ENVIRONMENTAL ISSUES FOR SCHOOLS:

MOLD, LEAD, TOXIC BUILDING SITES, AND OTHER UNMENTIONABLES

Presented at:

NATIONAL SCHOOL BOARDS ASSOCIATION
COUNCIL OF SCHOOL ATTORNEYS
2003 SCHOOL LAW SEMINAR

April 5, 2003
10:30 a.m. to 12:00 noon
San Francisco Hilton
San Francisco, California

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These materials are intended to provide a broad overview of the topics discussed. The views expressed in the following pages are not necessarily those of the Co-Authors, Johnson & Condon, P.A., or its clients.

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INTRODUCTION

In 1995, the United States General Accounting Office reported that over half the schools in America had at least one unsatisfactory environmental condition affecting the physical building.[1] While lighting, heating, acoustic and physical security issues are part of this statistic, indoor air quality (IAQ) and other environmental influences are a significant percentage of the conditions reported. While often caused by factors beyond a school district's control, IAQ and other environmental problems are many times the result of a decreasing dedication of funds in the face of a district's numerous other obligations. Ultimately, finite funding may cause school design, maintenance or response procedures or operations to be streamlined or even eliminated.

These materials by no means fully address the numerous issues raised by any of the contaminants or conditions described.[2] Instead, the following pages highlight some of the IAQ and environmental matters which continue to be addressed in recent governmental and school-related publications. This overview discusses some of the specific contaminants or conditions causing concern in the school arena, provides some perspective on the issues, and presents some practical considerations to examine when addressing school IAQ and environmental matters.

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[1] United States General Accounting Office, Report to Congress, *School Facilities: Condition of America's Schools*, p. 10 (1995).

[2] An October 1, 2002 Hearing before The United States Senate Environment and Public Works Committee heard testimony from several witnesses on a variety of school environmental health matters. The testimony is posted at www.senate.gov/%7Eepw/stm1_107.htm#10-01-02 (last accessed January 19, 2003).

MOLD

Mold continues to be the most discussed IAQ issue raised in schools.[3] Among the schools addressing mold issues of late is the recently opened Cesar Chavez Elementary School in Madison, Wisconsin. Chavez Elementary was the subject of a large scale reconstruction following the discovery of mold in eleven rooms of the school. More than 40 of the school's 50 teachers, and some students, reported upper-respiratory health effects in September, 2001.[4] Disputes over how the School District performed its investigation and remediation, and the findings reached by the District's consultants, resulted in arbitration proceedings between the District and the contractor. Three teachers later filed suit against the contractor for alleged personal injuries related to the exposures.[5]

It has also been reported that the West Memorial Elementary School in Katy, Texas closed in March, 2002 for the balance of the school year because elevated mold spore counts were discovered in carpeting and wall cavities.[6] The school was closed despite reports stating that the mold spores had not become airborne (and therefore could not be inhaled), and had not settled on classroom surfaces.

Litigation involving mold abounds,[7] and schools are not immune from this process. However, not all litigation against schools imposes liability just because mold is involved in the lawsuit. For example, a school district in Contra Costa County, California received a defense verdict in a claim brought on behalf of a minor student. A school employee had left a faucet on over a weekend, and

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[3] Over 60 examples of stories linking mold to schools can be seen at www.mold-help.org/submenus/mold_and_schools/index.htm (last accessed January 16, 2003).

[4] *See*, "Haste Makes Waste." The Daily Reporter, December 27, 2001 Editorial. www.dailyreporter.com/editorials/eds/dec28/edit12-28.shtml (last accessed December 19, 2002); Construction Inspection Report, Reconstruction of Cesar Chavez Elementary School, May-June, 2002. Huffman Facility Development, Inc. (on file with the authors).

[5] *Conroy v. Westra Construction Inc.*, Wis. Cir. Ct., No. 02-CV-0821, reported in 17 Toxics Law Reporter, No. 13, p. 289 (March 28, 2002).

[6] *See* "West Memorial Elementary School at 22605 Provincial Blvd. Will be Closed for the Rest of the School Year for the Removal of Mold Spores From Carpets and Wall Cavities, Katy ISD Announced March 15," Katy Sun, March 15, 2002 (copy of article on file with the authors).

[7] A more detailed discussion of some of the litigation issues raised by mold can been seen in Dale O. Thornsjo and Shamus P. O'Meara, *Defense Considerations in Mold Litigation: Investigation, Causation, Mitigation & Remediation*, Minnesota Defense, Fall 2002 (Part I), Winter, 2003 (Part II)(in press).

claims were made based on the allegation that the moisture created a mold condition which triggered the elementary student-plaintiff's existing genetic neurological disorder.[8]

Perhaps one of the most unique approaches taken against a district recently is reflected in *Adams v. Hicksville Union Free School District, et al.*, File No.: 00-CV-6751 (E.D.N.Y. January 4, 2002).[9] In *Adams*, parents of children enrolled in a school alleged various civil rights, Constitutional and statutory violations occurred because mold was present in the school. Plaintiffs alleged the District violated their First Amendment rights by not allowing parents to leaflet the school grounds to publicize a meeting to address the mold concerns. In addition, Plaintiffs alleged the mold's presence violated their childrens' Constitutional right to an education, and violated special needs students' rights under the Individuals with Disabilities Education Act (IDEA).

