

Office Workers and the “Sick Building” by William D. Sheldon

Twenty years ago last July, a convention of the American Legion was held in the Bellevue Stratford Hotel in Philadelphia. Of the 4,400 attendees, 221 became ill and 29 died within a few days of the convention. Many said they felt like they had the flu or a bad summer cold at first. It was five months before investigators from the Centers for Disease Control (CDC) issued a report blaming what is now called Legionnaire’s Disease on a bacteria (*Legionella*), now named for the outbreak, for the illness and deaths.¹ This bacteria has been around for a long time, but, ironically, highly efficient heating, ventilation and air conditioning (HVAC) provided a vehicle for it to incubate to dangerous levels and become part of the constantly recirculated air. In 1991, another outbreak of Legionnaire’s disease thought to be caused by a buildup of bacteria in the ventilation system resulted in the death of two workers in the Social Security Administration building in Richmond, California.² In Tucson, two deaths and seven other cases of infection were attributed to legionella at University Medical Center in 1996.³ Arizona’s statistics for Legionnaire’s disease hover around 12 to 15 cases per year, though there were outbreaks three to four times the normal range in 1991 and 1992.⁴

In 1988, the Environmental Protection Agency was plagued by a multitude of claims in its new office building. For several years, more than 100 of the 5,500 employees in the EPA headquarters had complained of new symptoms since moving into the new building, including hoarseness, dizziness, headaches, rashes, nausea, fatigue, blurred vision, chills, sneezing, fever, irritability, memory loss and burning sensations in the throat, eyes, ears, and chest. Further investigation revealed that more than 1,000, or nearly one-fifth, of the occupants of the building had serious health complaints by November of 1989.⁵

Can a Building be “Sick”?

“Sick building syndrome” is a broad name given to situations in which some factor or combination of factors in a given building — home or office — create poor indoor air quality (IAQ) causing health complaints.⁶ The Legionnaires’ convention dramatically demonstrated the potential for spreading contaminants through a building’s ventilation system. Hundreds of other examples of IAQ problems involving biological contaminants (bacteria, viruses, molds, etc.) and chemical contaminants (whether drawn into the air intake from outside or occurring as a result of construction materials, office machines, or chemical emissions from new carpet and new furniture) are reported yearly to Occupational Safety and Health Administration (OSHA), the CDC and other agencies.

The Cost of Efficiency

The 1970s saw the rapid increase of new buildings with highly efficient heating, ventilation, and air conditioning systems designed primarily to control the temperature of the building while saving energy. These efficient designs use very little fresh air intake and maintain temperature largely by recycling air, thus reducing the volume of air that had to be heated or cooled from the outside temperature. These buildings often did not have windows that could be opened by the office workers. A “tight” building resulted — energy efficient, but prone to recirculate every chemical and biological agent that occurred naturally, developed, or was introduced into the building. At the same time, newly manufactured furniture was made with a number of products, such as pressed wood or particle board, which are known to emit, or “off-gas”, by-products, such as formaldehyde. New carpets, similarly, had glues and resins which gave off odors. In a typical office building, the air contains various concentrations of at least 50 and as many as 500 different volatile organic compounds (VOCs), minute quantities of gases emitted by everything from caulking to carpeting.⁷ Similarly, photocopy machines give off ozone, detectible by its metallic odor, which can be a source of nosebleeds, headaches and eye and throat irritation.⁸ Humans, as well, provide their own by-products, particularly carbon dioxide, as well as perfumes, scented hygiene products and drycleaning chemicals, which add to the staleness of the air. By 1984, the World Health Organization issued statements that up to 30 percent of new buildings world-wide may be troubled by excessive indoor air quality (IAQ) problems.⁹ Typical employee complaints indicative of IAQ problems, particularly where the complaints come from several employees working in the same area or in areas served by the same air handler, are headaches, frequent sore throat, fatigue and lethargy, upper airway irritation, nausea, burning or itching eyes, dizziness, chest tightness, skin irritation, rashes, visual disturbances, unusual taste, body aches and shortness of breath.

