

Ventilation and Air Filtration: The Science

- A study published in the September 2004 edition of the Journal of Occupational and Environmental Medicine compared the indoor air quality of a casino, six bars, and a pool hall in Wilmington, Delaware, before and after the implementation of a smokefree law. The study found that the ventilation technology installed in these establishments did not protect the workers and the public, as secondhand smoke contributed 85-95% of the carcinogen PPAH, and 90-95% of the respirable particulate air pollution into the air. These contamination levels greatly exceed those encountered on major truck highways and polluted city streets.¹
- In less than two hours after New York's smokefree law went into effect and smoking stopped, the level of respirable particulate matter (PM) dropped to 15 percent of the level on a smoking night in restaurants and bars. Three months after the law became effective, the level of PM dropped by 90 percent in these venues. Prior to the smokefree law's implementation, New York hospitality employees working an eight hour shift, 250 days a year, were exposed to particulate matter levels seven times greater than the maximum level deemed as acceptable by the U.S. Environmental Protection Agency. In addition, PM dropped an average of 77 percent after the law went into effect in bowling alleys, pool halls, and bingo halls.²
- The 2002 Environmental Health Information Service's 10th Report on Carcinogens classifies SHS as a Group A (Human) Carcinogen--a substance known to cause cancer in humans. There is no safe level of exposure for Group A toxins.³
- The 1986 Surgeon General's report on involuntary smoking concluded that, "the simple separation of smokers and nonsmokers within the same airspace may reduce, but does not eliminate, the exposure of nonsmokers to ETS [environmental tobacco smoke]."⁴
- Using current indoor air quality standards, ventilation rates would have to be increased more than a thousand-fold to reduce cancer risk associated with ETS to a level considered acceptable to federal regulatory agencies. Such a ventilation rate is impractical since it would result in a virtual windstorm indoors.^{5,6}
- "Separation of smoking areas does not protect the workers and occupants within the smoking area. When separation is properly done (and this is not common), it can reduce the exposure of occupants in the nonsmoking areas, but there is no

quantitative assurance that the remaining exposure meets any current health standard or goal."⁷

- "[T]o be at all effective in reducing the concentration of smoke in a space, any air cleaner must process many room air volumes per hour.... [E]ven large, expensive air cleaners with efficiencies for captured particles are capable of reducing, but not eliminating the environmental tobacco smoke tar particles in room air, and are not at all effective for gases, which contain most of the irritants.... [E]ven expensive particulate air cleaners cannot remove enough tar particles in room air to eliminate the cancer risk from environmental tobacco smoke. In general, filtration of indoor air to remove environmental tobacco smoke contaminants is futile - like trying to filter a lake to control water pollution."⁸
- Ventilated smoking rooms leak smoke into the rest of the building, harming everyone in the building. A recent research study conducted by and published for the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) "showed that up to 10 percent of smoking room air enters non-smoking areas just by opening and closing of a swing type entry door.... With supply and exhaust air flow that are practical for small smoking rooms, leaving the smoking room door open results in a large flow of air to adjoining non-smoking areas. To prevent this, smoking room doors should be equipped with an automatic closure mechanism."⁹
- "Changes in ventilation rates during smoking do not have a significant influence on the air concentrations of tobacco components. This means, in effect, that efforts to reduce indoor air pollution through higher ventilation rates in buildings and homes would hardly lead to a measurable improvement of indoor air quality."¹⁰
- "[I]t is noted that the specific amount of additional ventilation cannot be determined until cognizant health authorities have determined an acceptable level of environmental tobacco smoke (ETS).... An appendix ... provides a method to allow designers to determine additional ventilation over what would be provided in a similar non-smoking area. However, this additional ventilation is for the purpose of odor control only."¹¹
- "In managing workplace ETS risks, smoking policies such as separating smokers from nonsmokers in the same space or on the same ventilation system expose nonsmokers to unacceptable risk."¹²

REFERENCES

1. Repace, J. "Respirable Particles and Carcinogens in the Air of Delaware Hospitality Venues Before and After a Smoking Ban." *Journal of Occupational and Educational Medicine*. September 10, 2004.

