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Indoor air quality medicolegal issues

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Abstract

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The regulatory and legal communities have begun only recently to address the medicolegal issues surrounding indoor air quality. No single governmental agency is responsible for indoor air quality issues. The focus of the federal government's indoor air quality programs is on the gathering and dissemination of information rather than on the regulation of indoor air pollution. State and local regulatory controls vary but may include antismoking ordinances, building codes, and contractor certification programs. Numerous lawsuits involving various parties and legal theories have been filed on the basis of illness allegedly related to indoor air quality. Further regulatory and legal review of indoor air problems will likely occur in the near future, particularly as a result of the

characterization of environmental tobacco smoke as a class A carcinogen. (J ALLERGY CLIN IMMUNOL 1994;94:417-22.)

OSHA Occupational Safety and Health Administration

U.S. EPA United States Environmental Protection Agency

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Key words: [Indoor air quality](#), [environmental tobacco smoke](#), [regulation](#), [expert testimony](#)

The regulatory and legal communities have begun only recently to address the complicated medicolegal issues surrounding indoor air quality. Thus far, the focus of the federal government's indoor air quality programs has been on gathering further data on the extent, health effects, and means of mitigating indoor air pollution. Despite the limited regulatory frame-work governing indoor air quality, litigation in this area has increased during the past several years. To understand the complexity and diversity of the legal issues related to indoor air quality problems, it is helpful to review a few representative legal cases.

Indoor Air Quality Lawsuits

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The following cases are examples of the many types of lawsuits involving indoor air quality that have been filed during the past several years.

In *Palmer v Del Webb's High Sierra*, ¹ a casino employee filed a workers' compensation claim for his obstructive lung disease, which he claimed was the result of environmental tobacco smoke. He had worked for 20 years as a "pit boss" supervising gaming tables in an area with high levels of environmental tobacco smoke. He did not smoke and did not live or socialize with smokers. At his workers' compensation hearing, three physicians testified that his lung disease was the result of continuous workplace exposure to tobacco smoke. The legal issue, however, was whether his lung disease was a compensable occupational disease under Nevada law. The Nevada Supreme Court concluded that "until the legislature so decides, occupational disease claims based on inhalation of environmental smoke in the workplace must fail" in part because tobacco smoke is not "incidental to the character" of the casino business and because workers may be equally exposed to tobacco smoke outside of the workplace environment.

In another lawsuit involving workplace exposure, *McCarthy v State of Washington Department of Social and Health Services*, ² the plaintiff McCarthy worked at a state government office from 1970 to 1980. During that time she was continuously exposed to tobacco smoke at work, and her complaints to her supervisors regarding this exposure were not heeded. She developed chronic obstructive pulmonary disease and was advised by her physician that she could not continue to work in such conditions and she quit her job. She then filed a workers' compensation claim for her lung disease, contending that it was an occupational disease. Her claim was denied because the

Board of Industrial Insurance Appeals concluded that she did not have an occupational disease. McCarthy then sued her employer, the State of Washington, on the theory that it had been negligent in failing to provide her with a smoke-free environment. The state argued that her lawsuit should be dismissed because her sole remedy was filing for workers' compensation, which she had attempted unsuccessfully. The Washington Supreme Court ruled that workers' compensation was not her only avenue of legal relief as her disease fell outside the coverage of workers' compensation. The court then ruled that an employer has a duty to provide a working environment "reasonably free from tobacco smoke pollution." The court made it clear that the duty was not absolute. In determining the adequacy of an employer's efforts to provide such an environment, factors such as the employer's financial resources, reasonably available means to control smoking, and authority to do so were to be taken into account.

Other types of workplace exposures formed the basis for the workers' compensation claim in *McCreary v Industrial Commission of Arizona*.³ A computer engineer filed a workers' compensation claim based on his alleged development of "toxic brain syndrome, multiple chemical sensitivity syndrome, rhinosinusitis, and allergies to inhalants and foods" after he began to work in his employer's new building. His employer opposed the claim by use of technical and medical expert testimony, including testimony that the work area was well ventilated, that the employee had no objective physical findings, and that the employee experienced the same type of exposures (if any) in his nonwork environment. The employee's claim was denied by the State Industrial Commission. However, the employee appealed the denial, and the appeals court sent the case back to the Commission for a more clearcut determination regarding whether the employee's injury was caused by workplace or nonworkplace exposures.