Around the same time as the advent of closed buildings, discoveries were being made about asbestos, a product used for many years in new buildings. In the ’70s, whether or not asbestos was truly harmful was

still a controversial question. It is now well established that asbestos inhalation exposures lead to lung cancer (of the same type as caused by cigarette smoke) and mesothelioma (a type of tumor attributed to asbestos exposure).¹⁰ The leading Federal appellate decisions holding manufacturers liable under product liability for failure to warn workers of the hazards of working with asbestos were handed down in the mid-'70s.¹¹ The last 20 years have seen large-scale operations of asbestos removal from schools, courthouses and office buildings. Despite the wealth of knowledge of the deadly effects of asbestos exposures, many still act as if asbestos were no more harmful than fluoridation in the water, and believe that those who brought the private lawsuits and public outcry were simply hysterics. The cases involving asbestos and the insulation industry resulted in protracted controversy and litigation, ultimately allowing claimants, many of whose claims had been treated with the utmost skepticism, to sue their employers for intentionally misleading the workforce about what they knew of the long-term effects of asbestos.¹² Asbestos contamination continues to be a serious problem, one that may be aggravated if asbestos is suddenly disturbed during remodeling.

Where is Your "Fresh Air" Coming From?

Contaminants may also be drawn in through the air intake for the HVAC system. Recently, in the course of a workers' compensation case, this author had the opportunity to review documents relating to a controversial IAQ problem. A large Arizona employer performed an industrial hygiene examination of a situation after workers complained of fumes that smelled like diesel truck exhaust in their offices. Some employees found the smell overwhelming and experienced headaches and nausea, while others could barely detect the odor. What the employer discovered was that the fresh air intake for one of several air handlers was located a few feet from a loading dock. Trucks parked there for loading and unloading were often left idling for as long as 20 minutes. That exhaust was sucked into one air handler, resulting in variable levels of fumes being injected into several offices and a corridor. The fumes mixed with the air flow from the rest of the building and so were diluted in some areas and stronger in others. The employer's solution was to put up a sign asking drivers to not leave their trucks running while unloading. The problem was not resolved by this measure and complaints continued for years.

Illnesses and Injuries

The worker may suffer a wide range of ailments related to IAQ in the workplace, ranging from temporary discomfort to cancer. One broadly documented disease is hypersensitivity pneumonitis, which has symptoms of fever, cough, chest tightness and fatigue.¹³ Causes of hypersensitivity pneumonitis include exposure to dust, airborne fungi, allergens, bacteria and other microscopic material delivered by the ventilation system of an office building.¹⁴ Asthma may also be a result of prolonged exposure in a building with low-level contaminants or shorter-term exposures to higher doses. In addition, long-term exposure to low levels of airborne materials, both VOCs and biological matter, may result in sensitization, or developing an "allergy" to one or more particular types of airborne matter. Once one is sensitized to a particular material, an allergic reaction may occur after exposure to extremely small amounts of the matter¹⁵ — as anyone with any of the common allergies to pollen, mold or dust can readily understand.

Indoor air contaminants may be a serious health threat to those who have asthma. As of 1992, it was estimated that 12.4 million Americans suffered from asthma, and that asthma-related deaths had risen by 91 percent between 1979 and 1992. The estimated cost of health care related to asthma in 1992 was \$6.9 billion. Productivity losses due to asthma were estimated at \$2.6 billion.¹⁶

The most controversial diagnosis is that of "multiple chemical sensitivity" (MCS). It is not a diagnosis that is widely accepted by many physicians, at least as judged by the public statements of their professional societies. However, acceptance of the diagnosis appears to be growing as newer medical studies point to valid mechanisms for illness causation.¹⁷ Even many conservative physicians now acknowledge that certain individuals are affected by chemicals found in our homes and offices at levels to which others simply do not respond. MCS describes, rather than diagnoses, a state of exquisite sensitivity to a wide, and sometimes unpredictable, variety of chemicals.¹⁸ It is thought to be an acquired state, a state claimed to be highly disabling in many, and one which is often blamed on workplace exposures. It has been explained in a variety of ways, e.g. (1) a chemical "allergy" in which the immune system mobilizes in response to small doses to which the worker has become sensitive, much the way the immune system responds to biological contaminants for which it has formed a memory or sensitivity; (2) a combination of repeated, short-term episodes of either allergic reaction, discomfort due to "stuffy" air, or asthma combined with psychogenic factors such as frustration, loss of control, depression or even post-traumatic stress caused by the repeated episodes of unexplained illness; (3) group hysteria (that, presumably, coming from seeing others in the building become "sick" and developing one's own set of

similar symptoms of purely or largely psychological reactions)¹⁹; (4) iatrogenic psychosomatic symptoms, i.e., symptoms growing worse as a result of being identified by a physician as one of a group of sick building exposure victims.²⁰ Recent studies have tended to objectively confirm that some physical injury or irritation is generally present in workers who report building-related symptoms.²¹

Not all IAQ related health complaints result in serious disability. Many are temporary by their nature, and many are curable by the building owner or employer by eliminating the source of contaminants and increasing both fresh air intake and interior air movement.