The Trial Court dismissed the case. First, schools are limited public fora which permits the State to impose reasonable, content-neutral restraints on the type of speech permitted. Since the District does not allow any leaflet activities on school grounds, the District could prevent leafleting which dealt with the mold concerns. Second, education is not an explicitly protected Constitutional right. Third, the mold situation did not involve conduct where the District treated the Plaintiffs any differently than others, thereby eliminating any claims that the Equal Protection clause was violated. Finally, claims under the IDEA, while possibly cognizable, were not ripe as the Plaintiffs had not exhausted administrative remedies.

The public (mis)perceptions about mold can be traced to several events, not the least of which was a series of publications beginning November, 1994 which addressed several cases of acute pulmonary hemorrhage/hemosiderosis in one section of Cleveland, and their asserted association with *Stachybotrys chartarum*.[10] Publicity elevated to a fever pitch as the press followed the highly-publicized prosecution of Melinda Ballard's bad faith insurance case against the Farmers Insurance Group in Texas.[11] Ultimately, the case garnered spectacular headlines when the Jury returned a $32.1 Million verdict in favor of Ms. Ballard and her husband.[12]

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[8] "California Jury Returns Defense Verdict for School District in Student's Mold-Related Personal Injury Lawsuit," Mold…*Matters!* Vol. I No. 3, Gordon & Rees, LLP.

[9] Copies of the Plaintiffs' Complaint, and the Court's Memorandum of Decision and Order, are on file with the authors.

[10] Centers for Disease Control and Prevention, *Acute Pulmonary Hemorrhage/Hemosiderosis Among Infants – Cleveland, January 1993-November, 1994*, Morb. Mort. Wkly Rep. 43:881-883 (1994).

[11] *Ballard v. Fire Ins. Exch*, No. 99-05252 (Tex. Dist. Ct.).

[12] The verdict award was based, not on physical injury, but on the Insurer's handling of the first party property damage claim. On appeal, the Texas Court of Appeals rejected the jury's findings that the Insurer committed fraud and did not deal fairly with the homeowner. These rulings

Despite the rash of recent horror stories, the good news is the hysteria surrounding mold is beginning to be balanced by dissemination of fair, objective information on the actual and realistically remote risks associated with fungi, especially in well-maintained buildings. In part, this evolving objective information comes from various governmental entities who realize, after an overreaction which required the wholesale abatement of asbestos from schools, that alternatives to extreme responses are likely more appropriate and cost-efficient. Therefore, just as with the cost-effective and rational control mechanisms which can be utilized with in-place asbestos, so too can schools respond to mold in proper contexts which limit costs and continue to adequately protect students and staff.

Recently, a balanced discussion has emerged concerning the medical implications of mold. Well-credentialed medical professionals, including those in government, are now weighing in on these issues. One of the very first publications casting doubt on the hype came from the Centers for Disease Control and Prevention when it called into question its own earlier determinations on the Cleveland study.[13] Another article more recently published exposes several deficiencies in various "alarmist" mold studies, and states that a definitive link between health outcomes and mycotoxins produced by mold has not been established.[14]

National medical organizations are beginning to publish position papers on fungal-related illnesses and the lack of current scientific evidence to support the proposition that mycotoxin exposures in home, school or office environments adversely affect human health.[15] State medical associations are also weighing in on the subject, and one such organization states there are no widespread health effects associated with mold inhalation in water-damaged buildings.[16] The entire

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eliminated over $17 Million of the award. The court left intact, however, $4 Million in damages, plus the interest and attorneys fees award; however, the attorneys fees are to be recalculated in light of the court's rulings. *Allison v. Fire Insurance Exchange*, ___ S.W.3d ___, 2002 WL 31833440 (Tex. App. (Austin Div.) 2002).

[13] Centers for Disease Control and Prevention, *Update: Pulmonary Hemorrhage/Hemosiderosis Among Infants – Cleveland, 1993-1996*, Morb. Mort. Wkly Rep. 49:180-184 (2000).

[14] Page, E.H. and Trout, D.B., *The Role of Stachybotrys Mycotoxins in Building-Related Illness*. AIHAJ 62:644-648 (2001).

[15] *See e.g.*, American College of Occupational and Environmental Medicine (ACOEM) Evidence-based Statement, *Adverse Human Health Effects Associated with Molds in the Indoor Environment*, October 27, 2002. This Statement may be accessed at www.acoem.org/guidelines/pdf/Mold-10-27-02.pdf (last accessed December 19, 2002).

