engineers up to lawsuits in the event of building problems. They seem to think that by saying less they will be immune from such suits, but just the opposite could happen. While meeting the standard is certainly a defense against lawsuits, it is not ironclad, even under the best of conditions. However, when the standard says less, common sense would indicate that meeting the standard provides even less of a defense.

Also, from where we sit, the petition — although not specifically backed by the tobacco industry — would seem to play directly into its hands, since it provides a wedge for the lobbyists to argue that no recognized authority has established concentration limits for tobacco smoke. The US Environmental Protection Agency (EPA) has established a maximum permissible concentration of zero, but the industry is attacking that ruling through the courts.

Even if the EPA limit stands, the industry could argue that no standardized testing procedures exist for determining tobacco smoke concentrations. The tobacco industry could argue this because it has spent considerable research resources on studies that have called into question almost every commonly accepted measurement of tobacco smoke in an indoor space.

One provision of the petition that we find particularly curious is the final one that says the standard shall "make no claim for health, comfort, or occupant acceptability." If the standard does none of those things, we're not sure what the point of the exercise is at all, leaving us to wonder whether the whole point of ventilation is just to go through the motions with no particular purpose in mind.

The more serious question is the confusion over liability that this whole process creates for those society members who look to the standard for guidance. While it seems sufficient to say that designers and others should work to the standard as published, it's not that simple. If matters come to litigation, a good plaintiff's lawyer will argue that, as professionals, the engineer should have adhered to best practices.

How does a designer or other engineer deal with addenda that have passed public review and final approval, but have not been published? How about addenda that are on the table, based on solid research, and not yet passed — but likely to be in force before the building in question is completed? A good lawyer will argue that the engineer, as a professional, should have known better and taken this into account.

How much credence will a jury give to the defense of meeting a standard that has been

diluted and hamstrung by political maneuvering? Only the jury knows, but a good lawyer will hammer that point into the ground.

One final question: When the members of the committees themselves express confusion and irritation over what they see as political meddling at ASHRAE headquarters and its effect on the standards, how must others — particularly outsiders — view the process?

Standard 62 Addendum Revises Ventilation Rates

In a sweeping change to the ventilation-rate procedure, the committee revising Standard 62-1989, *Ventilation for Acceptable Indoor Air Quality*, has introduced the concept of accounting for both the building's contribution to IAQ as well as the occupant-generated contaminants. The existing standard accounts only for the occupants in the space.

Sure to draw controversy — if only because it sets the rates for no-smoking environments — the addendum still needs to be approved by other ASHRAE committees before it goes out for public review. However, the concept of accounting for the building's contribution to pollution is not new; it's been talked about for years. In fact, such a method was part of the former 62R standard, which made it as far as the public review process.

Basically, the outdoor air (O/A) ventilation rate is determined in a twofold process, determining one portion of the rate based on the size of the area under consideration and then adding another portion determined from the number of occupants. The formula for this is:

$$\begin{aligned} V_{OA} &= V_P + V_B \\ &= R_P P + R_B A \end{aligned}$$

where V_P is the O/A required to account for the number of people in the space; V_B is the O/A required to account for the emissions from building materials and furnishings; R_P is the outdoor air requirement from the accompanying table; P is the design population; R_B is the outdoor air requirement per unit area from the accompanying table and A is the net occupiable floor area.

The ventilation-rate table in the standard, gives the rates — both in terms of occupants and space — for various types of building uses. This is similar to the table in the current standard; however, the current standard bases its rates only on the number of people. Table 1 shows some selected entries from the proposed addendum. The new method, while it may provide some markedly different rates for some applications, doesn't seem to increase rates in general — and in fact might actually provide lower rates under some circumstances.

For example, a 10,000 ft² space with a design occupancy of 70 persons (7 persons per 1,000 ft²) would require an O/A rate of 420 cubic feet per minute (cfm) — 6.0 cfm per person from the table — and an added O/A rate of 600 cfm for the building portion — 0.06 cfm per ft² from the table. This would give a total O/A ventilation rate of 1,020 cfm. Under the current standard, the minimum O/A ventilation rate, at 20 cfm per person, would be 1,400 cfm.

However, the current version of the standard bases its rates on "a moderate amount of smoking in the space," while the proposed addendum bases its rates on no smoking. Spaces that allow smoking would require different ventilation schemes and ventilation rates.

The proposed addendum also introduces several other new concepts, including the idea of a minimum supply air rate for such spaces as bathrooms, kitchens, and garages. These spaces generally have exhaust systems and draw their air from other occupied spaces and do not necessarily have a direct O/A supply. The standard specifies that the minimum

Table 1 — Selected ventilation rates from Addendum 62n

Category	People		Building		Minimum supply air rate	
	L/s/pers	cfm/pers	L/s/pers	cfm/pers	L/s/m ²	cfm/ft ²
Office space	3.0	6.0	0.3	0.06	—	—
Reception areas	3.5	7.0	0.3	0.06	—	—
Conference rooms	2.5	5.0	0.3	0.06	—	—
Corridors	—	—	0.3	0.06	—	—
Public restrooms	—	—	—	—	25 L/s/fixture	50 cfm/fixture
Restaurant dining rooms	3.0	6.0	0.8	0.16	—	—
Bars, cocktail lounges	3.0	6.0	0.8	0.16	—	—
Commercial kitchens	—	—	—	—	3.5	0.70
Classrooms (grades K to 3)	3.0	6.0	0.7	0.14	—	—
Classrooms (grades 4 and up)	3.0	6.0	0.5	0.10	—	—
Lecture Hall	2.5	5.0	0.3	0.06	—	—
Jail cell (without toilet)	2.5	5.0	0.8	0.16	2.5	0.50
Jail cell (with toilet)	2.5	5.0	0.8	0.16	5.0	1.00
Theater auditoriums	2.5	5.0	0.3	0.06	—	—

Source: Addendum 62n

supply air rate for these types of applications can come from a combination of O/A, recirculated air, or transfer air.

The committee has offered an explanatory preface to the draft of the addendum — although it will not appear with the final standard — explaining some of the changes and the reasons behind them. One of the explanations addresses the issue of the apparent complexity of the addendum:

Some may perceive this addendum as more complex than 62-1989 because it contains many equations. In fact, the use of equations was deliberate because equations articulate

what is required much more clearly and unambiguously than English sentences. The perception of complexity may also be due to unfamiliarity as well; we believe that after the user becomes familiar with procedures and terms, this revision will be considered simpler than section 6.1.3 of 62-89.

The committee also says that it has tried to simplify such things as accounting for air distribution and dealing with multiple spaces. In both cases, the addendum supplies default values for various applications to eliminate the need for complex calculations.

Practical Research Briefs

Study Finds Correlation Between Fine Particles and Childhood Asthma

A study looking at the association between fine particle concentrations and emergency department visits for children has found a positive correlation, with a relative risk of 1.15 for every increase in particles of 11 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

The researchers report their results in the June 1999 issue of *Environmental Health Perspectives*. The lead author is Gary Norris of the Department of Civil and Environmental Engineering at the University of Washington (Seattle).

The study was looking at whether there was a difference between inner city admissions and admissions in other areas, but what it found was a positive correlation for all children with no significant differences based on location. The researchers also found a positive correlation for PM₁₀ and carbon monoxide (CO).

The researchers obtained daily emergency department visit data from six hospitals in central and southeastern Seattle for 15 months. They also obtained atmospheric data, looking