

## RESEARCH PAPER

## ASHRAE Standard 62: tobacco industry's influence over national ventilation standards

S Aguinaga Bialous, S A Glantz

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See end of article for authors' affiliations

Correspondence to:  
Professor Stanton A Glantz,  
PhD, Box 0103, University  
of California, San  
Francisco, San Francisco,  
CA 94143-0130, USA;  
glantz@medicine.ucsf.edu

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**Objective:** To describe the role of the tobacco industry in the development of ventilation standards for indoor air quality by influencing the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE).

**Methods:** Review of tobacco industry documents available on the internet between January 2001 and March 2002. Search terms included "ASHRAE", "ventilation", "minutes", "memo", and the names of key players and organisations as identified in the initial searches. Analysis of ASHRAE and other relevant documents publicly available and the personal files of a Standard 62 committee member; interviews of a selected number of ASHRAE players; observation of an ASHRAE meeting.

**Results:** The tobacco industry has been involved in the development of ventilation standards for over 20 years. It has successfully influenced the standard and continues to attempt to change the standard from a smoke-free framework into an "accommodation" framework. The industry acts directly and through consultants and allies. The major health groups have been largely absent and the health interests have been poorly represented in standard development. While concentrated in the USA, ASHRAE standards are adopted worldwide.

**Conclusion:** The tobacco industry determined that allowing smoking in ventilation standards for indoor air quality was a high priority and dedicated significant human and financial resources to ensure that its interests were represented. The health groups, until recently, have largely ignored the policy implications for tobacco control of standard development. This situation is changing, but unless health groups maintain high visibility within ASHRAE, the tobacco industry may succeed in creating a standard that ignores the dangers of secondhand smoke.

The tobacco industry knows that public concern about secondhand smoke (SHS)<sup>1-5</sup> threatens its profits<sup>6-8</sup> because smoke-free environments undermine the social acceptability of smoking and reduce cigarette consumption.<sup>9-10</sup> In response, the industry developed a comprehensive strategy to deny the health effects of SHS,<sup>11-12</sup> and to promote alternatives to smoke-free environments. A central element of this strategy has been to promote ventilation as a "solution" to SHS and to have it legitimised by national and international standards for ventilation and indoor air quality (IAQ). The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) develops these standards in the USA, which are often adopted in other countries. The tobacco industry has recognised the potential impact ventilation standards can have in determining whether or not smoking indoors is compatible with good indoor air quality and actively worked to influence their development. While a few public health advocates have opposed tobacco industry influence in ASHRAE, the major health groups have, until recently, mainly ignored it.

#### What is ASHRAE?

ASHRAE is an international organisation that develops, through over 80 committees, standards for heating, ventilation, air conditioning, and refrigeration.<sup>13</sup> One committee is responsible for Standard 62, which defines ventilation standards for acceptable indoor air quality. Standards are revised approximately every five years, to reflect evolving knowledge and technology. The process is open to the public and there are opportunities for public comments and appeals so the standards reflect a consensus of all affected parties.<sup>14</sup> Once ASHRAE approves a standard, it is submitted for approval to the American National Standards Institute (ANSI), after which it is often adopted into building codes, which gives it the force of law.

#### METHODS

We analysed tobacco industry documents available on the internet as a result of litigation in the USA. Documents were accessed between January 2001 and March 2002. Search terms included "ASHRAE", "ventilation", "minutes", "memo", and the names of key players and organisations as identified in the initial searches. Although every effort was made to identify all significant documents, the sheer volume of documents made it unfeasible to include every document that mentioned ASHRAE. (For example, in September 2002 there were 7166 documents that mentioned ASHRAE on legacy.library.ucsf.edu.) Documents were selected for detailed review if they referred specifically to the industry's plans and participation in ASHRAE proceedings. We also analysed ASHRAE and other relevant documents that were publicly available as well as the personal files of a Standard 62 committee member. We conducted a selected number of interviews to gain a better contextual understanding of the ASHRAE dynamics and one of us (SAB) attended an ASHRAE

**Abbreviations:** ANSI, American National Standards Institute; ASHRAE, American Society of Heating, Refrigeration, and Air Conditioning Engineers; BCIA, Business Council on Indoor Air; BOCA, Building and Official Code Administrators; BSR, board of standards review; EPA, Environmental Protection Agency; ETS, environmental tobacco smoke; GASP, Massachusetts Group Against Smoking Pollution; IAQ, indoor air quality; ISO, International Organization for Standardization; NRA, National Restaurant Association; OSHA, Occupational Safety and Health Administration; PM, Philip Morris; SHS, secondhand smoke; SPC, standard project committee; SSPC, standing standard project committee; TC, technical committee

meeting as an observer. This project was conducted in accordance with a protocol approved by the University of California San Francisco committee on human research.

## RESULTS

The tobacco industry has been heavily involved with ASHRAE since the early 1980s (table 1). Industry employees and consultants participate in several ASHRAE committees and activities that could have any impact or relevance to the issue of indoor smoking.<sup>15-22</sup>

### Standard 62-1981: ventilation requirements and energy costs as an incentive for smoke-free buildings

The energy crisis of the late 1970s and early 1980s led building design and maintenance professionals to seek to reduce ventilation to reduce energy consumption and costs. In 1981, ASHRAE approved a revision of Standard 62 (hence the name 62-1981) that recognised that smoke-free buildings required less ventilation. Standard 62-1981 caught the tobacco industry by surprise. A summary of the situation prepared by Philip Morris (PM) at the time recognised that:

. . .the new standard (62-1981) requires ventilation rates from two to five times higher in areas where smoking is permitted than in areas where it is prohibited. The new standard, if adopted and enforced, would effectively double the costs for heating and cooling in areas which allow smoking.<sup>23</sup>

In addition, Standard 62-1981 recognised that “higher ventilation rates are specified for spaces where smoking is permitted because tobacco smoke is one of the most difficult contaminants to control at the source” and that the standard was developed so that indoor air quality does not “impair health”.<sup>23</sup> The PM summary went on to recognise the consequences for the tobacco industry: “The choice given in the Standard is clear—either permit smoking and substantially increase ventilation rates, or prohibit or restrict smoking and maintain ‘minimal’ ventilation rates.”<sup>23</sup>

Thus, Standard 62-1981 provided an incentive for building managers to restrict or end smoking indoors just at the time that smoking restrictions in offices were emerging as a public health issue.

