

UB scientists put "allergy-friendly" hotel rooms to the test

By ELLEN GOLDBAUM
Contributing Editor

In partnership with industry, UB researchers are conducting one of the first scientific air-quality tests of "allergy-friendly" hotel rooms.

The project is expected to provide data applicable to other environments where indoor air quality is critical, such as in health-care facilities and aboard airplanes.

Using new "allergy-friendly" guest rooms in the Buffalo Niagara Marriott in Amherst as their laboratory, the Industry-University Center for Biosurfaces at UB (IUCB) is testing how novel cleaning processes and air-purification devices developed by five Western New York companies affect indoor air quality.

The study was facilitated by new monitoring equipment funded by a \$1.27 million Capital Facility program grant from the New York State Office of Science, Technology and Academic Research (NYSTAR) through the Syracuse Center of Excellence in Environmental and Energy Systems.

While a small, but growing number of hotels offer allergy-friendly accommodations, little scientific evidence exists proving the effectiveness of such rooms.

The hotel industry and the companies that provide the allergy-friendly technologies are banking that scientific proof of the rooms' efficacy will appeal to the estimated 25 million Americans who suffer from allergies.

"These companies are anxious to demonstrate and confirm the scientific basis for their techniques, and so are we, so that they can take their products to the next step commercially," said Robert Baier, executive director of the IUCB and professor of oral diagnostic sciences in the School of Dental Medicine.

The companies and products involved in the testing are:

- Anabec Systems, which provides formulations for deep-cleaning carpet treatment and anti-microbial shields for the cleaned surfaces
- VigilAir Systems, which installs germicidal ultraviolet lights in air-conditioning units to keep cooling coils free of fungi
- Pure Solutions NA, which packages an allergy-friendly system ranging from special pillows and bedcovers to shower filtration and a high-ozone shock treatment to destroy mold and bacteria
- IntelliPure LLC, whose patented Under-Bed Air Purification Unit uses a high-energy field to kill airborne viruses, bacteria, fungi, mold and spores
- Collom Enterprises Inc., which supplies sanitation procedures and tea-tree oil as a natural, broad spectrum fungicide/germicide/biocide for HVAC systems

All of the companies are affiliated with the National Indoor Environmental Quality Research Institute Inc., a Western New York consortium whose \$40,000 annual membership fee in IUCB also provided funding for this project.

From May 31 to June 2, UB researchers measured more than 25 components of air quality inside each of four "allergy-friendly" rooms in the Buffalo Niagara Marriott, including large and small particles, volatile organic compounds,



UB researcher Robert Baier (right) is testing how cleaning processes and air-purification devices developed by five Western New York companies—among them Pure Solutions NA, headed by Thomas Pickles, left—affect indoor air quality in guest rooms in the Buffalo Niagara Marriott.
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(chemical off-gassing), radon, ozone, carbon monoxide and viable and non-viable fungi. Continuous air monitoring on a minute-to-minute basis was conducted during the entire test period.

Measurements also were taken from a fifth standard room, which was used as a control.

Analytical techniques used on the samples retrieved from the rooms include infrared spectroscopy, which provides a chemical fingerprint respirable particle counts, ozone measurements and scanning electron microscope pictures that can characterize samples particle by particle.

And since outdoor air is the source for indoor air, the researchers also gathered data on the quality of air outside of the hotel.

"The quality of the outside air changes with each air mass or front that you always hear the weather forecasters talking about," said Baier. "Some of these fronts carry a lot of suspended fine particles, including bacteria or pollutants, but you won't know that until you're right in the middle of it, and the following air masses can last two to three days. Our goal with this project is to answer the question, 'Can we improve the inside air to a higher quality than the outside air?'"

In early analyses conducted in the treated rooms, breathable particle counts dropped by about 75 percent—from 2.5 million per cubic foot in one case to about 600,000, he said.

"Although the project is only in its early stages, preliminary results show that such dramatic reductions in suspended small-particle concentrations can be attained and maintained in rooms outfitted with some of these devices and treatments," said Baier.

"In fact, we are hopeful that some of these successful interventions can be applied to controlling and improving the air quality in public-health facilities, as well, especially with regard to resisting cross-infections of patients and visitors," he said.

The researchers are analyzing their data and have engaged an outside accredited microbiology lab to work with them.

Baier noted that final results will be ready by the fall.

"Our goal is to apply the best science possible to this study," said Baier. "Not one of these companies could do this degree of comprehensive testing by itself, nor would its work be looked upon as independent and credible by the public. So just the fact that we've been able to create a comfort level at UB where industry is willing to join with us, defer to our judgment and abide by our findings is extremely positive."

David Gordon, chief executive officer of IntelliPure, agreed.

"There has been incredible cooperation among the companies involved, UB and the Marriott," he said.

The Buffalo Niagara Marriott began renting the "allergy-friendly" rooms to guests in late June for about \$10 more than the standard room rate, according to Richard Schroen, general manager.

The Industry-University Center for Biosurfaces at UB is one of 50 such National Science Foundation-funded centers across the country. While the centers are university-based and catalyzed by a small investment from NSF, they are supported primarily by industry members with the goal of benefiting the regional and national economy.