[16] Texas Medical Association, Report of Council on Scientific Affairs, *Black Mold and Human Illness*, CSA Report 1-I-02, September, 2002. This report can be accessed at www.texmed.org/has/csa%20black%20mold.doc (last accessed December 19, 2002).

concept of mold as a realistic toxin is being called into question.[17] In addition, nonphysical reasons for apparent health reactions are being identified and substantively discussed as reasons for a claimant's condition.[18]

Governmental entities are exercising caution in their published materials to avoid needless alarm among the public. The United States Environmental Protection Agency's (EPA) extensive publication "Indoor Air Quality Tools for Schools" contains remarkably little reference to mold as the identifiable cause of poor indoor school air quality. Instead, the materials focus on an overall discussion of indoor air quality. In taking this more generalized approach, the materials do recognize that poor indoor air quality *can* trigger asthmatic episodes in children with asthma.[19] Also, the IAQ Coordinator's Guide discusses in passing that *certain predisposed building occupants* such as persons with allergies and asthma, and those who are chemically sensitive, have respiratory disease, depressed immune systems, or those with contact lenses, may be particularly susceptible to IAQ (as opposed to just mold) contaminants.[20]

The publication also implicitly recognizes that there is really no clearly defined disease related to school building exposures. Unlike recognized mold diseases such as Farmer's Lung, Sausage Worker's Lung and Rabbit Farm Hypersensitivity, the materials do not label mold exposures in schools by any name such as "School Building Disease." Instead, the Coordinator's Guide notes the "effects of IAQ problems are often non-specific symptoms rather than clearly defined illnesses[, . . . and that the symptoms] may be caused by other factors, and are not necessarily due to air pollutants."[21] Even if these snippets could be considered inflammatory, the passages must be viewed in light of the 78 pages of other materials in the IAQ Coordinator's Guide. In all, this is a very low key rational approach to potential school health issues.

Various state publications approach mold issues in assorted ways. For example, the Minnesota Health Department's "Recommended Best Practices for Mold Investigations in Minnesota

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[17] Robbins, C.A., Swenson, L.J., Nealley, M.L., Gots, R.E., and Kelman, *B.J. Health Effects of Mycotoxin in Indoor Air: a Critical Review*, Appl Occup Environ Hyg 15:1-12 (2000).

[18] Paul R. Lees-Haley, *Mold Neurotoxicity: Validity, Reliability and Baloney*, presented at "Mold Medicine & Mold Science: Its Practical Applications for Patient Care, Remediation & Claims," May 13, 2002, Georgetown University Convention Center, Washington, D.C. This article can be accessed at http://phys4.harvard.edu/%7Ewilson/soundscience/mold/lees.html (last accessed December 19, 2002).

[19] "The number of children with asthma increased by 60% during the 1980s, and poor indoor air quality can trigger asthmatic episodes." *Indoor Air Quality Tools for Schools: IAQ Coordinator's Guide*, p. i, EPA Document 402-K-95-001 (Second Ed.) August, 2000.

[20] *Id*. at p. 13.

[21] *Id*. at p. 14.

Schools" contains a short discussion of "Mold Growth and Health Effects." These materials state mold could *possibly* produce a spectrum of problems from allergenic reactions to asthma attacks, hypersensitivity pneumonitis and infections; toxic reactions "*may* also occur" (emphasis added).[22] However, this discussion is contained in an Appendix, and therefore appears to signal that health concerns are not to be the focus of the materials. Instead, the publication is designed to assist School Districts in their investigation to determine the cause and scope of mold in school structures.[23] The materials take a common sense approach to avoid costly mold testing procedures in nearly all situations[24]

These more recent publications and articles provide school districts with objective materials and resources to consider in addressing mold issues. Often, inquiries or school meetings are motivated by a parent's or staff's fear of not knowing and not having answers. In response to these situations, administrators may well not have "all" the answers. However, district personnel can work through the questions asked by preparing a well-defined plan of action which includes, not only addressing the physical causes of the mold, but also employs good listening and communication skills to reflect an appreciation of the inquiry raised and a conveyance that concerns are being addressed. A plan of action may involve working with realistic qualified experts to address industrial hygiene, medical or remediation issues, and allowing concerned parents and staff to ask questions of and listen to these experts in a setting which encourages an exchange of reasonable information. In the end, concerned parents and staff are generally not looking to solve the problem themselves; they are looking for signs that they can be confident that the district is listening and responding to concerns, and solving whatever problem exists. The realistic information now being disseminated on mold greatly assists the district in these efforts.

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[22] Minnesota Department of Health, Environmental Health Division, Indoor Air Unit, *Recommended Best Practices for Mold Investigations in Minnesota Schools*, p. 13-14, November, 2001 This publication can be accessed at www.health.state.mn.us/divs/eh/indoorair/schools/schools.pdf (last accessed December 19, 2002).

[23] *Id*. at p. 1.

[24] *Id*. An exception identified is if liability considerations are at issue.

LEAD

For several years, lead poisoning has been known as "one of the most common pediatric health problems in the United States today."[25] With the elimination of lead from gasoline,[26] the common primary high-dose contamination source continues to be lead-based paint.[27] With the average age of a public school building in the United States being more than 40 years old,[28] lead-based paint continues to be in many schools across the country. Older studies show, for example, that an estimated 80% of the private schools in New York City contained lead paint.[29] More recent studies claim, for example, that 95.8% of California schools contain some level of lead paint.[30]

Prior to the 1950's, lead-based paint was commonly used in, and even marketed to, schools due to its durability and washability.[31] These paints contained as much as 50% lead.[32] In the late 1970s, the federal government banned the manufacture of lead-based paint for commercial use.[33]

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[25] Center for Disease Control, *Preventing Lead Poisoning in Young Children*, October 1, 1991.