PM recognised that it was “at an extreme disadvantage, because the final version of the Standard has been approved and distributed” but that “it is mandatory that the industry keep abreast of the Committee’s work in order to anticipate further revision of the Standard.”<sup>23</sup>

### The tobacco industry blocks approval of Standard 62-1981

By 1983, PM was fully involved with ventilation standards. A memorandum from PM-USA’s Bob Moore to PM vice president and director of corporate affairs Stanley Scott titled “Ventilation for acceptable indoor air quality” reports that “Fred Newman [PM Inc Law Department] won a battle today, and I’ll bet you didn’t even know there was a war in this area.”<sup>24</sup> PM had convinced the Building and Official Code Administrators (BOCA) officials to reject ASHRAE Standard 62-1981.<sup>25</sup> (Once BOCA approves a standard, it usually becomes part of building codes throughout the country.) The PM memorandum notes that if Standard 62-1981

. . .were enacted into law, it would take big bucks to bring existing buildings up to standard. The hooker is that, by designating an entire building as a “no smoking building”, no added expense at all would be involved. . . .It is mind boggling to attempt to calculate the harm that this code would have done to our company

*and our industry had it been adopted . . .*<sup>24</sup> [Underline emphasis in original; italic emphasis added]

ANSI did not approve the standard due to lack of consensus because of objections from the tobacco industry and the Formaldehyde Institute.<sup>26-27</sup> The Formaldehyde Institute objected the limitations on urea formaldehyde foam insulation; after federal regulations were imposed on this insulation, the Formaldehyde Institute stopped being a major player on ASHRAE 62 standard discussions.

### Standard 62-1989: the “accommodation” standard assumed “moderate” amounts of smoking

Since BOCA, other building codes organisations, and ANSI did not approve Standard 62-1981, in 1983 ASHRAE established a standard project committee (SPC 62) to review Standard 62 and resolve any controversial issues. (An SPC is discharged upon publication of the standard.<sup>14</sup>) By September 1988 SPC 62 issued the revised Standard 62-1981R which eliminated the two tiered standard that the tobacco industry objected to and raised ventilation rates from 5 cubic feet per minute (cfm) per person to 15 cfm per person for schools and residences, 20 cfm for offices, and 60 cfm for smoking lounges with no return air being recirculated.<sup>28-29</sup> This new standard ignored two earlier papers by Repace and published by ASHRAE demonstrating that the proposed standard did not adequately remove exposure to the toxins in tobacco smoke.<sup>30-31</sup>

No health organisation involved itself in this process. The tobacco industry’s involvement, however, did not go completely uncontested. In 1985 and 1986, Northeastern University law professor Richard Daynard, chairman of the Tobacco Products Liability Project and president of the Massachusetts Group Against Smoking Pollution (GASP), sent several letters to John Janssen, of Honeywell Inc (a company that manufactures ventilation equipment), chair of SPC 62,<sup>32</sup> and to ASHRAE’s manager of standards,<sup>33</sup> asking SPC 62 to consider the scientific evidence of the health effects of SHS and objecting to the Tobacco Institute’s role in the process of developing the new standard.<sup>32</sup> Daynard requested that a GASP representative “be invited to speak to the Committee and to participate in its deliberations”.<sup>32</sup> Janssen did not reply to Daynard’s request. Later he claimed that it is “common knowledge” that ASHRAE’s committee meetings are open to all interested parties, therefore, he did not think that a reply was necessary.<sup>34</sup> Nonetheless, in more than one occasion, Janssen stated that the “[tobacco] is obviously too politically powerful to balk. [Daynard’s presence at the committee] would just gum up the works and make it impossible...to come up with a consensus standard”,<sup>26</sup> that he and the committee wanted “to avoid pressure from [and] confrontation with...the tobacco interests . . .”.<sup>27</sup> These statements conflict with ASHRAE’s stated mission of developing science based standards designed to protect the public.<sup>13</sup>

Daynard was never invited to the committee meeting and the tobacco industry continued to submit comments on the draft proposal<sup>35-37</sup> and participate in meetings.

In 1988 and in 1989, after the 62 Committee had adopted the revised standard, Daynard appealed ASHRAE’s decision to publish it.<sup>38</sup> His appeal was based on procedural claims (the over representation of the industry and the fact that it was not made clear to him that meetings were open to the public) as well as technical claims that evidence on the health effects of SHS have not been considered.<sup>38-42</sup>

Daynard’s appeals were denied<sup>43</sup> and Standard 62-1989 was published and submitted for approval to ANSI.<sup>44</sup>

Other than “smoking lounges”, the standard did not distinguish between buildings with and without smoking. In addition, the standard was based on controlling odour, not SHS’s health dangers.

Janssen recognised the difficulties in controlling tobacco smoke through ventilation in a paper published in the October

**Table 1** Timeline of ASHRAE Standard 62: ventilation for acceptable indoor air quality

Standard	Year	Activity	Notes	Tobacco industry actions
62-1973	1970s	Revised	Revised because it established minimum and recommended levels for indoor ventilation, in conflict with energy conservation standards (90-1975) which mandated adoption of minimum rates only	
62-1981	1981	Revision finished	Determined ventilation rates based on whether or not smoking was allowed; ventilation rates 2–5 times higher for areas where smoking is permitted (at least doubling the cost for heating and cooling)	The beginning of tobacco industry involvement
	1981	Approval	Standard approved by ASHRAE	
	1983	Submitted to ANSI	ANSI does not approve the standard because it considers it “controversial”	The Tobacco Institute (and the Formaldehyde Institute) opposed the standard
	1983	Submitted to BOCA	BOCA does not adopt the standard	Philip Morris convinced BOCA to reject 62-1981. Industry starts using the argument that “to single out” tobacco smoke as a source of indoor air pollution is inaccurate, unfair and not scientifically sound
62-1981R	1983		ASHRAE revision of Standard 62-1981 begins	
	1985		Northeastern University law professor and tobacco control advocate Richard Daynard requests that scientific information regarding the health effects of second hand smoke be considered by the 62-committee. Daynard questions the involvement of the Tobacco Institute in the process. Committee chair expresses reluctance in create conflict with the tobacco industry	
62-1981R	1988	Ready for public review	Ventilation rates increased from 5 cfm to 15 cfm; 20 cfm for offices, and 60 cfm for smoking lounges. No two tier approach—that is, no different ventilation rates based on whether or not smoking is permitted. It assumes a “moderate amount of smoking” for most building areas. Daynard appeals the Standards Committee (appeal denied)	
62-1989	1989	Approved by ASHRAE	Daynard appeals decision to publish the standard (appeal denied). Approved by the ASHRAE Board of Directors as Standard 62-1989	
	1990	ANSI’s approval	ANSI approves 62-1989 as an American standard. Daynard appeals the decision. The appeal is sustained	The Tobacco Institute denies having influenced the committee
	1991	ANSI’s reversal	ASHRAE appeals ANSI’s decision favourable to Daynard, and wins. ANSI’s board of standards review approves 62-1989	
62-1989R		Endorsement	62-1989 is endorsed by the Southern Regional Standards Association, making it more likely to be incorporated into building codes	
	1991	Revision	A committee is created to revise standard 62-1989. Gene Tucker, from EPA, is appointed to chair the committee. He indicates that it will focus on source control and secondhand smoke	
	1995	Change in chair	Tucker’s term as chair expires (but he stays as non-voting member), Steve Taylor is new committee chair.	Congressional investigation of EPA and its relationship with ASHRAE
		Review by TC9.1	The technical committee, which members includes industry consultants, opposes the release of the standard draft for public review	
	1996	Ready for public review	Ventilation rates prescribed assume non-smoking. Different recommendations if smoking is permitted	
	1997	Withdrawal	Standard is not approved, but rather placed under continuous maintenance by the ASHRAE board of directors. The proposed standard is withdrawn	Philip Morris lobbied the board of directors. It considered it a victory to have the standard placed in continuous maintenance
	1998	New draft for review	A new draft of the standard is submitted to public review. It includes addendum 62e, removing moderate amount of smoking allowance from the ventilation rates prescribed	The industry mounts a major campaign to submit comments opposing addendum 62e. It appeals and loses; the ASHRAE board approves the addendum
62-1999	1999	Publication	Standard published. With addendum 62e that establishes that the standard ventilation rates are for non-smoking areas only, with the exception of bars, casinos and cocktail lounges	The industry opposes the inclusion of the addendum and appealed ANSI. It loses the appeal at all levels
	2000	Approval	ANSI approval of standard	The industry is campaigning to have a separate standard, allowing for smoking, for the hospitality industry

