Position Paper: Air Allergen & Mold Testing

Much has been said and done about the air outside of the built environment, which has been the focus of most environmentalists, but little is said about the indoor air where research indicates we spend 90% of our time. This lack of adequate attention has obscured an enormous void in our health care system resulting in needless suffering and costs associated with the air we breathe in the indoor environment.

There are three ways harmful substances can enter our bodies. What we eat, what we breathe, and what we touch. Many of us have been taught about the micro-ingredients in the four pounds of food we eat and four pounds of fluid we drink each day. But most of us are totally unaware of the micro-ingredients in the thirty to forty pounds of air we breathe each day.

Peer reviewed studies indicate airborne mold spores, chemicals, and other particulate in the indoor environment are unnecessarily contributing to the preventable illness of many residents. The burden of suffering and financial waste includes lost school days, lost workdays, poor performance, high pharmaceutical and medical bills, preventable Emergency Room visits, hospitalizations, and premature death. (Use the link at the bottom of this paper for access to the synopsis of approximately 260 studies dealing with adverse health affects relating to indoor air quality).

Air Allergen has analyzed air samples from more than twenty thousand locations. The data indicates that the indoor air often has higher average quantities of mold spores associated with allergy symptoms and higher particulate counts of all particle sizes above 0.3 microns than the outdoor air. Recent data suggests that 50% of the homes have particulate counts above the National Ambient Air Quality Annual Standard for PM2.5 and PM10, and more than 20% of the homes have particle counts above the Short-Term Standard.

A study commissioned by the National Institute of Health indicated that chemical pollution in the indoor air is often 2 to 5 times higher than the outdoor air with gusts to 100 times, and there are hundreds of chemicals that could be present. The EPA has rated indoor air pollutants as third out of 30 environmental risks.

The earliest point in a derivative chain of events where an intervention could reasonably be implemented to prevent an undesirable outcome is commonly referred to as the root cause. The chain of events leading to undesirable health outcomes related to what we breathe in the built environment includes four easily identified categories: (1), Particulate; (2), Gaseous chemicals; (3), Microbial growth; and (4), Pests.

Occam's Razor is a problem-solving principle traceable to philosophers for more that 2000 years. The principle recognizes that although there may be multiple paths leading to an outcome, multiplying paths without necessity leads to needless waste effecting an outcome. A variation used in medicine is that complexity should be rejected when a simple explanation is available. Phrases such as "It is vain to do with more what can be done with fewer" were common as far back as the thirteenth century.

The least complicated interventions for the root causes of adverse health outcomes resulting from the built environment are filtration, humidity control, conditioned ventilation, and housekeeping. Managing these four things will favorably impact nearly all events leading to unhealthy outcomes originating from the built environment and can mitigate the severity of outcomes originating elsewhere.

What we breathe matters. Twenty-five percent of Emergency room visits are reportedly for breathing difficulty. Grady Hospital alone sees over 40,000 ER visitors per year for breathing difficulty resulting in more than 140,000 visits to various components of their health care system and there are over two dozen hospitals in greater Atlanta. These repeated visits to the ER are substantial and often preventable burden on Georgia's health care system.

Emergency Room visits are also a recognized indicator of asthma control in a community. According to one study involving 28 emergency rooms in several states, 70% of ER visits for acute asthma are from people who have been there three or more times in the previous year and 50% of visits for acute asthma are from people who have been there five or more times in the previous year. The problem is so prevalent that the hospitals have coined the phrase "frequent flyer" referring to these patients. Evidence suggests many of those patients are treated, stabilized, and sent back to the environment that made them sick.

The Fulton County Asthma Coalition brought in a speaker from San Antonio to address their annual Asthma Conference. She reported that by addressing the indoor air quality of the schools, absenteeism in the San Antonio school system was reduced by half and the incidence of emergency intervention for asthma was reduced by 80%. The same methods can be applied to housing.

A study at Cincinnati's Children's Hospital reported that ER visits and hospitalizations for children who had been in the ER twice or hospitalized once during the previous year for asthma were reduced ten-fold compared to a control group by dealing with the indoor home environment.

Reducing ER visits is not the only societal benefit for addressing indoor air quality. Addressing conditions affecting air quality in the apartments of children who were students at an Atlanta school resulted in a 40% lower class turnover rate, and a reported 50% increase in standardized test scores. (https://www.youtube.com/watch?v=6-P7_yhMzUA).

The Atlanta Volunteer Lawyers Foundation provides legal services to families who otherwise cannot afford legal representation. They deal mostly with the south and west neighborhoods in Fulton County where many of the Grady Hospital ER patients reside. Their data indicates that 64% of their cases with tenant landlord disputes over a two-year period involved asthma and other housing issues associated with poor indoor air quality.

The growth rate of healthcare cost is not sustainable. While breathing difficulty is the most obvious consequence of poor indoor air quality, long term exposure to the micro-ingredients found in airborne particulate has been associated with cardio-vascular disease, heart attacks, strokes, diabetes, kidney disease, COPD, and a variety of cancers. Most health care solutions ignore dealing with the air we breathe in our homes where more than half of the air we breathe originates.

You might ask what causes poor indoor air quality. One reason is that we have changed the way we build homes and manage the indoor air quality, often focusing on cost and energy efficiency. For instance, we have replaced hardwood floors and plaster with carpet and cardboard covered walls. We have sealed up the homes and increased insulation to save energy, without fully dealing with the consequences to indoor air quality relating to lack of ventilation and the microbial growth that destroys the materials and damages our health.

A second issue is the focus on managing symptoms rather than preventing them by health care professionals whose education and training focuses on, and whose livelihood depends on, treatment rather than prevention.