Other problems exist which may not lead to actual illness so much as the perception of illness or the enhancement of short-term effects. For example, workers who complain that the air is “stuffy” or “stale” and cannot open windows or adjust the air conditioner have no sense of control and may feel helpless and ignored. This adds a psychological factor to the physical one of simply not being able to increase the fresh air flow. Employers and physicians who treat complaints of ill health that are or may be related to poor indoor air quality with skepticism and ridicule simply increase the frustration of the employees, demonstrate a lack of concern for the employees’ health, and invite costly litigation. While increasing fresh air intake after the initial exposure would not have saved the lives of those exposed to legionella in Philadelphia or Arizona, it is a serious prescription by toxicologists and industrial hygienists for the majority of IAQ problems.

Third-party litigation in this area is also on the rise.²² In April 1995, a state court jury awarded Polk County, Florida nearly \$26 million to correct construction and design problems in Polk County’s newly built courthouse.²³ Such litigation may pit the buildings’ owners, architects and builders against one another in a battle over who is to blame and who must bear the cost both of remodeling and of the victims’ injuries.

Arizona Case Law Regarding Inhalation Injuries

Arizona’s workers’ compensation case law has repeatedly recognized inhalation injuries, including cases involving low levels of contaminants. In *Mead v. American Smelting and Refining Co.*,²⁴ the Arizona Supreme Court held that medical evidence established the causal relationship between the conditions of work and the illness despite the fact that medical testimony indicated that the inhalation of dust from the employment was a minor factor producing the illness. The concept of “gradual injury” has also been applied to inhalation illnesses held compensable under workers’ compensation.²⁵

Chemical sensitization is also not a new concept in Arizona’s workers’ compensation cases. In *Lorentzen v. Industrial Commission of Arizona*,²⁶ the applicant was a teacher who had a pre-existing sensitivity to certain pesticides to which she was again exposed at work. The court described her sensitization to the chemicals as “allergies” and found that the illness she developed as a result of re-exposure at work was an “accident” and compensable within the meaning of workers’ compensation. In addition, Lorentzen’s claim was considered “unexpected” despite her knowledge of a long-standing sensitivity to certain pesticides, because she had made her employer aware of her condition and had been assured that she would not be exposed to pesticides at the school.²⁷

Similarly, in *McReary v. Industrial Commission of Arizona*,²⁸ the court examined the repeated exposures to “off-gassing” from new furniture and dust from nearby construction resulting in symptoms of “stiffness, sinus pain, headaches, and chronic fatigue.”²⁹ The court quoted medical testimony by the applicant’s physician who diagnosed, inter alia, “toxic brain syndrome, multiple chemical sensitivity.” There was also a report of “immune system breakdown and mental dysfunction.”³⁰ The court also rejected the defense that the case should have been tried under the Arizona Occupational Disease statute because the exposure did not come from “causes and conditions characteristic of and peculiar to a particular employment.”³¹

Often the defense argues that exposures outside of work are culpable for the illness of the worker. The law does not require that there be no exposure other than at work. The McReary court stated that the “actual risk” test was applicable. The court found that pre-existing allergies combined with the work-related exposures were sufficient for the claim to be compensable. This is consistent with workers’ compensation case law outside of the chemical exposure area. In *Samaritan Health Service v. ICA*,³² the defendant attempted to avoid liability for a knee injury based on the information or assumption that activities outside of work would have placed similar strains on the applicant’s knee as those she experienced at work. The court enunciated the actual risk determination as follows:

It is not a question of what stooping/squatting the applicant might, or might not have done at home or elsewhere, but what she did, in fact, do at work, i.e. stoop/squat to open a file drawer during her work activities....³³

This is an important consideration because many of the airborne contaminants that are known to cause injury are also found at large (at least in minute quantities) in the environment and in our homes. Professor Larson addresses a similar issue under Occupational Disease, stating that "...even a disease which is rare and which is due to the claimant's individual allergy or weakness combining with employment conditions will usually be held to be an occupational disease if the increased exposure occasioned by employment in fact brought on the disease."³⁴

