

Indoor Air Quality—A Breath of Fresh Air

by Tom Clinton

Indoor Air Quality (IAQ) issues pose serious health risks, but unlike many traditional age-old problems, they are becoming less and less tolerable. Not only is it becoming more common for juries to side with plaintiffs in IAQ lawsuits, but compliance to IAQ regulations, standards, and legal specifications has become a prominent issue in today's society. It has been found that the quality of air expelled from older Heating Ventilation and Air Conditioning (HVAC) systems simply does not meet IAQ requirements. Furthermore, new concerns regarding the presence of airborne mold species and other contaminants have forced regulatory agencies and legislators to take a hard line on the issue of air quality.

For building owners and managers, this translates to inspections, possible upgrades, and repairs, which may prove costly. The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) indicates that 50% of all cases of poor IAQ result from badly designed or fitted HVAC systems.

One cause of building-related illnesses (BRIs) and poor IAQ is the growth and distribution of various biological contaminants in HVAC systems. The condensation produced by HVAC systems is a major contributor to the growth of microorganisms. This condensation collects in condensate drain pans, which until recently have been equipped with level design. This poor design allows water to collect in stagnant pools, fostering corrosion and the growth of mold and other organic residue, increasing the likelihood of air stream microbiological contamination. (See *Photo 1*) Not only does this poor design affect IAQ, but it also promotes another less evident problem—organic residue that can clog the drain line and force condensate water to overflow onto the floors of the air handling unit.



Photo 1

There are ASHRAE 62 Specifications for HVAC, and buildings must also be National Fire Protection Association, NFPA 90A compliant. The rules are changing, and the good news is that there are various solutions and access to technologies that will allow us to eliminate these nagging issues. Traditional solutions include biocide tablets, replacement of HVAC components, and even a replacement of the entire HVAC unit. Biocide tablets may alleviate the problem symptoms, but unfortunately, if the pan is level, the tablet is only a temporary solution to a larger problem. Replacing unit components and entire units, although effective, also includes down time and disruption to the business facility, complete with a large price tag. Innovative technologies provide another solution—remediating and restoring the air handler, which includes repairing the existing condensate drain pan in place. (See *Photo 2*)



Photo 2

By repairing the condensate drain pan, the treated unit is more efficient and boasts a rust-free, antimicrobial environment that is free of standing water and maintenance free for the building owner. More importantly, the safety of the building occupants is greatly improved, while the efficiency and life of the HVAC unit is increased. The advanced technological system employed can be fully installed at a fraction of the cost of conventional fixes with no interruption in building operations. This is summarized below in *Table 1*.

Option	Cost	Attribute								
	(\$/SF)	Down Time < 4 Hours	Passive Anti-Microbial	ASHRAE Compliance	NFPA90A Compliance	Corrosion Arrested	Unit Sealed	Low Maintenance	Risk Mitigation	Value Rating
Biocide Tablets	\$ -	Yes	Local/Temp.	No	No	No	No	No	Negligible	Negligible
Replace Components	\$ 1.67	No	No	No	Yes	No	No	No	Medium	Low
Replace HVAC Unit	\$ 6.67	No	No	Yes	Yes	No	No	No	Medium	Medium
Innovative Technology	\$ 0.67	Yes	Yes	Yes	Yes	Yes	Yes	Tes	High	High

Table 1: Potential Solutions vs. Cost, Benefits, and Value

Whether you're a building owner, manager, or tenant, IAQ is an issue that affects us all. From building-related illnesses and sick building syndrome to building efficiency and repair, IAQ will continue to be of increasing importance and concern. Building owners and managers have a responsibility to be compliant with existing regulatory IAQ codes and laws, and they can also provide something else—a breath of fresh air.

About the Author

Tom Clinton is CEO of Air Quality Innovative Solutions, LLC (AQUIS). He spent many years as Senior VP of Global Product Development at GE and earned his MSEng from the University of Massachusetts in Plastics Engineering. He can be reached at www.aquissolutions.com or (407) 583-9064.