2. RTI International, "First Annual Independent Evaluation of New York's Tobacco Control Program," New York State Department of Health, November 2004. Accessed on November 29, 2004. Download at http://www.health.state.ny.us/nysdoh/tobacco/reports/docs/nytcp_eval_report_final_11-19-04.pdf.
3. Report on Carcinogens, Tenth Edition; U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, December 2002.
4. U.S. Surgeon General. The Health Consequences of Involuntary Smoking. Washington, DC: U.S. Department of Health and Human Services, 1986.
5. Repace, J., "Smoking in the workplace: ventilation. In: Smoking Policy: Questions and Answers, no. 5.," Seattle: Smoking Policy Institute, [n.d.].
6. Repace, J., "An air quality survey of respirable particles and particulate carcinogens in Delaware hospitality venues before and after a smoking ban," Bowie, MD: Repace Associates, Inc., February 7, 2003.
7. Schoen, Lawrence J. Principal Engineer of Schoen Engineering, Inc. [Letter to M. J. Nicchio re: ventilation.] October 7, 2003.
8. Repace, J., "Smoking in the workplace: ventilation. In: Smoking Policy: Questions and Answers, no. 5.," Seattle: Smoking Policy Institute, [n.d.].
9. "ASHRAE Journal: Shutting the Door on ETS Leakage," ashrae.org, July 2003.
10. Joint Research Centre, Indoor air pollution: new EU research reveals higher risks than previously thought. Brussels: European Commission. September 22, 2003.
11. "ANSI Upholds Approval of ASHRAE Smoking Addendum," csemag.com, September 29, 2003.
12. Repace, J.L., "Risk management of passive smoking at work and at home," St. Louis University Public Law Review 8(2); 763-785, 1994.

**COMPANIES AGREE THAT VENTILATION SYSTEMS DO NOT ELIMINATE
HEALTH RISKS CAUSED BY SECONDHAND SMOKE**

- **Allergy Control Products, Inc.:** "Allergy Control Products, Inc. does not claim that air cleaners offered in this catalog will protect people from potential health risks associated with secondhand smoke."¹
- **Allergy Buyers Club, Inc:** "Improved ventilation and use of air purifiers may reduce, but will not completely eliminate, your exposure to secondhand smoke and the associated health risks."²
- **Brookstone:** "No air purifier can protect against the health hazards associated with secondhand tobacco smoke."³
- **Espitech Air Products:** "We make no medical or health claims whatsoever and it is not our intention to do so.... [The] goal or objective of [the] air purification systems that we sell, for use in a smoking environment, is to provide relief from the annoyance of the odour produced by tobacco smoke as well as some of the discomforts that the smoke (fumes) and odour causes. Espitech Air Products disclaims all warranties, implied or otherwise, that anyone (non-smoker or smoker) who installs our air purifiers, air cleaners, or air scrubbers as an alternative to seeking a smokefree environment will be protected from the health risks caused by exposure to second hand smoke."⁴
- **Honeywell:** "Honeywell has not in the past and does not make health hazard claims."⁵
- **IQAir North America:** "[Air filtration] doesn't remove the risk of secondhand smoke. It would reduce the amount of smoke in the air over an amount of time. In my opinion, air cleaners are not going to be a solution. Air cleaners can not reduce the initial exposure [to smoke] and that's where the risk is coming from."⁶
- **Peak Pure Air:** "Nowhere [sic] do we claim that our products eliminate all hazardous contaminants... No! ... not any product on earth will eliminate health hazards cause by exposure to second hand tobacco smoke. After one has been exposed, the damage is done.... In a perfect world we would not need to worry about secondhand tobacco smoke."⁷
- **Radio Shack:** "We make no claims that this product will protect people from second-hand smoke....The Environizer electronic air purifiers do not eliminate

such [health] hazards...The Environizer will not help remove gases that are found in tobacco smoke."⁸