[26] One medical article purportedly reports that blood lead levels in a population dropped 15 points following the removal of lead from gasoline. Weiss, B., "Endocrine Disruptors and Sexually Dimorphic Behaviors: a Question of Heads and Tails," *Neurotoxology* 18 (2): 581-586, *cited in* Center for Health, Environment and Justice, "Child Proofing Our Communities Campaign," *Creating Safe Learning Zones: Invisible Threats, Visible Actions*, Background, January, 2002.

[27] *Id.*

[28] United States Department of Education, *The Condition of Education 2000*, National Center for Education Statistics, Report # NCES 2000-062, Washington, D.C.

[29] Deborah W. Denno, *Considering Lead Poisoning as a Criminal Defense*, 20 Fordham Urb.L J. 377, 390 (1993).

[30] California Department of Health Services, *Report to the Legislature: Lead Hazards in California's Public Elementary Schools and Child Care Facilities* (1998).

[31] Amber E. Dean, *Lead Paint Public Entity Lawsuits: Has the Broad Stroke of Tobacco and Firearms Litigation Painted a Troubling Picture for Lead Paint Manufacturers?*, 28 Pepp. L. Rev. 915 (2001).

[32] *Id.* at p. 19.

[33] Consumer Product Safety Commission, Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead -Containing Paint, 16 C.F.R. § 1303.1 (adopted in 1977).

Therefore, schools constructed before 1978 probably contain lead paint, and the schools constructed prior to the 1950's likely have high concentrations of lead in paint.[34]

While all children are potentially susceptible to lead poisoning, children under the age of six, and particularly children two years old or younger, are at a greater risk. Young children are potentially exposed to greater levels of lead due to their tendency to put their hands and other foreign items in their mouths.[35] Children also absorb more of the lead introduced into their systems, often in conjunction with a child's iron, calcium, protein and/or zinc deficiencies.[36] Cracking or deteriorating paint is of critical importance as children often ingest paint that is peeling or chipping.[37]

Lead-based paint is not the only source of lead in schools. Unlike lead paint, lead in drinking water is a concern for both old and new schools. Plumbing fixtures containing lead were still used in construction until the late 1990's.[38] A review of test results in Philadelphia revealed no correlation between the age of the schools and lead levels in the water.

The inspection should not be limited to the school building interior itself. Exterior surfaces can also be a potential lead source. In addition, playground equipment can be another potential lead-based paint emission source.[39]

LEGISLATION: While not initially intended to apply to schools, the Residential Lead-Based Paint Hazard Reduction Act of 1992 established programs for the reduction of lead in "child occupied" structures.[40] A child occupied structure is any building or portion of a building constructed prior to 1978 which is visited by a child, six years old or younger, at least twice a week with each visit lasting at least three hours and the combined annual visits of at least 60 hours.[41] The Act does

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[34] These conclusions are supported by the California study which found lead paint levels exceeding the federal standards in the following percentage of schools (date of construction in parenthesis) 94.6% (prior to 1940), 91.5% (1940-1959), 70.4% (1960-1979) and 2.6% (1980-1995). California Department of Health Services.

[35] CDC, *supra* at n. 25, at p. 15.

[36] *Id.*

[37] *Id*. at p. 20.

[38] The EPA's website at www.epa.gov/safewater/lead/schoolanddccs.htm contains helpful materials on the testing of drinking water in schools. (last accessed December 19, 2002)).

[39] *Playground Equipment and Lead-Based Paint Hazards*, Oklahoma Department of Environmental Quality, August 2002.

[40] 42 U.S.C. § 4851

[41] Toxic Substances Control Act, 40 C.F.R. § 745.223

not impose any affirmative duty upon the property owners, but rather establishes guidelines for conduct if the property owner undertakes repairs or remodeling actions.[42] Any renovations or inspections of a child occupied structure which are specifically designed to address lead paint must be performed by individuals or firms certified pursuant to EPA Guidelines.[43]

LITIGATION: Public entities and school districts continue their involvement in the litigation fray against the lead-based paint industry in order to offset the costs these entities have incurred because of lead-based paint. Lawsuits in Rhode Island and Texas have taken different approaches in trying to hold the lead paint industry responsible for damages arising from lead which is contained in the paint.

While lead paint litigation has been pressed for years, it has been recently described as possibly becoming the "next tobacco."[44] In 1999, the Rhode Island Attorney General filed suit against eight paint manufacturers and the Lead Industries Association, Inc. on behalf of the state.[45] This lawsuit bears a striking resemblance to the tobacco litigation, likely because of the commonality of Plaintiff counsel in both sets of cases.[46] The Rhode Island action seeks compensatory damages for the cost of removing the paint from all public buildings, and the additional medical and educational costs associated with treating children affected by lead paint.[47]

The first phase proceeded to trial in September, 2002. After seven weeks, the Judge declared a mistrial when the jury indicated they were hopelessly deadlocked.[48]

In Texas, two School Districts filed suit against the lead paint industry seeking damages for the removal and abatement of all lead paint in the schools.[49] The Texas lawsuits differ from the Rhode

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[42] 40 C.F.R. § 745.61 (c)

[43] 40 C.F.R. § 745.226

[44] Dean, *supra* at n. 31.

[45] *State v. Lead Industries Association, Inc.* Rhode Island Superior Court, Court File No. 99-5226.