Occupational Disease and Air Contaminants

Many workplace exposures are primarily circumstantial and not related to the nature of the work. For example, many non-lethal bacteria, molds and fungi get into the HVAC system and cause complaints. Brief, one-time bursts of chemical contaminants from outside the workplace may do the same and may have only transient effects unless the chemical agent is highly toxic or one or more exposed workers already have a sensitivity to that chemical. In Arizona, such problems, if they lead to illness, would be filed as workers' compensation claims. If the problem was a chronic one, with no specific date of onset, the claim could be filed as a "gradual injury," just as one would file a repetitive motion disorder such as carpal tunnel syndrome. If a specific toxin or group of toxins are introduced on a certain date, and injury results, the exposure date, or at the latest the date the employee has reason to know he has been injured by the exposure, would normally constitute the date of injury.

On the other hand, some jobs carry an inherent risk of injury because of known exposure to harmful chemical or biological agents that are particular to the job. Arizona's Occupational Disease Statute, A.R.S 23-901.01, is designed for this circumstance. The statute's six specific requirements are primarily aimed at ensuring that the disease be a result of the actual nature of the work. Bacteria exposure would be in the nature of the work for someone whose job was to analyze biological matter containing a particular bacteria. If the worker became ill as a result of the exposure, the claim should be compensable under the statute. The same would be true of exposure to chemicals regularly used in the course of employment. However, for the office worker whose exposure comes through the ventilation system from a different department or even from the outside, the worker's exposure and illness would not be considered "occupational disease" but rather an injury by accident.

For example, in *Lorentzen*, the injured teacher's claim was held to have been compensable as an accidental injury and not subject to the Occupational Disease statute because exposure to pesticides was not considered to be a risk particular to teaching.³⁵

There are important differences between injuries considered accidents and those considered occupational diseases. First, the applicant's burden may be more difficult in an occupational disease case. The Industrial Commission is required to appoint a three-physician medical consultant committee and an industrial hygienist as an advisor if the ICA determines it is necessary or if either party requests it.³⁶ In addition, the employer has certain additional defenses not available in the ordinary accidental exposure case. Most important, the six statutory criteria that must be met in order for the exposure to be compensable significantly increase the applicant's burden of proving compensability.

Other Jurisdictions

There is certainly no uniformity in other jurisdictions in cases involving illness allegedly caused by exposure to airborne agents.³⁷ The controversy over "clinical ecology"³⁸ and whether or not "multiple chemical sensitivity" is a recognizable condition and can be called an injury ranges from mud-slinging in some cases to simple acceptance in others. Among the reported appellate cases the following work-related injuries were found: a totally disabling immune system disorder attributed to several years of exposure to gasoline fumes from a defective storage tank adjacent to the applicant's office³⁹; "multiple chemical sensitivity" and organic brain damage as the result of fumes from an air conditioner malfunction (offensive odor causing all occupants of the building to be temporarily evacuated except claimant);⁴⁰ unspecified "serious illness" attributed to acid fumes leaking in a plant, recirculated throughout the plant through the air handler.⁴¹ A wider variety of serious injury cases related to workers becoming immunologically sensitized⁴² to various airborne substances is found when searching beyond cases arising out of office buildings and indoor air quality.⁴³

If the Air's So Bad, Why Isn't Everyone Sick?

In a recent remake of the movie "Diabolique," the character played by Sharon Stone, a chain-smoking co-conspirator to murder, is seen smoking a cigarette while standing with several other characters. One of them, waving away the smoke, complains that "second-hand smoke kills, too, you know!"⁴⁴ Stone's

character then blows smoke in his face and says, “Yes, but not reliably.”⁴⁵ Stone’s line exactly states the problem of causation with regard to indoor contaminant injuries. Because levels of both chemicals and biological agents change with the temperature, indoor airflow, and fresh air intake, the presence of a particular contaminant sometimes cannot be tested for with reliable or repeatable results. Many of the chemicals we breathe daily have not been studied for long-term, low-level exposure hazards, and what level of danger they pose (or do not pose) may not be known for years. In addition, many individuals may be genetically predisposed to injury from some chemicals and biological agents that do not effect others. Only five percent of the 4,400 Legionnaires became sick, and less than 15 percent of those who became ill died. One might expect much higher percentages if, in fact, the delivery system for the bacterial agent was the air conditioning system. Other outbreaks of Legionella, however, demonstrate the same tendency to cause illness in only a fraction of those presumably exposed. Nonetheless, “cluster studies” and various epidemiological techniques are useful for both the applicants and the defense in litigating workplace exposure cases.