ANSI, American National Standards Institute; ASHRAE; American Society of Heating, Refrigeration, and Air Conditioning Engineers; BOCA, Building and Official Code Administrators; EPA, Environmental Protection Agency; TC, technical committee.

1989 *ASHRAE Journal*: “The great problem is that ventilation alone cannot effectively control the risk from ETS.”<sup>45</sup>

ANSI approved the standard in August 1990.

Daynard appealed to ANSI, stating that the standard “misrepresents the available scientific evidence” about the dangers of SHS. ANSI sustained Daynard’s appeal and did not adopt the standard.<sup>46–48</sup> Despite ANSI’s rejection of Standard 62-1989, the Tobacco Institute was promoting it by sending letters to employers stating “where ventilation is adequate and ventilation systems properly maintained, tobacco smoke is not a problem.”<sup>46</sup>

ASHRAE appealed ANSI’s upholding of Daynard’s appeal,<sup>49–50</sup> and proposed compromise language in the purpose of standard to Daynard that would change “avoid” into “minimize the potential for” adverse health effects,<sup>51</sup> making the standard weaker in relation to health protection. Daynard rejected the change because the 62-1989 standard increased health risks from SHS compared to the earlier 62-1981, and because it accommodated the tobacco industry instead of providing “acceptable healthy indoor air”.<sup>52</sup>

In January 1991 ANSI’s board of standards review, in consultation with ASHRAE, but not Daynard,<sup>53</sup> reversed its November 1990 decision and approved ASHRAE Standard 62-1989 as an American standard.<sup>54</sup>

As an attempt at compromise, the foreword—this is not part of the standard—partially recognised that the standard would not control the health risks of SHS:

The purpose of the Standard is to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to avoid adverse health effects... Therefore, with respect to tobacco smoke and other contaminants, *this standard does not, and cannot, ensure avoidance of all possible adverse health effects*, but it reflects recognized consensus criteria and guidance.<sup>44</sup> [emphasis added]

Despite this moderating foreword, Standard 62-1989 represented a victory for the tobacco industry.

#### **ASHRAE Standard 62-1989R: source control to provide acceptable indoor air quality**

In June 1991, according to review procedures, ASHRAE created a standing standard project committee (SSPC 62) to review Standard 62-1989. (An SSPC has a continuing assignment over the standard, making revisions on a regular basis, as appropriate.<sup>14</sup>) ASHRAE asked Gene Tucker, an employee of the US Environmental Protection Agency (EPA), to chair the committee.

The standard also included an alternative to the ventilation rates, the indoor air quality procedure, which was even more problematic and therefore not used in practice. A 1985 paper by Repace and Lowrey<sup>55</sup> showed that under this procedure 226 air changes per hour (5400 cfm/occupant) would be necessary to obtain the minimum risk level in an office with smoking. Ventilation rates, based on occupancy, assumed 20 cfm/occupant.

As committee chair, Tucker selected committee members, observing a balance in the interests represented and the technical expertise necessary. The new committee was going to look into SHS, source control, and the design and implementation problems with the previous standard.<sup>15 19 29 56 57</sup>

The tobacco industry was not pleased with either the appointment of Tucker or the committee membership, which it considered “an anti-smoking battleground”.<sup>58</sup>

The industry got at least one representative on the SSPC 62 committee, Ed Fickes, an engineer representing the Tobacco Institute, as well as several others working as liaisons to SSPC 62 from other key technical committees,<sup>19</sup> or as non-voting members in SSPC 62 subcommittees.<sup>39</sup> (table 2).

Tucker divided the work among several subcommittees as the discussion of whether the standard should be comfort or health based continued. (Tucker favoured the latter position because he did not believe that ventilation or design can ensure good IAQ in the presence of tobacco smoke.<sup>15 60</sup>)

The subcommittee on health and comfort recommended that SSPC 62 be consistent with “cognizant health authorities”, particularly EPA and the Occupational Safety and Health Administration (OSHA) on the issue of SHS.<sup>15 56 61</sup> (At the time, OSHA was considering a regulation on indoor air quality in the workplace.)

Tucker’s effort to develop a health based standard was succeeding. By the end of 1994, the SSPC 62 approved definition of “acceptable indoor air quality” was: “Air that poses no greater than negligible risk to human health, as determined by cognizant authorities, and toward which a substantial majority of people exposed express no dissatisfaction.”<sup>62</sup>

A 1995 PM presentation on OSHA issues illustrates how concerned the tobacco industry was with the direction SSPC 62 was taking; an important element of PM’s response was to fund a well connected scientist to study comfort and smoking levels:

- If we do nothing, we will have a very unfavorable standard making it easier for OSHA to adopt and give building owners and employers more impetus to ban smoking.

- We will be funding a study to determine the comfort acceptability at moderate smoking levels as a function of ventilation rate by Jim Woods at Va Tech.

- Why Woods?

- Respected and influential member of ASHRAE

- We have a relationship from previous work

- An OSHA witness and has been retained by OSHA to draft the final rule

- Recognized around the world as an IAQ expert<sup>58</sup> [emphasis added]

Woods appears to have been selected based on his potential for influencing the process at ASHRAE and OSHA as much as because of his technical expertise.