Another case, *Dreesen v W.W. Henry Company*,⁴ pitted employees of a tenant against a landlord and carpet and glue manufacturers. A tenant requested that its landlord replace worn carpet in its building. The landlord had new carpet installed, and several of the tenant's employees then began to complain about the new carpet's odor and the potential resulting health problems. The tenant reported the complaints to the landlord, who had the carpet removed. The tenant then ordered environmental testing, including formaldehyde levels, which revealed "a slight amount of formaldehyde" in the building. After the building was again recarpeted, studies revealed no air contaminants in excess of Occupational Safety and Health Administration (OSHA) standards. Several of the tenant's employees then filed a lawsuit against the carpet manufacturer, carpet glue manufacturer, and the landlord, alleging negligent building construction, negligent maintenance of the building's ventilation, negligent misrepresentation of the building's safety, strict liability, and breach of warranty. The carpet and glue manufacturers argued that their products met government safety standards and that their products were not defective or unreasonably dangerous. The landlord argued that the tenant's lease required the tenant to maintain the ventilation system in good repair. The court accepted these arguments and ruled against the tenant's employees.

Finally, one of several cases involving exposure of prisoners to environmental tobacco smoke was recently decided by the U.S. Supreme Court. In *Helling v McKinney*,⁵ a federal prisoner alleged that his constitutional right to be free from cruel and unusual punishment was being violated because of exposure to environmental tobacco smoke in prison. The Supreme Court concluded that such a claim could be successful if the plaintiff proved: (1) that the exposure posed "an unreasonable risk of serious damage" to his health; (2) that society considers that such a risk "violates contemporary standards of decency," and (3) that the prison administrators were "deliberately indifferent to his plight." The Supreme Court sent the case back to the trial court so that

the prisoner would have the opportunity to present evidence regarding these issues.

Determination of Applicable Legal Theories and Use of Expert Testimony

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As evidenced by the previous case discussions, there are a wide variety of legal theories and parties in lawsuits involving indoor air quality. The nature of a particular lawsuit will depend largely on the case and statutory laws of the state in which it is filed, the relationship of the parties involved, the factors responsible for producing the indoor air pollution, and the applicable regulations.

For example, employees who develop problems resulting from workplace exposure to indoor air pollution typically file workers' compensation claims such as in the *Palmer*¹ case, but other types of lawsuits, such as *McCarthy*,² may also be successful. The recent designation of environmental tobacco smoke as a carcinogen by the U.S. Environmental Protection Agency (U.S. EPA)⁶ and the U.S. Supreme Court's decision regarding prisoners' exposure to environmental tobacco smoke⁵ presumably will form the basis for further regulatory decisions and litigation.

Tenants who are exposed to indoor air pollution may bring lawsuits against their landlords or building owners on the basis of various theories including breach of contract, constructive eviction, strict liability, and negligence. Building owners file lawsuits against any number of parties, including architects, engineers, contractors, HVAC (heating, ventilation, air conditioning) manufacturers or installers or servicers, interior designers, realtors, carpet manufacturers, fumigators, and maintenance personnel. Numerous scenarios exist for lawsuits involving indoor air pollution including defective design or improper installation of building material or ventilation systems, negligence in maintenance or application of chemicals, and failure to warn about or failure to disclose potential indoor air quality problems.

Expert witnesses, including physicians, engineers, industrial hygienists, and toxicologists, obviously play a critical role in litigation related to indoor air quality. The nature of the expert testimony required in a particular case will vary depending on the legal theories and issues. Typical issues to be addressed include whether by the "preponderance of evidence" the plaintiff's injuries were caused by exposure to indoor air contaminants and whether the defendant complied with applicable building and ventilation standards. In June 1993 the U.S. Supreme Court handed down its most recent and authoritative decision regarding the use of expert testimony in federal trials.⁷ The Supreme Court rejected the widely used standard that the expert opinion must be based on evidence or techniques "generally accepted" in the scientific community to be admissible. For example, in this case, the trial court had rejected the expert testimony offered by the plaintiffs in their attempt to prove that the drug bendectin causes birth defects. The rejected expert testimony was based on animal studies, analyses related to chemical structure, and unpublished "reanalysis" of published epidemiologic studies. The Supreme Court concluded that it was the trial judge's responsibility to determine in each case whether the expert testimony is "scientifically valid" by considering factors such as "whether the theory or technique . . . can be (and has been) tested, whether it has been subject to peer review and publication, its known or potential error rate, and the existence and maintenance of standards controlling its operation, and whether it has attracted widespread acceptance within a relevant scientific community."