- **The Sharper Image:** "No air cleaner can protect against the harmful effects of secondhand tobacco smoke. Clean air begins with a smoke-free environment."⁹
- **Wein Products, Inc.:** "No air filtration or air purification system has been designed that can eliminate all the harmful constituents of secondhand smoke. A reduction of the harmful constituents of secondhand smoke does not protect against the disease and death caused by exposure to secondhand smoke. The U.S. Surgeon General has determined secondhand smoke to cause heart disease, lung cancer, and respiratory illness."¹⁰

VENTILATION DOESN'T PROTECT YOUR HEALTH - THE TOBACCO INDUSTRY KNOWS IT

- **Philip Morris USA** carries a disclaimer on its web site under a section entitled "Policies, Practices and Positions - Public Place Smoking" that admits ventilation does not address health issues: "While not shown to address the health effects of secondhand smoke, ventilation can help improve the air quality of an establishment by reducing the sight and smell of smoke and by controlling smoke drift."¹¹
- Although the Philip Morris-sponsored *atmospherePLUS*, a heating, ventilating and air conditioning consulting program, promotes "enhanc[ing] indoor air quality through ventilation," a promotional brochure's fine-print reads: "*atmospherePLUS* does not purport to address health effects attributed to smoking."¹²
- The **Options**, Philip Morris USA web site stated: "Our programs are not intended to address the health effects attributed to secondhand smoke."

REFERENCES

1. [n.a.]. "[Disclaimer re: Allergy Buyers Club, Inc.]" *Allergy Buyers Club, Inc.* [n.d.].
2. [n.a.], "[Disclaimer re: Allergy Buyers Club]," *Allergy Buyers Club*, [n.d.]. Accessed on December 6, 2004. Download at <http://www.allergybuyersclubshopping.com/al40voc.html>.
3. [n.a.], "[Disclaimer re: Brookstone.]," *Brookstone Catalog*, Winter 2004.
4. Lito Espinosa, Sales Manager of Espitech Air Products, "[Espitech letter re: performance of air cleaners and health hazard claims on www.allerairsolutions.com]," *Espitech*, April 14, 2004.

5. Janell Siegfried, Honeywell representative, "[Honeywell letter re: performance of air cleaners and health hazard claims]," *Honeywell*, June 12, 2000.
6. Glory Dolphin-Hammes, Executive director of the air filtration company IQAir North America. Quoted in: Filtration systems help, but can not eliminate smoke, *Northwest Arkansas News*, July 21, 2003.
7. Edward L. Peacock, President of Peak Pure Air, "[Peak Pure Air letter re: performance of air cleaners and health hazard claims on www.peakpureair.net]," *Peak Pure Air*, April 9, 2004.
8. J. Christian Angle, Trademark/Corporate Attorney for RadioShack Corporation. "[RadioShack letter re: performance of air purifiers and health hazard claims on www.radioshack.com.]" *RadioShack Corporation*. May 26, 2004.
9. (n.a.) "[Disclaimer re: air purifiers do not protect against adverse health effects caused by secondhand smoke.]" *The Sharper Image*. Accessed on May 19, 2004. Download at http://www.sharperimage.com/us/en/catalog/pipmoreshell11_2.jhtml?sku=SI637SNX&pid=58036000.
10. Stan Weinberg, Chairman and CEO of Wein Products, Inc., "[Disclaimer re: air purifiers do not protect against adverse health effects caused by secondhand smoke.]" *Wein Products, Inc*. Accessed on April 28, 2004. Download at <http://www.weinproducts.com/smoke.htm>.
11. [n.a.]. "Policies, Practices & Positions: Public Place Smoking, Reasonable Ways to minimize Secondhand Smoke," pmusa.com. Downloaded: October 3, 2003.
12. National Licensed Beverage Association. *AtmospherePLUS: How Ventilation Can Improve Customer Comfort and Profitability Brochure*. Alexandria, VA: National Licensed Beverage Association, 2000.