#### **ASHRAE Standard 62-1989R: internal review of proposed draft**

In June 1995, ASHRAE technical committee 9.1 (TC 9.1): large building air-conditioning systems, which includes tobacco industry consultant Milt Meckler as a liaison to SSPC 62, submitted its advisory review of the draft 62-1989R to SSPC 62.<sup>63</sup> Echoing the tobacco industry, TC 9.1 objected that the draft standard was based on health dangers of SHS rather than smoke odor and recommended emphasising “adequate ventilation necessary to provide acceptable IAQ based on the absence of odor and sensory irritation of the occupants.”<sup>63</sup>

Also echoing the tobacco industry’s position, TC 9.1 specifically objected to the definition of “acceptable air indoor quality” based on health because it would transform “the current standard from being a ventilation standard into a public health regulatory standard. This definition puts the burden on the HVAC designer to comply with ‘no greater than negligible risk’ standard that amounts to a ‘medical guarantee’ and leaves him, ASHRAE and all other parties involved susceptible to lawsuits.”<sup>63</sup> TC9.1 also appended to the review a letter from

**Table 2** Partial list of people involved at ASHRAE with tobacco industry ties, 1981–2001 \*

Name	ASHRAE involvement	Tobacco industry links
Apple, Bill	Appendix S subcommittee	PM employee <sup>15 175-177</sup>
Benda, George	Participates in meetings and subcommittees	Tobacco industry consultant <sup>15 178-184</sup>
Binnie, Peter Healthy Buildings International	Attended committee meetings	Tobacco industry consultant <sup>177 185</sup>
Bohanon, Hoy	Non-voting member, ASHRAE 62 committee; participated in subcommittee level developing 62-1999 (appendix S)	RJR employee <sup>87 93 186</sup>
Cammer, Paul Business Council for Indoor Air	Attended committee meetings	<sup>66 187</sup>
Daylor, FL	TC 2.3 Secretary (1987–1992?)	PM employee <sup>21 175 177 188-190</sup>
Fickes, Edward (Ed)	Participated in the committees that developed standard 62-1989 and standard 62-1999 (also appendix S)	Tobacco Institute representative, later Philip Morris representative <sup>19 186 191-194</sup>
Hirnikel, Dan	Attended several committees and subcommittees	PM employee <sup>15 195</sup>
Holcomb, Larry Holcomb Environment Services	Attended meetings, participated in several subcommittees and technical committees	Tobacco industry consultant <sup>15 56 57 177 186 192 196-198</sup>
Janus, Walter Gershon Meckler Associates	Attended committee meetings	Tobacco industry consultant <sup>177</sup>
Logue, Mayada	Participated in subcommittee, attended all meetings; appendix S subcommittee	Philip Morris Management Corporation employee <sup>15 59 175</sup>
Meckler, Gershon Gershon Meckler Associates	Attended committee meetings	Tobacco industry consultant <sup>177 199-201</sup>
Meckler, Milton The Meckler Group	Participated in the committee that developed standard 62-1989, liaison to 62 from a technical committee in the development of 62-1999, ASHRAE TC9.1	Tobacco industry consultant <sup>177 186 192 194 202</sup>
Moschandreas, Demetrios J	62-1989 development committee, technical committee member	CIAR grantee and scientific board <sup>203</sup>
Nelson, Paul	ASHRAE member; attended meetings	RJR employee 92 208
Sterling, T Simon Fraser University and Sterling & Associates and Sterling, Elia M. Theodor D. Sterling and Associates Ltd	Participated in several committees Participated in the committee that developed standard 62-1989, TC 9.9 liaison to 62 (development of 62-1999 + app. S)	Tobacco industry consultants <sup>186 192 194 198 201 204 205</sup>
Turner, Simon ACVA Atlantic, later Healthy Buildings International	Participated in meetings and subcommittees st. 99	Tobacco industry consultant <sup>18 186 192 198</sup>
Witorsch, Philip	Member of subcommittee working on st. 99 (1993)	Tobacco industry consultant <sup>15</sup>
Woods, James Virginia Tech University	Chair of the committee that developed 62-1981, in the development of 62-1989, member of Standards committee	Later received a grant from Philip Morris to develop ventilation technology. <sup>58 206</sup> Advisory board member, CIAR <sup>203</sup>
Wilson, Robin K	ASHRAE member, attended committee meetings	RJR employee <sup>92 207</sup>

\*This is not a comprehensive list, but a minimum list. There could be both more people, not listed, and more activities by those listed. CIAR, Center for Indoor Air Research; PM, Philip Morris, RJR, RJ Reynolds.

Paul Cammer, president of the Business Council on Indoor Air (BCIA, a group that had been infiltrated by the tobacco industry<sup>64-67</sup>) to ASHRAE's then president elect, Richard Hayter, requesting a legal analysis of the proposed standard before release for public review, stating that there was "liability created by the shift from an engineering standard to a health standard".<sup>68</sup> Cammer attached an analysis by the tobacco industry law firm Paul, Hastings, Janofsky & Walker in 1993.<sup>69 70</sup>

These arguments contradicted ASHRAE's code of ethics, which states that ASHRAE's efforts "shall be directed at all times to the enhancement of the *public health, safety* and welfare"<sup>13</sup> [emphasis added] and ignored the fact that ASHRAE had always considered health concerns at no increased liability consequences to engineers using the standard.<sup>61</sup>

### The attack on Tucker and the EPA

In addition to the opposition to the draft standard's health orientation, ASHRAE dealt with an attack on SSPC 62 chair, and EPA employee, Gene Tucker. In May 1995, EPA received a letter from US Representative Joe Barton (R-Texas), chair of the subcommittee on oversight and investigation, accusing the EPA of playing an illegal regulatory role on IAQ by developing voluntary programmes and influencing ASHRAE through Tucker. EPA denied these charges, noting that Tucker was not working at ASHRAE as an EPA representative. Indeed, ASHRAE had invited Tucker to chair the 62 committee.<sup>71-74</sup> Later, the EPA's Inspector General did not find any wrongdoing, but stated only that an appearance of "undue involvement on a private standard setting" had been created by Tucker's involvement with SSPC 62.<sup>75</sup>

PM's internal documents contain drafts of a May 1995 letter to be signed by Congressman Jerry Lewis (R-California).<sup>76-77</sup> It is unclear if the letter was sent, but portions of it are identical to Barton's letter.<sup>77</sup> Lewis' draft letter referred to a \$600 000 1989 Cooperative Agreement between EPA and ASHRAE to work on indoor air issues, implying this agreement was EPA's attempt to influence ASHRAE.<sup>77-78</sup> (In fact, EPA routinely entered into such agreements with professional organisations. EPA funding for ASHRAE's projects in fiscal years 1988 to 1991 was \$45 000, and \$200 000 for fiscal year 1992, of which only \$50 000 was for Standard 62 related activities, mainly to pay for committee meetings organisation, secretarial support, and travel expenses.<sup>74</sup>)

According to the tobacco industry law firm Shook, Hardy & Bacon (SH&B) report of the September 1995 SSPC 62 Palm Springs meeting, Tucker stepped down as committee chair because of the EPA controversy.<sup>79-80</sup> In reality, Tucker's four year term as chair had expired, but he continued on as a non-voting committee member. At this meeting, the goal was to have the draft standard ready for public review by April 1996, but SSPC 62 members determined that there was not enough consensus among the committee to approve the definition of acceptable IAQ.<sup>80-82</sup> Steve Taylor, the new chair of SSPC 62, sent it back to the health and comfort subcommittee for revision.<sup>81</sup>

#### **Appendix S: guidelines when smoking is permitted—perceived acceptable indoor quality based on comfort, not on health**