Expert testimony from physicians on whether a plaintiff's injury was caused by exposure to indoor air contaminants generally must be given with a “reasonable degree of medical certainty” to be considered by the judge and/or jury in making its decision. This standard is one that in essence means that the expert testifies that it is more than 50% likely that the plaintiff's injuries were or were not caused by exposure to indoor air contaminants.

These general principles have been addressed in several lawsuits involving indoor air pollution. For example, in *Brown v Fairmont Homes, Inc.*,⁸ the plaintiffs sought to use the testimony of the treating physician to prove that their physical illnesses were related to formaldehyde exposure in their mobile home. The physician had never stated that he believed that the plaintiffs' illnesses were caused by exposure to formaldehyde in the home, although the physician did tell them that they should move out of the home if they thought it caused their problems. Thus the court concluded that the plaintiffs had failed to produce any evidence that their illnesses were related to formaldehyde exposure in their home.

Issues related to expert testimony can become very complex, as evident from the following case discussions. For example, in the *McCreary*³ case discussed previously, one of the plaintiff's expert medical witnesses had diagnosed the patient with “toxic brain syndrome, multiple chemical sensitivity syndrome, rhinosinusitis, and allergies to inhalants and foods.” The defendant company's expert medical witnesses had challenged the findings and diagnoses of the plaintiff's expert physicians and had concluded that the plaintiff did not have any neurologic, immunologic, or other illnesses other than preexisting allergies. In considering the conflicting expert medical testimony, the trial court decided to rely on the company's experts and went so far as to state that “in view of the debate within the medical community regarding the nature and cause of multiple chemical sensitivity syndrome, it may also be concluded that this condition . . . may actually be caused by medical opinions offered by the applicant's physicians.” This may be a bit extreme, but it emphasizes the varying manners in which the judge or jury may perceive and use expert testimony.

In another case, *Conde v Velsicol Chemical Corporation*,⁹ several complicated issues were raised regarding expert testimony on application of a pesticide (Chlordane) in the plaintiffs' home. The defendant's arguments were that the plaintiffs' experts failed to cite any valid supporting human epidemiologic studies and failed to rule out other causes for the plaintiffs' illnesses and that the plaintiffs' allegations regarding “immune system dysregulation” were not based on generally accepted medical theory. The court concluded that the plaintiffs had failed to provide evidence that their exposure to Chlordane caused their alleged injuries. The court in particular was critical of the testimony of the plaintiffs' expert physician (who happened to be one of the plaintiffs) because he did not have “specialized medical training or expertise in toxicology, immunology, or any of the other specialties related to the medical causation issues of this case” and because his testimony did “not clearly link his clinical findings and the test results to the medical literature.”

Multiplicity of Regulations and Regulators

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There is neither one single law that governs nor one single agency that regulates indoor air pollution. Thus far in the arena of air pollution, governmental regulation has focused on outdoor air pollution, but the focus is slowly expanding to include indoor air pollution. The potentially complex interrelationship is exemplified by asbestos abatement, which is often regulated at the federal, state,

and local levels.

At the federal level, the activities are to be coordinated by the Interagency Committee on Indoor Air Quality.¹⁰ A 1991 report from the investigative arm of Congress, the General Accounting Office,¹¹ entitled "Indoor Air Pollutants: Federal Efforts Are Not Effectively Addressing A Growing Problem"¹¹ detailed the need for more funding and research in this area. The laws that deal with indoor air quality include, to some extent, the Occupational Safety and Health Act, Toxic Substances Control Act, Consumer Product Safety Act, Federal Hazardous Substances Act, Uranium Mill-Tailings Act, Emergency Planning and Community Right-To-Know Act, and Federal Insecticide, Fungicide, and Rodenticide Act. Federal agencies involved in the regulation or investigation of indoor air quality include the U.S. EPA, OSHA, National Institute of Occupational Safety and Health, Consumer Product Safety Commission, Department of Health and Human Services, General Services Administration, Department of Housing and Urban Development, and Department of Energy.