[46] Dean, *supra* at n. 31. The South Carolina firm of Ness, Motley, Loadholdt, Richardson & Poole has also discussed lawsuits with the attorneys general in Missouri, Washington, and as many as 12 other states.

[47] *Id.*

[48] Molly McDonough, "Mistrial in Lead Paint Case" ABA Journal eReport, November 1, 2002.

[49] *Spring Branch Independent School District v. Lead Industries Association,* and *Houston Independent School District v. Lead Industries Association*, District Court of Harris County

Island suit because the districts are not claiming damages for harm to students. This is an important distinction because a common defense for the lead industry is that lead-based paint does not pose a significant threat if it is well maintained. Therefore, if there is harm to students, the harm arises solely from the property owners' negligent maintenance. The Texas actions eliminate this "Catch-22" by only focusing on the regulatory-mandated costs associated with lead-based paint in public schools.

Specifically, the School Districts are seeking the costs of abatement to avoid the potential harm of lead poisoning. The Spring Branch School District began a large scale renovation program that would disturb the lead paint.[50] School officials estimate the special precautions necessary to deal with the lead paint will increase the renovation costs some 30 to 40 percent over the costs if non-lead-based paint was involved.[51] Not surprisingly, many parents expressed concerns that, on the one hand, the School Districts were claiming the paint posed a potential threat to the children; however, the Districts at the same time were continuing to hold classes in the affected buildings. The attorneys for the School Boards responded by stressing that the lawsuit is a pro-active step to eliminate any *potential* threat, and the lead-based paint in its current state posed no immediate threat to the students.[52]

Texas.

[50] Annette Baird, "District: Lead-Paint Concerns in Check" Houston Chronicle, October 17, 2001.

[51] *Id.*

[52] *Id.*

"TOXIC BUILDING" SITES AND MATERIALS

Universally accepted by all involved with education is that the student should be educated in a safe environment. The nub in this comment, though, is how "safe environment" is defined. A "safe" environment to one is another's venomous cesspool.

This clash of perceptions manifests most often in deciding where schools should be built, what materials the school should be built with, and what supplies the school should use in the educational process. From a philosophical standpoint, the dispute turns on whether a child should be exposed to any substance abstractly or theoretically considered "toxic," regardless of whether the child is actually exposed at levels commonly experienced in the school environment. Given this dichotomy, it is to be expected that the disputes arise more often in the legislative forums than the judicial arena.

Advocates note a recent EPA study shows more than 87,000 chemicals are currently in use, but that the vast majority of the chemicals have not been subjected to basic toxicity testing in all respects.[53] An additional EPA study purportedly shows that complete toxicity data is available on only about 7% of the 2,863 most commonly used chemicals.[54] Separate from these reports, other studies show a dramatic increase in childhood asthma,[55] elevations in certain types of childhood cancers,[56] and increasing childhood conditions such as learning disabilities, hyperactive behavior (including attention deficit hyperactivity disorder) and autism. Some materials published then combine these varied studies to propose that many of these types of childhood conditions *may* be related to environmental conditions, including those experienced in schools.[57]

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[53] United States Environmental Protection Agency, *Endocrine Disruptor Screening and Testing Advisory Committee, Final Report*, USEPA Office of Prevention, Pesticides, and Toxic Substances, Washington D.C. (1998).

[54] United States Environmental Protection Agency, *Chemical Hazard Availability Study*, USEPA Office of Prevention, Pesticides, and Toxic Substances, Washington D.C. (1998).

[55] American Lung Association, *Trends in Asthma Morbidity and Mortality*, Epidemiology & Statistics Unit, January, 2001 (available at www.lungusa.org/data/asthma/ASTHMA1.pdf (last accessed January 19, 2003)).

[56] National Cancer Institute, Surveillance, Epidemiology, and End Results (SEER) Cancer Statistics Review, 1973-1995, Reis, L.A.G., Kosary, C.L., Hankey, B.F., Miller, B.A., and Edwards, B.K. (Eds.), Cancer Control Research Program, Division of Cancer Prevention and Control, Bethesda, MD. (1998).

[57] For, example, see Greater Boston Physicians for Social Responsibility, *In Harm's Way" Toxic Threats to Childhood Development*, Greater Boston Physicians for Social Responsibility, Cambridge, MA. (May, 2000); Needleman, H.L. and Landrigan, P.J., *Raising Children Toxic Free*, New York, N.Y., Farrar, Straus, and Giroux (1994).

The fact more legal challenges are not seen to date is likely based on the level of proof needed to establish a cause of action in court. The Federal jurisdictions, along with many state courts, follow the evidence-admittance criteria set forth in the *Daubert* line of cases.[58] Under this approach, the court acts as a "gate-keeper" to prohibit admission of testimony which does not establish that the agent at issue (1) *generally* causes the type of personal injury claimed by the Plaintiff; *and* (2) the *specific* injuries actually involved in the case.[59] General causation focuses on whether the agent of concern causes the disease or condition in the involved population.[60] This is best addressed by analyzing the available epidemiologic evidence.[61] Other indicia of reliability such as the Bradford Hill Criteria may be considered to determine if general causation is met.[62]

To say that general causation is not found does not mean that medical literature has not shown some type of association between an agent and disease. However, associations do not automatically equate to causation in a legal sense.[63] This ultimately is the difference between what may be relied upon in an administrative or legislative context as opposed to what may be admissible in a courtroom.[64]

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[58] *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993); *General Electric Co. v. Joiner*, 522 U.S. 136 (1997); *Kumho Tire Co. Ltd. v. Carmichael*, 526 U.S. 137 (1999).