The draft of 62-1989R contained Appendix S, to "provide guidance for achieving acceptable perceived air quality in the presence of ETS" with the caveat that exposure to ETS (environmental tobacco smoke) automatically made IAQ unacceptable.<sup>83</sup> The September 1995 meeting established a subcommittee to deal with Appendix S to convert the appendix from normative (that is, part of the standard) into informative.<sup>84</sup> SH&B summarised the meeting:

Ventilation for smoking remained a contentious issue and consumed most of the committee's attention during the first day of its meeting. . . . Prior to the Palm Springs meeting . . . [a] majority of committee members had agreed that if smoking occurs, air quality indoors is unacceptable. Appendix S would provide high ventilation rates to achieve acceptable perceived indoor air in indoor spaces where smoking is allowed.<sup>79</sup> [emphasis added]

Appendix S subcommittee members included several tobacco industry representatives<sup>80-85-86</sup> (table 2). RJ Reynolds' Hoy Bohanon wrote to Appendix S subcommittee members raising some questions as to why smoking should be singled out as the only indoor air contaminant, stating that there was no "universal agreement concerning the health risks of ETS at exposures encountered in the real world".<sup>87</sup> Appendix S subsequently became part of the draft standard (as opposed to an appendix) as a "strong source reference", which meant it would address other contaminants sources, including but without singling out tobacco smoke, another victory for the tobacco industry.<sup>88-91</sup>

The subcommittee's recommendations were based on the premise that elimination of all risks associated with exposure to SHS was an unattainable goal and beyond the scope of ASHRAE's mandate, given that ASHRAE was not a regulatory agency and should avoid "becoming the tool of those wishing it to assume that role".<sup>88</sup> This position ignored the well established principle of source control in industrial hygiene, the ASHRAE code of ethics, and the fact that any standard has regulatory implications.

#### **1996: Standard 62-1989R is ready for public review—the issue of defining acceptable indoor air quality remains**

SSPC 62 continued to address the definition of acceptable indoor air quality, and "whether the standard should be a health-based standard or a perception standard".<sup>80-92-94</sup>

The industry "lost ground" when at the 1996 winter meeting, the committee reinserted the language that for "[v]entilation for Environmental Tobacco Smoke" the rates prescribed were based on non-smoking, "since no acceptable level of environmental tobacco smoke has been established regarding its carcinogenicity".<sup>92</sup>

SSPC 62 approved a draft standard to be submitted for public review on August 1996. The definition of "acceptable indoor air quality" continued to include health issues as "air in . . . which there are not likely to be known contaminants at concentrations leading to exposures that pose a significant health risk".<sup>95</sup> It assumed no smoking, recognising that decreased perception of smoke and odour is all ventilation accomplishes.<sup>96</sup>

The draft included Appendix E, which was informative and, similarly to the earlier Appendix S, described ventilation rates for spaces in which smoking was allowed or that were exposed to tobacco smoke. It also determined that air that had been contaminated by smoke could not be recirculated or transferred to smoke-free zones. Appendix E made clear that the ventilation rates prescribed did not "provide acceptable indoor air quality in smoking or smoking-exposed zones".<sup>97</sup>

The tobacco industry was not pleased and called the revision of 62-1989 "Mission critical".<sup>98</sup> An October 1996 PM draft plan about strategies to defeat smoke-free laws states that ASHRAE's "proposed revised standard (PDR 62-R) [would result in a] . . . *de facto* prohibition of smoking [inside buildings]"<sup>99</sup> [Emphasis in original]. The company's goals and strategies regarding the proposed standard were:

Goals Perpetuate the substance of Standard 62-1989, which provides for smoking, . . .

#### Actions

- Build the record on procedural improprieties during the development of PRD 62-R.
- Consider litigation options concerning PRD 62-R.
- Encourage comments during public review from independent sources, as well as from engineers at PM USA, Kraft and Miller on the deficiencies of PRD 62-R . . .
- Mitigate potential adverse media stemming from PRD 62-R
- Encourage representative composition of the Committee revising PRD 62-R.<sup>99</sup>

PM mounted a campaign to generate public comments.<sup>100</sup> It created a 239 page briefing book<sup>101</sup> for company employees and potential allies (building design and construction professionals, hospitality industry members, HVAC equipment manufacturers, etc). The book contained instructions for submitting comments, and offered free technical assistance by industry consultant Chelsea Group (table 2), as well as through a PM employee,<sup>92</sup> and once again stated that the proposed standard was a *de facto* ban on smoking.<sup>101</sup> PM's campaign generated nearly 9000 comments, an unusual high number of comments for any proposed standard,<sup>95-102</sup> and although they were not all

from the tobacco industry and its most obvious allies, it is likely that most were motivated by PM efforts.<sup>101</sup>

As part of ASHRAE's process, at the end of the 60 day public review period, SSPC 62 had to address all the comments and attempt to resolve all objections by incorporating changes suggested or by discussing with the commenter until a common ground is reached. If a comment is rejected by the committee, the commenter has the option of appealing to ASHRAE's standards committee and board of directors. An ASHRAE document, presumably by Taylor, stated that "commenters . . . almost unanimously suggest we go back to the 62-89 definition [of acceptable indoor air quality]"<sup>95</sup> which was acceptable to the tobacco industry.

The document suggested re-wording the standard so that the definition for acceptable indoor air quality and ventilation for areas where smoking was permitted would emphasize comfort rather than health. In addition, the new wording would state that meeting the definition of acceptable indoor air quality was not a requirement for compliance with the standard.<sup>95</sup>

In 1997, the committee started reviewing comments.<sup>103-105</sup> The June 1997 interim draft<sup>106</sup> split the standard in two: commercial and high rise buildings (62.1) and low rise residential buildings (62.2), following a decision by ASHRAE's board of directors. The definition of "acceptable indoor air quality" was changed from the 1996 definition to put the emphasis on comfort and shifted the responsibility for determining safe levels of exposure to unnamed "cognizant health authorities".<sup>106</sup> Although not as strong as the 1996 draft, the 1997 draft maintained a health based approach as well as Appendix E.

#### **ASHRAE Standard 62-1989R: draft proposed standard withdrawn and standard changed into continuous maintenance**

The committee's revision of public comments was mooted in July 1997 when ASHRAE's board of directors, on a motion by tobacco industry consultant Milton Meckler, placed Standard 62-1989 under "continuous maintenance".<sup>102</sup> Under continuous maintenance "anyone may propose changes at any time" to be considered by the appropriate SSPC.<sup>107</sup> Under continuous maintenance, changes are made through addenda, and the standard is published with an approved set of addenda while additional addenda are being considered. ASHRAE then releases regularly additional approved addenda to be added to the standard. When Standard 62 was placed under continuous maintenance, the draft that had been submitted for public review was withdrawn<sup>108</sup> and the committee was required to rewrite the draft taking into consideration proposed changes submitted to ASHRAE.

PM's Logue described how the industry convinced ASHRAE's board to hand them this "major victory" in what she described as an "unprecedented" action:

In an Executive meeting . . . ASHRAE's Board of Directors voted 24-0-0 to place Standard 62-1989 under Continuous Maintenance . . .

