BY ARTHUR BRADFIELD

Prevent Mold & Moisture in Public Buildings

Mold contamination and its associated health effects have received much attention in the media, in part because of expensive litigation. While direct links between mold and diseases are subject to debate, mycotoxins given off by some species of mold are known to cause allergic reactions in some individuals. Mold has always been with us in both outdoor and indoor environments. The problem arises when excess moisture in buildings goes undetected, resulting in excessive mold growth and degradation of building materials.

One recent local example is damage to War Memorial Plaza in Nashville and to offices in the Legislative Plaza below (Tennessean.com, 6-4-2004). A $9.5 million dollar project is underway to stop storm water from seeping into the building. Large trees around the building will have to be clear-cut and another $6.7 million dollars will be spent to repair water-damaged walls, ceilings, floors, and elevator shafts. Mold contamination on damp surfaces has resulted in complaints of respiratory problems from workers. Lost productivity is one of those "hidden" costs.

While leaks can cause extensive damage, problems with moisture and mold in public buildings are often caused by heating, ventilating, and air conditioning (HVAC) systems that are not maintained or operated properly. Mold can grow on drywall (a favorite nutrient source for mold) at humidity levels above 70 percent. Changes in building techniques over the last 30 years have resulted in "tighter" building envelopes that require adequate ventilation (outside air) to reduce humidity.

The key is to maintain HVAC systems (clean coils, drip pans, and duct work) *as scheduled*. Wet spots from leaks or condensation must be dried quickly, as mold can begin to grow in less than 48 hours given the right conditions. Water barriers and proper drainage around foundations are critical, as was discovered the hard way at War Memorial Plaza. One preventative measure is to monitor indoor environments continuously so that moisture problems are identified before mold can grow and damage occurs.

Continuous monitoring of indoor air quality (IAQ) parameters such as temperature, humidity, and carbon dioxide levels in public buildings will not only improve IAQ but will also result in significant energy savings. Studies in Minnesota using continuous remote monitoring of 5 key IAQ parameters in 114 K-12 classrooms, simultaneously, for more than one year, showed that millions of dollars in energy costs could be saved by implementing setbacks in temperature when buildings were not occupied.[1]

These studies also showed that providing adequate *ventilation on demand*, rather than a constant volume, to control odors and carbon dioxide levels in classrooms could be achieved at less cost. Ventilation on demand reduces the amount of outside air specified in design documents, air that must be heated or cooled.

Proper operation and maintenance of HVAC equipment and continuous monitoring of indoor environments can avoid costly repairs, provide a healthier and more productive environment for workers and the public, and reduce liability for local governments and public officials. We live in a society prone to litigation, so it is best to be proactive rather than reactive when it comes to public money and public health.

For more information on indoor air quality, sampling techniques, and continuous indoor air quality monitoring, contact the author at 615-790-1000 or go to www.bradfieldenviro.com. TPW

[1] R. Schulte, and others, "Continuous Indoor Air Quality Monitoring in Minnesota Schools", 2003/2004 School Year Report, Legislative Commission on Minnesota Resources, June 2004.