[59] *See e.g.*, Perrone, Patrick J., et. al., *Excluding Expert Witness Testimony in Mold Litigation* Mealey's Mold (June 2001) (*citing Daubert*).

[60] *See e.g., Merrell Dow Pharmaceuticals v. Havner*, 953 S.W.2d 706, 714-15 (Tex. 1997). The "involved population" element is often cited by alarmists as a factor not considered in the medical literature. It is claimed that few medical studies focus on the effect of an agent on childhood populations as opposed to the population at large. Publications claim a child's size, rate of body growth and organ development, a greater consumer of food, water and air per pound than adults, habits, and a longer lag time to develop disease require child-oriented general population studies to determine if childhood exposures to toxins are causing disease. *See e.g.*, Needleman, *supra* at n. 57; Landrigan, P.J., *et al.*, *Children's Health and Environment: A New Agenda for Preventative Research*, Environmental Health Perspectives 106 (Supplement 3): 787-94 (June, 1998).

[61] *See, e.g., Brock v. Merrell Dow Pharmaceutical, Inc.*, 875 F.2d 307, 311 (5th Cir.), modified, 884 F.2d 166 (1989), *cert. denied*, 494 U.S. 1046 (1990).

[62] Federal Judicial Center, *Reference Manual on Scientific Evidence* (2nd Ed.), p. 374-379 (2000) (available on line at www.fjc.gov/)(last accessed January 19, 2003).

[63] *Id*. at p. 336.

[64] *Id*. at p. 423-24 (discussing difficulties in citing regulatory positions in personal injury litigation due to the different scope of evidence which may be required to support regulations, and other factors impacting the scientific proof required for the regulatory decision maker as opposed to the court).

Even if general causation is established, the injured party must still prove that he or she was actually exposed to the agent of concern in an amount to cause the injury alleged. This involves a deductive clinical analysis which includes:

> "an assessment of the individual's exposure, including the amount, the temporal relationship between the exposure and disease, and other disease-causing factors. This information is then compared with scientific data on the relationship between exposure and disease. The certainty of the expert's opinion depends on the strength of the research data demonstrating a relationship between exposure and the disease at the dose in question and the absence of other disease-causing factors (also known as confounding factors)."[65]

Stated another way, numerous factors must be analyzed to determine if the agent actually caused the injury at issue, including whether the person was exposed to the substance in a manner which allows for absorption into the body, the dose of the exposure, whether objective results confirm exposure, how or whether the agent is distributed within the body, how the body metabolism impacts the allegedly toxic effect of the agent, whether or in what amount the agent is excreted, the temporal relationship between exposure and effect, the medical history, the specificity of complaints, whether other causes could create the injury claimed, how a person's individual susceptibility plays into the evaluation, and whether other confounding factors exist to contradict the causation opinion.[66]

To date, it appears the general medical literature has not associated a school population's exposure to building sites, materials or supplies containing expected low levels of "toxins" with disease. However, because medical science seems to not be able to absolutely disprove a causal connection, attempts to remove the possibility of even infinitesimal school toxin exposures continue.

TOXIC BUILDING SITES: In 1999, California passed the first "Toxic Building Sites" Statute in the country.[67] The Statute requires school districts to investigate potentially contaminated property before a site can be acquired for the construction of a school building. Specifically, the district is required to conduct a Phase I Environmental Assessment of the proposed building site to determine whether or not hazardous materials are present.[68] If hazardous materials are present, additional assessments, and even remediation, may be needed should the school district wish to build on the identified site.[69]

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[65] *Id*. at p. 422-23.

[66] *Id*. at p. 424-31.

[67] Cal. Code Ch. 992, Education Code, §§17070.50, 17268, 172072.13, 17213.2 and 17213.3 (effective January 1, 2000).

[68] Cal. Code § 17213.1, subd (a) (2000).

[69] *Id*.

Following California's lead, Michigan Legislators introduced a more stringent bill which sought to prevent schools or playgrounds from being built or operated on properties contaminated above certain levels.[70] House Bill 5320 also sought to impose monitoring and notification requirements on the district when the school or playground was operated on formerly contaminated property which had met specified cleanup criteria.[71] Despite its pending status for more than one year, the Bill's only history is a referral to the Committee on Land Use and Environment.[72]

Despite these initial efforts at expressly regulating school locations, a review of sources has failed to identify any additional state legislation which has been introduced with the express purpose of imposing an evaluation or notification process on school districts before building or operating schools on or near potentially contaminated land or facilities.