State and local regulation of indoor air quality involves several mechanisms and varies from jurisdiction to jurisdiction. Many states have enacted air quality-related standards. For example, the state of Washington's regulatory scheme¹² includes prohibition on smoking in public places except in designated areas, development of indoor air quality requirements in new residences, development of stronger workplace and air quality control in public schools, and inspection of new residences for radon. The Washington statutes also preclude lawsuits against builders or designers regarding indoor air quality in buildings (constructed after July 1, 1991) if built in compliance with existing product safety standards and ventilation standards and radon-resistive requirements. Another example is workers' compensation statutes that vary from state to state and that may or may not allow claims for health problems related to indoor air pollution. Local regulations typically include building codes and possibly other laws such as antismoking ordinances, ventilation standards, contractor certification, and asbestos abatement statutes.

Conclusions

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Regulation of indoor air quality continues to develop at the federal, state, and local levels. Litigation in this area is also increasing. Further regulatory policy decisions and litigation will necessitate input from legal, technical, and medical experts. The U.S. EPA's decision to classify environmental tobacco smoke as a carcinogen⁶ and the Supreme Court's decision on the constitutionality of exposing prisoners to environmental tobacco smoke⁵ may hasten consideration of many of these policy decisions. Physicians can expect to play a greater role in legal and regulatory decisions in the future and to receive more questions regarding indoor air quality as patients become more aware of these issues.^{13 15}

Policy making in this area is challenging because of the diversity of sources, contaminants, and mitigation techniques,¹⁶ the need for further research, and the potentially widespread nature of indoor air pollution.^{10 17} The exact extent of indoor air quality problems, including numbers of affected buildings and occupants, is not known. However, one report has estimated that 800,000 to 1,200,000 commercial buildings with 30 to 70 million workers and 17 to 25 million residences with

50 to 70 million occupants may be affected by indoor air quality problems.¹⁸ In 1991, OSHA requested public input regarding potential health effects, assessment, and mitigation techniques and what regulations should be enacted.¹⁹ However, OSHA has not yet promulgated such regulations.

Sources of Information and Assistance

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In addition to the list of sources of assistance found in The Appendix, state and local health departments may be able to provide further information. More specific information regarding radon is included in the radon article published in this issue.

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Sources of information and assistance.

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6. U.S. EPA and Consumer Product Safety Commission. The inside story: a guide to indoor air quality. September 1988 (EPA/400/1 - 88/004).

B. Contacts

1. U.S. EPA
 - a. Public Information Center (202) 260-2080
 - b. Indoor Air Quality Information Clearinghouse (800) 438-4318
 - c. Regional offices
 1. Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) (617) 565-4502
 2. Region 2 (New Jersey, New York, Puerto Rico, and Virgin Islands) (212) 264-

6459

3. Region 3 (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia) (215) 597-8322
4. Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee) (404) 347-2864
5. Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) (800) 621-8431, except for Illinois (800) 572-2515
6. Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas) (214) 655-7223
7. Region 7 (Iowa, Kansas, Missouri, and Nebraska) (913) 551-7020
8. Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming) (303) 293-0976
9. Region 9 (Arizona, California, Hawaii, and Nevada) (415) 744-1133
10. Region 10 (Alaska, Idaho, Oregon, and Washington) (206) 553-2589
2. Occupational Safety and Health Administration (same states as above)
 - a. Regional offices
 1. Region 1
(617) 565-7164
 2. Region 2
(212) 337-2376
 3. Region 3
(215) 596-1201
 4. Region 4
(404) 347-3573
 5. Region 5
(312) 353-2220
 6. Region 6
(214) 767-4731
 7. Region 7
(816) 426-5861
 8. Region 8
(303) 844-3061
 9. Region 9
(415) 744-6670
 10. Region 10
(206) 553-5930
3. National Institute of Occupational Safety and Health
(800) 35-NIOSH
4. Department of Health and Human Services: Office on Smoking and Health
(404) 488-5705
5. American Industrial Hygiene Association
(703) 849-8888
6. Business Council on Indoor Air Quality
(202) 775-5887
7. National Energy Management Institute
(703) 739-7100
8. AFL-CIO
(202) 637-5000

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