This action by the Board of Directors will have a profound impact on the already proposed revision of the standard . . .

Below are the reasons the Board took this unprecedented action:

1. As a result of information becoming available on the inappropriate EPA involvement and funding relative to SSPC 62 committee, ASHRAE's members have become

increasingly alarmed by an apparent attempt by a Federal Agency to take over their organization. ASHRAE staff attempted to keep this information from their members. However, this effort failed.

2. Because of this concern, the President of ASHRAE appointed a special Ad Hoc Committee, in Jan. 1997, to review ASHRAE's process of developing multi-disciplinary standards and to specifically make recommendations for process improvements.

3. The Ad Hoc Committee made several recommendations at the Boston meeting, the most relevant being that standard 90.1-89 and 62-89 be placed on continuous maintenance. (PM submitted comments to that committee.)

4. The Board did not vote to place 90.1 [Energy Standard for Buildings Except Low-Rise Residential Buildings] on continuous maintenance because the chairman of that committee has made an effort to be inclusive in the process, rather than exclusive, as the chairman of 62 has done.

5. I addressed the Board of Directors on Sunday June 29. At that time I recommended ASHRAE open its' process to include more impacted parties. Following my presentation, I was contacted by ten Board members to provide more details on my experiences with the committee revising 62-1989. I have been told that the information I provided helped in their decision.

*This is a major victory for us. We have been working hard on preserving 62-1989 for five years . . . We have always attempted to work with ASHRAE by making technical presentations, suggestions and attended each committee meeting held since its' formation. Finally, I can say that our views have been heard and recognized.*<sup>109</sup> [emphasis added]

The *IEQ Strategies Newsletter's* account of events highlighted the tobacco industry's behind-the-scenes role:

How the process derailed [from proposed standard ready for approval to Continuous Maintenance] is an even more intriguing question than what the change in process means, but while observers with whom IEQS has spoken do not have a smoking gun, they do suspect a political maneuver, most likely by the tobacco industry or a closely allied group . . .

The official response is that the move to place the current standard on continuous maintenance . . . is in response to objections from "rank and file" members . . . [which was apparently coordinated by the tobacco industry, who contacted different allies throughout the country]

*It's no secret that the tobacco industry opposed the revised standard, for the principal reason that it assumed there would be no smoking in buildings. This would, in effect, constitute a smoking ban in any jurisdiction that adopted the standard as a code, and the committee was, in fact, drafting the standard in code language.*<sup>110</sup> [emphasis added]

Continuous maintenance placed the standard in a procedural situation favourable to the tobacco industry, which already had lawyers and scientific consultants with the knowledge and resources to maintain pressure on ASHRAE.

### **ASHRAE Standard 62-1999: despite tobacco industry opposition, assumes non-smoking indoors**

The tobacco industry continued to be involved with Standard 62. Twenty six change proposals were received by 20 September 1997 submitted by nine people. Of the nine people, five—Ky Ajayi, George Benda, and Stephen Turner from the Chelsea Group, Ed Fickes and Mayada Logue (table 2)—had known ties with the tobacco industry. One was from long time health based standard advocate and committee 62 member Francis Offerman.<sup>111 112</sup> (Offerman's change proposal became the basis for addendum 62e, discussed below.)

Throughout 1998 SSPC 62 dealt with change proposals. The treatment of tobacco smoke and the health implications continued to be a major issue. Nonetheless, in March 1998 ASHRAE released several addenda to the Standard for public review.<sup>113</sup> Most controversy would be created by addendum 62e, which removed a statement in 62-1989's table 2 (ventilation rates) that the ventilation rates in the table accommodated "a moderate amount of smoking". It also removed reference that "supplementary smoke removal equipment" was necessary in conference rooms. By removing these statements, the standard was returning to a smoke-free framework.

After the review period, SSPC 62 had to respond to the comments. If the commenter does not accept ASHRAE's response, he or she may appeal the committee's decision to the board of directors. Outstanding comments were referred to a mediation meeting, set up by the board of directors, which took place in October 1998. Comments submitted by PM<sup>114 115</sup> and Tobacco Institute representative Ed Fickes<sup>116</sup> generally stated that SSPC 62 did not follow due process in the establishment of the new addenda. PM's unresolved comment specifically stated that 62e was unpractical and would "hurt the hospitality industry" by removing smoking from the prescribed ventilation rates table.<sup>115</sup>

Meanwhile, PM was preparing for the approval of 62e. In a draft document for internal distribution, PM stated that there was no scientific reason for ASHRAE to move from comfort to health in defining the standard, that it was wrong of ASHRAE to use the findings of the 1992 EPA report<sup>2</sup> on the health effects of SHS as a reference, and again brought back the issue that SSPC 62 move towards a smoke-free standard was part of EPA's attempt to regulate indoor air.<sup>75 117</sup> A draft document on "discussion points" anticipating the approval of 62e describes steps PM would take:

- At this juncture, Addendum 62e has not been accepted [by ANSI] . . . The ANSI certification and appeals processes will provide another opportunity for review of Addendum 62e.
- Unless and until Addendum 62e is adopted into state and local building codes it does not have force of law . . .
- It could be premature to change policies and practices with respect to smoking based solely on Addendum 62e because ASHRAE continues to work on additional addenda [sic] specifically addresses smoking. These other addenda, together with Addendum 62e, may provide more comprehensive and clear guidance to building owners and designers with respect to smoking . . .<sup>75</sup>

PM decided to take advantage of the continuous maintenance process and "work with the committee revising Standard 62 on other addenda that are expected to provide for the accommodation of indoor smoking"<sup>75</sup> nullifying the effect of addendum 62e.

In September 1999, after approval by the board of directors, ASHRAE published Standard 62-1999 ventilation for acceptable indoor air quality. It included addendum 62e and defined acceptable indoor air quality as:

Air in which there are no known contaminants at harmful concentrations as determined by cognizant authorities and with which a substantial majority (80% or more) of the people exposed do not express dissatisfaction.<sup>118 119</sup>

Although this definition was not as strong on the health issue as the one proposed in 1996, Standard 62-1999 contained addendum 62e, which assumed non-smoking.<sup>119</sup>

Due to an editorial oversight, ASHRAE created an exception to the smoke-free standard for smoking lounges, bars, cocktail lounges, and casinos that would have to be addressed later by the committee by providing separate guidelines if smoking were to be allowed or by another addendum.<sup>120</sup>

The board of directors issued policy directives asking SSPC 62 to address ventilation rates for smoking areas, a position "consistent with the positions" taken by the tobacco industry at ASHRAE.<sup>121</sup> Thus, there was still room for the tobacco industry to promote "accommodation". The board's directive again contradicted ASHRAE's code of ethics that its efforts "shall be directed at all times to the enhancement of the public health, safety and welfare".<sup>13</sup>

A PM draft statement following the approval of addendum 62e emphasised the "good news",<sup>122</sup> framing the approval of 62e as:

the first of several steps in the development of comprehensive ventilation guidelines for non-smoking and smoking environments. We do not believe that this addendum, without further anticipated action by the board, will have a material impact on existing ventilation guidelines.<sup>123</sup>

This statement ignores the fact that with the adoption of addendum 62e and Standard 62-1999 (with the few exceptions mentioned above) it is not possible to have a building ventilated consistent with ASHRAE standards if smoking is allowed.