As noted above, no reasonable school district seeks to expose its students to unsafe environmental conditions, including hazardous chemicals releasing from lands where school activities take place. Despite this universal agreement, and the lack of additional state legislation on the issue, advocates were able to have Congress hold hearings on this and other related concerns. On October 1, 2002, the United State Senate Environment and Public Works Committee took testimony on several school environmental matters, including whether national legislation is needed to restrict schools from being built on or near potentially hazardous grounds or facilities.[73] Testimony addressed a variety of topics, including the amount of time students spend in schools, the condition of many school buildings, the increased incidence of childhood illnesses, the number of schools located on or near Superfund sites, and medical issues related to childhood exposures to toxic chemicals.[74]

The EPA's Office of Environmental Information Deputy Assistant Administrator, Ramona Trovato, confirmed that the Senate Committee is particularly interested in school siting issues.[75] Therefore, part of Deputy Assistant Administrator Trovato's comments discussed the EPA's efforts in this area:

> "By the end of the year (2002), EPA will also release new web-based guidance devoted to school design, construction and renovation issues titled *Indoor Air Quality Design Tools for Schools*. This guidance for new and renovated schools will

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[70] Michigan Leg. House Bill No. 5320, introduced October 23, 2001.

[71] *Id*.

[72] 2001 House Journal No. 73 (10/23/2001).

[73] Transcripts of the Hearing may be found at http://www.senate.gov/%7Eepw/stm1_107.htm#10-01-02 (last accessed January 19, 2003).

[74] *Id*.

[75] Testimony located at http://www.senate.gov/%7Eepw/107th/Trovato_100102.htm (last accessed January 19, 2003).

> complement EPA''s *IAQ Tools for Schools* program, which aims to help *existing* schools prevent and solve indoor air quality problems. The new *IAQ Design Tools for Schools* guidance will encourage schools to make indoor air quality goals part of the school planning and design process. It also discusses factors to consider in the siting of school facilities, stresses the importance of building commissioning, and provides guidance on a host of other issues related to the indoor environment. The guidance will draw from EPA expertise as well as from some excellent resources that have emerged from State and private sector initiatives such as the California Collaborative for High Performance Schools and the US Green Building Council''s LEED (Leadership in Energy and Environmental Design) Green Building Rating System, among many others. The draft *IAQ Design Tools for Schools* guidance was widely available this summer for public review, and we are now integrating comments from a broad spectrum of interests."[76]

(Emphasis in original).

Based on the October 23, 2002 Quarterly Meeting Minutes of the Federal Interagency Committee on Indoor Air Quality (CIAQ) addressing the draft *IAQ Design Tools for Schools*, it appears the voluntary guidance will include the following recommendations as part of a district's school siting analysis:

- Provide opportunities for participation in the school site acquisition process by school administrators, and staff, parents, age-appropriate students, and community members;

- Prior to site acquisition, complete a Phase I Environmental Site Assessment using ASTM Standard Practice E1527-00; and

- Ensure that the soil contamination is cleaned up or the site is avoided.[77]

Because school siting is local in nature, a voluntary approach to this issue appears to provide administrators with valuable assistance without imposing compliance requirements inherent in state or federal legislation. Therefore, it is hoped the EPA's approach will adequately address school siting concerns, and no additional state legislation, or Federal legislation, would be required.

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[76] *Id*. The draft *Indoor Air Quality Design Tools for Schools* guidance materials may be found at http://www.epa.gov/iaq/schooldesign/ (last accessed January 19, 2003). The EPA Web Page expressly states that the materials are in draft form; the legend "**DRAFT -- DO NOT CITE OR QUOTE!**" is prominently displayed at the top and bottom of each web page. A January, 2003 review of the EPA's website did not locate a reference to a final version of the *IAQ Design Tools for Schools* guidance.

[77] The Committee notes can be found at http://www.epa.gov/iaq/ciaq/10_23_02meeting_minutes.pdf.

TOXIC BUILDING MATERIALS AND SUPPLIES: The other issue raised by concerns over possible childhood exposures to low doses of potential toxins is whether building materials or supplies used in schools are a source of disease or illness. As with Toxic Building Sites, the concerns expressed are based on a possibility that children may be adversely affected by low dose exposure to toxins, and that medical science is incapable of stating with absolute assurance that children will never become sick from such exposures. Therefore, advocates claim items such as pesticides; building materials; art, science and industrial shop supplies; cleaning products; and even office equipment or supplies must be monitored or changed to avoid any incidental student exposures.

Many of the complaints associated with these categories of materials appear similar to those seen in "Sick Building Syndrome" or "Multiple Chemical Sensitivity" cases. Sick Building Syndrome cases are characterized by non-specific illnesses or symptoms allegedly caused by contact with a building without determining the specific causal agent.[78] Multiple Chemical Sensitivity cases typically involve a person's sensitivity to a chemical or condition which is disproportional to that of the average person in the general public.[79] As in the mold context, many federal courts have determined that physicians connecting the plaintiff's Multiple Chemical Sensitivity to the agent at issue should be precluded from testifying under the *Daubert* factors.[80]

Despite the lack of legal support, advocates continue to warn of potential toxic effects of these types of exposures.[81] However, instead of focusing on the negative aspects of these possibly toxic exposures, it appears more recent efforts in this area focus instead on changing prospective decisions on what materials and supplies should be used. This is part of a more widespread effort to build and operate efficient, "high performance" "green" buildings. "Green" buildings are structures which are

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[78] *See* Segalla, *Sick Building and Indoor Air Quality*, 49 Federation of Insurance & Corporate Counsel Quarterly 321, 325 (Spring, 1995). *See also*, Apter, Andrea *et al.*, *Epidemiology of the Sick Building Syndrome*, 1994 J. ALLERGY CLIN. IMMUNOL. 277. A term also utilized in this area is "Building-Related Illness." Unlike Sick Building Syndrome's inability to identify a specific causal agent, the term "Building-Related Illness" is utilized where a particular illness *is* associated with a definable building problem. Segalla, *supra*. A good example of a Building-Related Illness is the original 1976 Legionnaire's Disease outbreak in Philadelphia.