- Drug Companies sell Pharmaceuticals.
- Allergists treat allergies.
- Pharmacists dispense drugs.
- Pulmonologists repair the lungs.
- Emergency room doctors stabilize the patient.
- Insurance Companies, Medicaid, and Medicare pay for healthcare treatment, not prevention.
- Healthcare professionals are influenced by Pharmaceutical Co.
- Many Air Quality health concerns occur over a long period.

- Comparatively little effort is focused on unhealthy indoor environments.

As difficult as it is to have medical personnel teach patients to eliminate the need for treatment, it is even more difficult when the paychecks of the medical personnel depend on providing that treatment. Most health care professionals were trained and are paid to treat symptoms, not steer people to alternatives that eliminate their paycheck. For this reason, we need alternative paths to provide education, and policy actions that provide sustainable solutions to the root cause of diseases due to, or exacerbated by, poor indoor air quality.

The average person can do little individually about what is in the outdoor air but can control the enclosed environment of a home. Evidence-based, peer reviewed studies point to four comparatively simple strategies to reduce the health consequences of poor air quality in the built environment where we breathe 90% of our air: (1), Filtration; (2) Humidity control; (3), Make up Air; and (4) Better Housekeeping.

Considering the available information, the following strategies can and should be implemented to improve the health care of our community and reduce the cost of health care in a sustainable way:

1. *Education:* Educate residents, health care professionals, construction & remediation contractors, landlords, tenants, academic community, legal community, and politicians, using mass media and other means, about the ingredients of air in the indoor environment and the benefits of improved filtration, humidity control, makeup air, and housekeeping before they suffer from a serious breathing problem or other disease known to be environmentally influenced.

2. *Building Codes:* Modify building codes for new construction to require wide box filters (or equivalent) with a minimum of a MERV 13 or higher rating, humidity control sufficient to maintain humidity near or below 50 percent at room temperature and require make up air for residences similar to what is now required for commercial buildings. These changes will add little to the one-time cost of new construction compared to the annual cost of health care due to diminished indoor air quality.

3. *Remediation:* For those properties already suffering from deterioration due to water intrusion or poor maintenance, prohibit remediation contractors and maintenance workers performing remediation (beyond routine maintenance) from doing both the remediation and testing to declare their work to be completed satisfactorily. In other words, separate the testing from the

remediation to avoid the conflict of interest inherent when the remediator or maintenance worker can benefit by selective testing, exaggerating, or mis-interpreting the results of a test when it is to their benefit.

4. *Residential Rentals:* Require landlords to accommodate those with a breathing disability, such as asthma or COPD, as required for other disabilities by the American Disabilities Act. Such accommodation should include adequate filtration with a minimum of a MERV 10 filter, humidity control able to maintain the humidity near or below 50% at room temperature, and appropriately conditioned and filtered ventilation.

5. Require adequate filtration and humidity control in all rental properties regardless of disability. A MERV 10 rated filter appears to be the best compromise between filtration and air flow in existing housing with standard HVAC filtration provisions. Humidity control can be provided with a stand-alone dehumidifier, a built-in wall unit, or a system attached to the existing HVAC.

6. *ER Visits for Breathing:* Require hospitals to question all patients treated for asthma, COPD, and other diseases related to the air we breathe about their housing conditions and advocate filtration, humidity control, makeup air and good housekeeping as part of the prescription and recommendations written by the medical practitioner.

7. *Environmental Inspections.* Require hospitals to have a residential environmental inspection completed for asthma, COPD, or other diseases associated with particulate and microbial growth, especially for frequent visitors to their Emergency Rooms. Such studies should include, at a minimum, air samples for microbial growth, particulate counts, and dust analysis in carpets or other surfaces rather than limiting the review to a visual inspection as a condition of reimbursement. (As an analogy, who among us would like our food inspected visually rather than being tested to determine whether the hormones, pesticides, bacteria, viruses and other micro-ingredients might be contributing to adverse short or long-term health outcomes?) The methods of analysis should be specified to ensure consistency when interpreting the results as outlined in initiative 8, *IAQ Laboratories*. Written reports provided to the occupants and medical personnel should include findings and recommendations for improvement, not just sample results.

8. *Health Care Providers Reimbursement:* Reimbursement from Medicare, Medicaid, and Heath care insurance should be broadened to include reimbursement for indoor air quality related investigation, sampling,

inspections, and corrective actions, including legal and regulatory intervention when indicated, as part of ER or other medical prescriptions. Root cause analysis to identify factors contributing to health care problems in order to reduce the health care burden for all stakeholders should be encouraged and, in some cases, mandated.

9. *IAQ Laboratories:* Require labs reporting on Indoor Air Quality to provide in their reports their basic analysis procedures, median findings, and uncertainty when reporting sample results to ensure that the analysis and significance of results can be understood and compared to the median of results at other locations and other labs regardless of which lab does the analysis.

   These initiatives will improve the health and sustainability of our community by providing cost effective measures to: (a), reduce the rate of disease and unhealthy medical conditions; (b), enable residents to live in healthier environments; (c), improve access to affordable housing that doesn't result in health care costs higher than the rent; (d) reduce the cost of health care; and (d), impact the poverty cycle by enabling residents to achieve their God given talents without burdening them with indoor air quality conditions that lead to absenteeism, missed work, poor performance, student class turnover, and poor health.

   Supporting Studies: Filtration, Humidity Control, Ventilation, Asthma, Other.

   It is time we give the built environment and micro-ingredients in the air we breathe the same scrutiny that we give outside air and the food and water we ingest.

   Respectfully

   Richard Johnson, CEO
   Air Allergen & Mold Testing

   If you agree, please click on this link and indicate your support.

   https://www.change.org/indoorairquality