PM and Fickes immediately appealed ASHRAE's decision to the ANSI board of standards review (BSR), requesting that approval of addendum 62e be rescinded, claiming procedural failure of the process.<sup>124 125</sup> (A third appeal was submitted by Mark Lehrman, an engineer who stated he was representing himself.<sup>126</sup>) BSR denied the appeals. PM appealed to the ANSI appeals board,<sup>127</sup> which denied the appeal and upheld the standard.

### **Interpreting the Standard**

ASHRAE procedures allow for questions regarding a standard's interpretation to be submitted, and responded by the appropriate committee. If the response is approved by vote it becomes an official committee position and part of the standard. In response to an interpretation request submitted by Francis Offermann, the committee reiterated that the intention of addendum 62e was that the ventilation rate procedure applies only to spaces with no smoking. The interpretation also stated that SHS is a human carcinogen.<sup>120</sup>

Another request for interpretation, submitted by R.J. Reynolds' Bohannon (table 2), asked if the ventilation rates would apply to restaurants that allow smoking. ASHRAE's



response clearly stated that the standard did not prescribe a ventilation rate for restaurants if smoking was allowed.<sup>128</sup> Further, it stated:

Based on Addendum 62e . . . the Ventilation Rate procedure applies only to spaces with no smoking (except for smoking lounges, bars, cocktail lounges and casinos). The standard currently does not provide guidance on prescriptive ventilation rate requirements for smoking-permitted restaurants . . .<sup>128</sup>

The accidental exception provided the tobacco industry and its allies ammunition to claim that the ventilation rates in the new standard are adequate for smoking (which they are not).<sup>129</sup>

In an effort to determine the importance of health in developing standards, in 2000, the ad hoc committee on health impacts in standards, appointed by ASHRAE's president Bill Goodman,<sup>130</sup> reported that:

ASHRAE standards should and do consider health impacts when setting the criteria for an acceptable indoor air environment . . . Health impacts are interwoven throughout our standards and guidelines and removing this information would abrogate our responsibilities to our membership and the general public.<sup>130</sup>

Further, the committee recommended that the "Board of Directors affirm the implied policy that ASHRAE Standards shall consider health impacts where appropriate".<sup>130</sup>

In light of the scientific evidence that even low levels of SHS are dangerous and ASHRAE's own internal reviews and interpretation, there would seem to be no question that Standard 62 should assume non-smoking. Nonetheless, because of the board of directors' directive when it approved 62e that SSPC 62 provide normative criteria to accommodate both smoking and non-smoking<sup>121</sup> and pressure from the tobacco industry and its allies, SSPC 62 continues to debate smoking and IAQ.

#### **Beyond addendum 62e: the tobacco industry (with its allies in the hospitality industry) continues to fight for an "accommodation" standard**

In November 1998, ASHRAE released another set of proposed addenda for public review. Addendum 62g would establish requirements for "classification ('ETS area' or 'ETS free area'), signage, and separation of areas where smoking of tobacco products is permitted (smoking permitted areas)".<sup>131</sup> Addendum 62g would require that smoking permitted areas be physically separated from smoke-free areas, and air from smoking areas be not recirculated to smoke-free areas. As of June 2002, this addendum had not been approved, but each revision was more consistent with the tobacco industry's need to maintain public smoking. The National Restaurant Association (NRA), the tobacco industry, as well as state restaurant associations, other hospitality groups, and individual restaurant owners continue to submit comments on addendum 62g.

PM continued to develop strategies to oppose addenda it considers threatening, including contacting potential allies and encouraging them to submit comments.<sup>129 132 133</sup> PM contacted "ventilation technology vendors" to inform them about revisions to the standard,<sup>134</sup> and allies in the hospitality industry and in the food and beverage business to encourage them to be more involved with ASHRAE.<sup>123 135-139</sup> Part of PM's strategy with the hospitality industry was outlined in a 1999 memo from Matt Winokur to PM USA's Rochelle Goldman:

Thanks for facilitating the meeting yesterday with the NRA and AH&MA [American Hotel and Motel Association] . . . [Some] specific next steps as follows:

1. It was agreed that PM would alert the associations about forthcoming opportunities to comment on addenda to Standard 62 and provide them with relevant information to help them develop their comments. Separately, you and I will need to ensure a mechanism is in place for this.

2. It appears both NRA and AH&MA are well aware of the new organizational membership opportunities on SSPC 62 . . . Also, we should consider whether the bar/tavern sector should also try to sign up as organizational members and whether they would also like a briefing such as yesterday's.

There was some discussions about taking an approach to the ASHRAE process by drawing attention to ASHRAE overstepping its bounds and taking on—and doing it badly—a regulatory role. We have already begun to consider options in this area and I would like to discuss thus further with the PM group as a next step.<sup>140</sup>

PM appeared to consider working with the casino and gaming interests on issues related to ASHRAE, as it had done in the past.<sup>141 142</sup> PM also looked for support among the bar and tavern associations.<sup>138 140</sup>

#### **The tobacco industry and the hospitality industry**

By mid 1999 PM worked towards developing a coalition with "hospitality business and labor interests" to focus on indoor air quality issues and participate at ASHRAE.<sup>136</sup> The result was the Hospitality Coalition on Indoor Air Quality. The coalition has representatives of labour unions, hospitality business, as well as PM and PM's consulting group, Chelsea Group Ltd.<sup>143</sup> Among the many goals of the Coalition's technical committee was to:

- a. Appoint a hospitality industry liaison to participate in ASHRAE meetings
- b. Consider applying for allied membership to have hospitality industry representation
- c. Draft talking points to assist the hospitality industry in commenting to ASHRAE on addendum that may impact their business, starting with addendum g.<sup>143</sup>

This effort is part of a larger industry effort to use the hospitality industry to defend the social acceptability of public smoking and protect its profits.<sup>144</sup>

PM saw results from its efforts with the hospitality industry. After a meeting with PM representatives, the NRA submitted comments to ASHRAE regarding different addenda.<sup>138 145 146</sup> In 2001, the NRA published on its website an issues update about ASHRAE Standard 62-1999 claiming that changes proposed at the time by addenda 62o and 62y, which related to ventilation requirements, would make it "virtually impossible to designate and operate a smoking section in a restaurant".<sup>147</sup>