Conclusion

For all who make their living in office buildings, courthouses, libraries, factories and other enclosed spaces, fresh air — air that we can comfortably breathe and take for granted — is essential. While there are no guarantees, the most frequent recommendations this author has come across are the preventive measures of (1) adequate fresh air intake from a source not located near anything likely to contribute to contamination, such as a loading dock, garbage storage, etc.; (2) the ability to “control” fresh air intake by opening a window or adjusting a thermostat — or easy recourse to the person with that control; (3) adequate air movement in the actual working spaces; (4) adequate ventilation of all machines, such as copiers; (5) live indoor plants; and (6) respectful and open-minded response from management when there is a complaint regarding the air quality. Minor problems can be either remedied, or aggravated into more serious situations. Serious problems will always require examination by a qualified occupational health or industrial hygiene specialist. It is not enough, if employees are complaining of “chemical” smells in the workplace, that the employer call the janitor and ask about adjusting the thermostat. Inadequate response is the most likely route to litigation, both in workers’ compensation and in third party claims.

William D. Sheldon is an associate with Dix & Forman, P.C. in Tucson. His practice includes workers’ compensation, employment law and personal injury.

ENDNOTES:

- Ching, W.T., Meyer, R.D., “Legionella Infections,” in *Infectious Disease Clinics of North America* 1(3):595-614, Sept. 1987. See also, Kreiss, K. “The Epidemiology of Building-Related Complaints and Illness,” in *Occupational Medicine: State-of-the-Art Reviews*. J.E. Cone and M.J. Hodgson, eds. (Philadelphia: Hanley & Belfus), Vol 4., Oct.-Dec. 1989: 575-592.
- Griffin, K., “When Your Office Calls In Sick,” *Health*, Jan.-Feb., 1993, pp. 79-84.
- Wabnik, A. “State, U.S. Probe UMC Legionnaires’ Cases,” *Arizona Daily Star*, August 9, 1996.
- Wabnik, A. *supra*. “Legionnaires’ Bacteria Found in Seven Water Samples At UMC,” *Arizona Daily Star*, August 15, 1996.
- Weisskopf, M. “Air Pollution Claims Victims Inside Headquarters of EPA,” *Washington Post*, May 25, 1988; Fagin, D. “Fuming Over Indoor Air, Even the EPA Faces ‘Sick Building’ Lawsuit,” *Newsday*, November 17, 1992.
- See generally, Sullivan, J., Van Ert, M. and Krieger, G. “Indoor Air Quality and Human Health.” Chapter 59 of *Hazardous Materials Toxicology*. J. Sullivan and G. Krieger, eds., 1992, pp. 667-689.
- Griffin, K. *supra* at p. 81.
- Lipsett, M. “Ozone,” Chapter 96 in *Hazardous Materials Toxicology*, *supra*, pp. 958-963; Griffin, K., *supra* at p. 82.
- “Sick Building Syndrome,” *U.S. Environmental Protection Agency Publication*, April 1991.
- Holland, J. “Asbestos,” Chapter 110 in *Hazardous Materials Toxicology*, *Ibid*.
- Karjala v. Johns-Mannville Products Corp.* 523 F.2d 144 (8th Cir. 1975) holding manufacturers liable under strict products liability theory for failure to warn workers of asbestos dangers; *Borel v. Fibreboard Paper Products*, 493 F. 2d 1076 (5th Cir. 1973) for similar holding.