[79] Segalla, *supra* at n. 78, p. 326.

[80] *See e.g., Coffin v. Orkin Exterminating Co., Inc.*, 20 F.Supp.2d 107 (D.Me. 1998); *Frank v. State of New York*, 972 F.Supp. 130 (N.D.N.Y. 1997). *See also Reference Manual on Scientific Evidence*, p. 30 (noting federal courts have "sided" with orthodox medicine to reject clinical ecology testimony proving a causal connection between agents of concern and a Multiple Chemical Sensitivity diagnosis).

[81] *See, e.g.*, Vermont Public Interest Research Group, *Toxic Chemical Exposures in Schools: Our Children at Risk*, March, 1998.

"constructed using recycled, less-toxic or simply fewer materials."[82] These environmentally friendly propositions have already made their way into governmental publications such as the New York City High Performance Building Guidelines,[83] and appear to be headed into the EPA's *IAQ Design Tools for Schools* guidance documents. Through these prospective positive-toned efforts at changing construction and management techniques, it is likely that many of the results sought by low dose exposure alarmists will be achieved.

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[82] 11 St. Paul Curbsider, No. 3 at p. 1 (Fall 1998)(on file with the authors).

[83] New York City Department of Design and Construction, High Performance Building Guidelines, Part 3: Technical: Material and Product Selection at p. 92 (April, 1999)(utilizing materials which are "environmentally preferable," defined as "products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service." The New York City High Performance Guidelines can be found at http://www.ci.nyc.ny.us/html/ddc/html/highperf.html (last accessed January 19, 2003).

NORWALK VIRUS

Many health experts attribute the recent rash of gastroenteritis on cruise ships to the Norwalk virus. The virus received its name from its first documented outbreak in 1968 in a Norwalk, Ohio elementary school.[84] Nearly half of the school's students, teachers and administrators suffered the now familiar nausea, vomiting, diarrhea and mild fever normally accompanying this malady.

Outbreaks are most likely to occur where people share foods – cruise ships, hospitals, nursing homes and schools. In December, "Hundreds of students" at a Minnesota high school were reporting Norwalk type symptoms.[85] In November, the Norwalk virus was suspected when more than half of an elementary school in British Columbia fell ill.[86] Last fall, an elementary school in Wisconsin was closed so health officials could investigate why approximately 100 students developed nausea, headache and fever.[87] It has been estimated that 12% of all outbreaks of the Norwalk virus in the United States occurred in schools and day care centers.[88]

The virus' transmission is different than the contaminants discussed above because it is not inhaled. Instead, it is usually transmitted by eating or drinking something contaminated with fecal matter. Common sources include contaminated water or food prepared by an infected worker who has not adequately washed his/her hands after using the bathroom.[89] This is not just limited to a hygiene issue; shellfish harvested in contaminated areas and not thoroughly cleaned are often the source of the virus.[90]

The best method of prevention is the thorough washing of hands with soapy water. Although it is important that all people wash their hands thoroughly, particular attention should be given to food preparers. In addition, thorough washing of foods before preparation will greatly limit the potential

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[84] The Daytona Beach News-Journal, December 5, 2002.

[85] Jill Burcum, *On Land or at Sea, Norwalk Bug Strikes*, Minneapolis Star Tribune, December 19, 2002, at A1.

[86] *Virus Outbreak at School*, CHBC Television, http://www.chbc.com/news/articles_files/4381/news_3_4381.shtml (last accessed December 19, 2002).

[87] *100 Kids Sick at Beloit School*, Channel 3000, http://www.channel3000.com/news/1095700/index.html (last accessed December 19, 2002).

[88] *Norwalk-Like Viruses: Public Health Consequences and Outbreak Management*, Morbidity and Mortality Weekly Report, Center for Disease Control; June 01, 2001, p. 1-18.

[89] *Id.*

[90] *See e.g.*, Morse, DL, *et al.*, Widespread Outbreaks of Clam- and Oyster-Associated Gastroenteritis. Role of Norwalk virus, 314 New England J.Med. 11:678-81 (March 13, 1986).

of transmitting the virus. The CDC recommends that anyone showing symptoms of Norwalk virus infection be excluded from all food preparation.[91]

[91] *See* n. 88, *supra*.

CONCLUSION

Implicit in these discussions is the proposition that IAQ and environmental matters will remain constant issues for school districts to address. Moreover, the issues will manifest in ever changing situations and aspects of school administration. Despite their complexities, however, districts can remain ahead of these problems by employing the most current reliable information available when constructing new schools or maintaining and operating current schools, and directly addressing problems as they arise. In this fashion, school districts can avoid many of the IAQ and environmental pitfalls faced by schools adversely affected by these issues.