More recently, the hospitality and gaming industries have initiated a major push within ASHRAE to develop a separate IAQ standard for them. As of June 2002, the issue was unresolved. At the ASHRAE winter meeting in January 2002 there were two separate sessions discussing the need for a separate standard. Among presenters were people with current or previous association with the tobacco industry, such as Elia Sterling (table 2),<sup>148-151</sup> as well as representatives from tobacco allies in the gaming and hospitality industries.<sup>141 142 144</sup> No representatives of "cognizant health authorities" were invited to

make presentations, despite a statement in an ASHRAE press release<sup>152</sup> that the sessions had speakers representing tobacco control and health groups. The moderator of one of the sessions, Richard Evans, reflected the standard tobacco industry position when he stated: "ASHRAE Standard 62 currently has a zero tolerance for environmental tobacco smoke . . . Hotels, restaurants, bars, taverns, and casinos—the majority of the hospitality industry—are trying to accommodate their smoking patrons, the law, and stay in business. They are looking to ASHRAE to alleviate the situation by specifically addressing their plight."<sup>153</sup>

In preparation for the winter 2002 meeting, and based on preliminary results of the research described here, one of the authors (SAG) submitted an ad to the *ASHRAE Journal*. The ad denounced the tobacco industry influence on ASHRAE's process. The *Journal* refused to run the ad, which was subsequently published in *Engineered Systems*. The ad generated a response from ASHRAE's president, William Coad, in which he denied any undue influence from the tobacco industry and expressed that there is still some questions over the harmful effects of SHS. (ASHRAE's insistence on the establishment, by cognisant health authorities, of a minimum, acceptable exposure level for SHS ignores the fact that these authorities view SHS as an easily avoidable human carcinogen and cardiovascular toxin through source control—that is eliminating smoking indoors.<sup>154–155</sup>) Several letters to the *Journal* followed<sup>156</sup> and after public health groups began to mobilise pressure on ASHRAE, the board policy committee on standards met in Atlanta in April 2002, coinciding with a meeting of the Standard 62 committee, and recognised the contradiction of addressing smoking in the normative language and considered several other options for handling SHS such as making Standard 62 a no smoking standard. Both the board and the Standard 62 committee meetings were attended by representatives from the Americans for Nonsmokers' Rights, American Heart Association, American Lung Association, Campaign for Tobacco Free Kids, and the local chapter of the American Cancer Society. These groups, present as observers, were given an opportunity to express, on the record, their opposition to a separate ventilation standard for the hospitality industry.

However, at the summer 2002 ASHRAE meeting, the board policy committee on standards recommended that a separate publication be written to provide design guidance for spaces that contain SHS, while maintaining that the current standard is applicable only to spaces without smoking indoors.<sup>157</sup> Such publication would be neither a guideline nor a standard, although through proposed addenda, it is still possible that eventually the current standard will incorporate some sort of guideline for ventilation on the presence of SHS, a goal of the tobacco industry. Richard Hayter, a member of the committee who made the recommendations, said: "References to the health effects of environmental tobacco smoke are outside the purpose of the standard."<sup>157</sup> It is not yet clear what health groups will do about this new development, but it generates additional confusion for building owners and managers in terms of standard compliance and provides the tobacco industry additional ammunition to oppose a smoke-free standard.

## DISCUSSION

The tobacco industry has given a high priority to influencing ASHRAE and succeeded. Its involvement with the standard setting process is part of its overall strategy to deny the dangerous health effects of SHS and to protect the social acceptability of smoking. In addition to open participation, the industry has used many of the same strategies at ASHRAE that it uses in other areas: utilisation of consultants and front groups, utilisation of procedural appeal mechanisms in order to delay the work and to create cumbersome tasks, and questioning the legitimate science regarding SHS. Given that time

## What this paper adds

Creation of smoke-free workplaces and public places not only protects non-smokers from secondhand smoke; they also reduce cigarette consumption. The tobacco industry has responded by promoting "accommodation" of smokers and non-smokers. A key element of this strategy is presenting ventilation as a "solution" to the problem of secondhand smoke exposure. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) develops standards for ventilation systems.

The tobacco industry has been involved with ASHRAE for over 20 years, both directly and through consultants and allies. The major health groups have been largely absent and the health interests have been poorly represented in standard development. The tobacco industry successfully blocked a health based ventilation standard. Through the efforts of a few individuals, ASHRAE has been prevented from issuing a pro-tobacco standard, but proposals to do so continue move forward.

and again<sup>61 102 130</sup> ASHRAE has confirmed that health impact has to be considered in the standards development process, it is a measure of success for the tobacco industry that is has convinced ASHRAE's board to resist treating SHS as the toxic indoor air contaminant that it is.

In addition to the impact that ASHRAE ventilation standards have in the USA and Canada, the industry has attempted to influence the International Organization for Standardization (ISO) development of international ventilation standards. When in 1993 ISO first established a technical committee on building environment design (TC 205) which would address ventilation standards, the process was completely dominated by the tobacco industry. The first TC 205 chairperson was industry consultant Milt Meckler and the committee had several other people associated directly and indirectly with the tobacco industry, which was pushing for an international standard modelled after 62-1989. (ANSI is the committee secretariat.) The tobacco industry also monitors other countries' development in the ventilation area and, just like in the USA, attempts to influence the outcome through the promotion of industry friendly ventilation standards. As of May 2002 an international IAQ/ventilation standard has not been issued by ISO and it is unlikely that the industry will push for a smoke-free standard similar to 62-1999.<sup>158–172</sup>

Even more important than the industry participation and success at ASHRAE, which is clearly permitted under ASHRAE guidelines and procedures, is the fact that the industry was unchallenged by the organised public health community for the last 20 years. Indeed, these organisations rarely participate in the process surrounding development of standards, regulations, and other administrative procedures despite the fact that these activities can have a substantial effect on public health.<sup>173 174</sup> The progress made to move the standard toward accepting a definition of acceptable indoor air quality that takes into account the overwhelming evidence about the dangers of SHS is a testimony to the individual efforts of a few Standard 62 committee members who did not cower when faced with the industry pressure. (Since the end of the writing of this paper, Standard 62-2001 has been published, incorporating new addenda, none relevant to the tobacco issue discussed here.) Until recently, none of the large health groups ever participated at ASHRAE in an organised way, either directly, attending meetings and requesting membership in the various committees and subcommittees or through the provision of comments during the public review process. The American Lung Association reimbursed Richard Daynard's expenses to attend some of the committee meetings in the early 1990s, but did not participate as an organisation.

In 2001, the American Medical Association applied for, and was granted, a voting membership on the committee, and as discussed earlier, several other health organisations attended the January and April 2002 meetings. ASHRAE discussions can be technically overwhelming and it would be beneficial for the health groups to engage the consultation of engineering experts to better bridge the gap between the health concerns and expertise and the technical aspects of standard development. If the health groups become active participants in the process and gain more visibility within ASHRAE they may be able to influence the process, otherwise, health interests will continue to be overwhelmed by the substantial efforts of the tobacco industry and its allies.

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## Authors' affiliations

**S Aguinaga Bialous, S A Glantz**, Center for Tobacco Control Research and Education, Cardiovascular Research Institute, School of Medicine, University of California, San Francisco, San Francisco, California, USA

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