- Karjala*, *supra*; for a similar holding with regard to chemical exposure, see *Birklid v. Boeing Co.*, 127 Wash.2d 853, 904 P.2d 278, 64 USLW 2352, 11 IER Cases 97 (Wash., Oct. 26, 1995), employer had knowledge that employees were being exposed to phenol and formaldehyde, that illness was resulting, but employer took no action to protect employees, rather removed labels and warnings from containers. Employer held liable for intentional tort exceeding workers’ compensation liability.
- Sullivan et al., “Indoor Air Quality and Human Health,” *supra* note 6, at p. 672.
- Id.* at 672.
- Id.* at 672.
- Schultz, D., “Lung Disease Data 1995,” a publication of the American Lung Association.
- See, e.g. Mulhave, L. et al., “Sensory and Physiological Effects on Humans of Combined Exposures to Air Temperatures and Volatile Organic Compounds,” *Indoor Air* 3:155-169 (1993). See also notes 16 through 18, *infra*.
- Ashford, N.A., Miller, C.S. *Chemical Exposures. Low Levels and High Stakes*. (New York: Van Nostrand Reinhold, 1991); see also Bell, IR, Miller, C. And Schwarz, G. “An Olfactory-Limbic Model of Multiple Chemical Sensitivity Syndrome: Possible Relationships to Kindling and Affective Spectrum Disorders,” *Biological Psychiatry*, 1992:32, 218-242.
- See, e.g. Chang, C.C. et al., “The Sick Building Syndrome (I) Definition and Epidemiological Considerations,” *Journal of Asthma*, 1993 30(4):285-95; Rothman, A.L., “The Sick Building Syndrome and Mass Hysteria,” *Neurologic Clinics*, May 1995, 13(2):405-12; Bauer, R.M., et al., “The Role of Psychological Factors in the Report of Building-Related Symptoms in Sick Building Syndrome,” *Journal of Consulting & Clinical Psychology*, April 1992, 60(2):213-9.
- While this author has seen nothing in the medical literature describing this last source, it was used as a defense, to the dismay of the injured worker as well as the physician who diagnosed her in a recent workers’ compensation claim relating to low-level chemical exposure.
- See, e.g. Koren, H.S. and Devlin, R.B., “Human Upper Respiratory Tract Responses to Inhaled Pollutants with Emphasis on Nasal Lavage,” *Annals of the New York Academy of Sciences*, 641:215-24, April 30, 1992; Hudnell, H.K. et al., “Exposure of Humans to a Volatile Organic Mixture,” *Archives of Environmental Health*, 47(1):31-8, Jan-Feb 1992; Teeuw, K.B. et al., “Airborne Gram-Negative Bacteria and Endotoxin in Sick Building Syndrome,” *Archives of Internal Medicine*, 154(2):2339-45, Oct. 24, 1994; Franck, C. et al., “Prevalence of Objective Eye Manifestations in People Working in Office Buildings With Different Prevalences of the Sick Building Syndrome Compared with the General Population,” *International Archives of Occupational and Environmental Health*, 65(1):65-9, 1993.
- This article is intended to address primarily building-related illnesses or Sick Building Syndrome in relation to workers’ compensation in Arizona. A separate, but related, field of inquiry is the standard for presenting controversial medical and scientific evidence in civil actions in both state and federal court. Without analysis, the reader is referred to *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L.Ed.2d 469 (1993) and its progeny.
- Brainard, J. *St. Petersburg Times*, July 18, 1995; Interestingly, a search in the ALLNEWS database through Westlaw searching for “sick building” or “chemical sensitivity,”

- but limiting the dates to 1994 through August, 1996, produced over 2,200 titles. Narrowing the search to see how many of these related to sick building syndrome in courthouses yielded 147 articles.
24. 90 Ariz. 32, 363 P.2d 930 (1961).
 25. *Mead v. American Smelting and Refining*, 1 Ariz. App. 73, 399 P.2d 694 (1965); *Reilly v. Industrial Commission*, 1 Ariz. App. 12, 398 P.2d 920 (1965).
 26. 164 Ariz 67, 790 P.2d 765 (App., 1990)
 27. *Lorentzen*, *ibid.* For a discussion of the intricacies of Arizona's Occupational Disease Statute, see Clymer, B., McGrory, L. and Poppe, M., "Accident, Disease, and Special Statutory Areas," Chapter 5 in *Arizona Workers' Compensation Handbook*, a State Bar of Arizona, CLE publication, 1992.
 28. 172 Ariz. 137, 835 P. 2d 469 (App. 1992),
 29. 172 Ariz at 137.
 30. 172 Ariz. at 139.
 31. 172 Ariz at 142.
 32. 170 Ariz. 287, 823 P.2d 1295 (App. 1991),
 33. 170 Ariz. At 290.
 34. 1B A.Larson, *The Law of Workmen's Compensation Section 41.00* (1993)
 35. *Lorentzen v. Industrial Commission of Arizona*, 164 Ariz. 67, 790 P.2d 765 (App. 1990).
 36. A.R.S. 23-901.03
 37. A review of all of the cases found mentioning one or more of the key words related to this article is far beyond the present scope. A Westlaw search in August, 1996 limited to the workers' compensation cases database (mwc-cs) using "sick building" or "chemical sensitivity" or "inhalation exposure" or "chemical exposure" produced 133 cases. The points of law determined in those were widely varied and many related to state by state procedural differences. However, there is a consistency, overall, in that nearly all cases mentioning either sick building syndrome or multiple chemical sensitivity presented medical testimony that the applicant had such a diagnosis, and opposing testimony stating either that the diagnosis related to non-work exposures or that the diagnosis had not gained broad medical acceptance and should not be used to form the basis of an award. Compare, for example, *Armstrong v. City of Wichita*, 21 Kan.App.2d 750, 907 P.2d 923 (Kan.App., Dec 15, 1995) diagnosis of MCS need not be accepted by majority of medical practitioners to sustain an industrial award for compensable injury. Here the court expressly said that the controversy over the *Frye* and *Daubert* standards of admissibility of scientific evidence are not applicable in the workers' compensation setting; *Conrad v. Mt. Carmel School*, 539 N.W.2d 713, 104 Ed. Law Rep. 872 (Wis.App., Sep 27, 1995) teacher claiming MCS as result of exposure to mold in carpet after roof leaked; claim rejected because of short time of exposure and length of time before illness.
 38. Clinical Ecology generally refers to a highly controversial school of thought which seeks not only environmental causes for a host of ailments, but also argues for treatments such as particular vitamin or mineral supplements to replace nutrients depleted by contact with the multitude of toxins in our daily environments. See, Rogers, S.A., M.D. *Tired or Toxic?*, Prestige Publishers, New York, 1990; and Rogers, S.A., M.D., *The Scientific Basis for Selected Environmental Medicine Techniques*, SK Publishing, Sarasota, Florida, 1994.
 39. *Grayson v. Gulf Oil Co.*, 357 S.E.2d 479 (S.C. App.1987).
 40. *Kyles v. Worker's Compensation Appeals Board*, 240 Cal. Rptr. 886 (App. 1987).
 41. *Jones v. VIP Development Co.; City of Painesville and Hamlin v. Snow Metal Products*, 472 N.E. 2d (Ohio Supreme Ct., 1984). This case is interesting because the employer ignored the employees' complaints and misled employees about the hazards in the workplace and was, therefore, held liable in tort for an intentional tort without the benefit of offset (under Ohio law) for workers' compensation benefits paid.
 42. Immunological sensitization to a variety of chemicals is a well established area of medicine, although proving the relationship between many symptoms and specific chemicals is often highly controversial. For a basic introduction to immune system sensitization, see Schindler, L.W., "Understanding the Immune System," U.S. Dept. Of Health and Human Services, NIH publication No. 92-529. For a more detailed account see deShazo, R, ed. "Primer on Allergic and Immunological Diseases," a publication of the *Journal of The American Medical Association*, 1992.
 43. See, e.g. *Daniels v. Kalispell Regional Hospital*, 750 P. 2d 529 (Montana Supreme Ct, 1988) sensitization to talc in surgical gloves for medical assistant, leading to anaphylactic shock reactions to a variety of chemicals; *Bremer v. Buerkle and State Compensation Fund*, 727 P. 2d 529 (Montana Supreme Court) sudden onset of rash followed by allergy to chemicals regularly used for nine years by auto body repairman; *Temple University and PMA Insurance v. Workmens Compensation Appeal Board*, 588A 2d 63 (Pa.Cmwlth, 1991) for PCB induced hepatitis in a mechanic working with oil containing PCB over a number of years.
 44. Passive environmental smoke has been for some years documented to be a causative factor in cardiovascular disease, cancer, respiratory diseases and asthma. See generally, Sullivan et al., *supra*, at p. 280 and cites contained therein.
 45. This article has not focused on the secondhand smoke issue because of the deluge of materials available in the press on this issue, and its wide (if recent) acceptance, largely through municipal ordinance throughout Arizona. For an eye-opening examination of the ingredients in secondhand tobacco smoke, see the table on p. 670 of *Hazardous Materials Toxicology*, Sullivan et al., *supra*.