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IAQ RADIO+

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Ed Light

Life and Times of an IH Practicalist

Good Day and welcome to IAQ Radio+ episode 775 blog. This week we welcomed Ed Light for a show titled, Ed Light, The Life and Times of an IH Practicalist. Ed has had a fascinating career from his early years at the WV DOH IAQ Program to his founding of Building Dynamics, LLC. Ed has always stressed the importance of hands on in the trenches people, following the science and being practical. Learn more this week on IAQ Radio+.

Ed Light, CIH, is a co-founder (now retired) of Building Dynamics, LLC, industrial hygiene and mechanical engineering consultants specializing in Indoor Environmental Quality (IEQ), HVAC engineering, and energy conservation. His areas of expertise include resolution of mold/moisture issues, COVID transmission in buildings, investigation of IEQ, HVAC operation and maintenance, construction, IEQ, and damage restoration. Ed holds degrees in Environmental Science from the University of Massachusetts (B.S.) and Marshall University (M.S.), is a Senior Fellow of the American Industrial Hygiene Association (AIHA), authored forty scientific publications and chaired national committees. In the 1980's, Mr. Light established the West Virginia Department of Health IAQ Program, pioneering efforts to resolve exposure issues related to formaldehyde, asbestos, and termiticides. In the 1990's, Mr. Light developed widely used protocols for addressing IAQ complaints (issued by EPA, NIOSH, and ISIAQ) and managing air quality in occupied buildings under construction (SMACNA/ANSI Standard).

Nuggets mined from today's interview:

WV Pioneer- You started the West Virginia Dept. of Health IAQ program in the early 1980s—a time when IAQ wasn't even a "thing" for most people. What was the catalyst for your obtaining the job, what was the toxin you were chasing back the

In 1972, Ed got an interdisciplinary degree in environmental science, which was not yet a formal major. He moved to West Virginia, where, as staff scientist for environmental groups, he focused on coal mining, chemical manufacturing, and power plants, coinciding with passage of the Federal Clean Air and Clean Water Acts. Based on research work with local communities, he made recommendations for regulating these industries at the national level and was invited to meet with President Carter to discuss how his new administration's EPA priorities. Recognizing the value of Ed's input at West Virginia state hearings on outdoor air pollution, Ed was offered a job with the Health Department. At that time, Ed needed to choose between becoming a coal mining inspector for the Feds or the State's industrial hygienist. He had no idea what industrial hygiene was but chose the latter. As state industrial hygienist Ed's desk had a stack of complaints filed by mobile owners over unhealthy conditions in their homes. Ed dug into the complaints and succeeded in determining that the complaints were due to formaldehyde emissions from some of the materials used to construct the homes. Ed helped push a formal resolution. Other issues Ed investigated included: misapplication of termiticides, building attributed occupant complaints (AKA "sick building syndrome") in government buildings and schools. Ed noted that this work was well ahead of federal government intervention. Ed successfully collaborated with other states and university researchers to understand and control these issues, which were among the first problems addressed by the new science of IAQ.

The "A" word? While asbestos was long known to cause occupational risks to workers, the federal government got involved with asbestos in 1982. Initially there was no funding, so Ed partnered with facility managers and building owners who, on a voluntary basis, wanted to learn how to identify and manage asbestos containing materials" (ACMs) in their buildings. Because asbestos only posed health risks when friable, the health department worked with facilities on in-place management of ACMs in most buildings and circumstances. Federal funding came along in 1985, and Ed received a substantial budget contingent on enforcing EPA's asbestos regulations. Ed concluded that the EPA's asbestos approach was developed by "ivory tower" people, with very little understanding of buildings or

public health. While the Feds promoted the removal of asbestos in most cases. In contrast, of the hundreds of buildings that Ed assessed, he identified only a few were immediate hazards and required major abatement ASAP.

Opportunity- Ed's not paid much as a state employee and could not continue supporting his family and was offered a substantial raise if he came to work for a consulting company. Interestingly, this was the company whose school asbestos plans he kept rejecting from his position as enforcer of school AHERA regulations until they were done over accurately. He took their position, which required him to relocate to the DC area. Ed quickly realized that the company's DC office had little for him to do and then went on to work for other consulting companies. Ed realized that he could solve clients' problems much better and then decided to co-found Building Dynamics.

Notable projects-

You've inspected the "white house" the world's most famous house, what were the issues you found and what were your recommendations? While consulting for the US Public Health Service, Ed investigated complaints by staff about building related symptoms in the west wing of the white house. The occupants considered themselves "too important" to discuss their concerns with Ed. Ed found nothing wrong and the white house to be the cleanest and best maintained government building he had ever assessed. Ed jokes that he inspected the white house during the Clinton Lewinsky period but observed no *hanky panky* when inspecting under desks!

What were you looking for at the south pole, what did you find, and what were your recommendations? Consulting for the National Science Foundation, Ed was sent to the south pole to assess the scientific research station. The buildings were aging-out and scheduled for replacement. Ed was to look for conditions, building performance and evaluate ventilation. Ed measured VOC levels much higher than other buildings due to evaporation of jet fuel from the clothing of maintenance personnel and operations in the heavy equipment garage which lacked ventilation. Ed subsequently published a series of papers based on his assessment of buildings under these unique conditions.

You were heavily involved in building assessments following 9/11. Looking back, what lessons did the industrial hygiene community and restoration industry learn?

Ed was originally scheduled to stay overnight on September 10th in the hotel located at the World Trade Center for a consulting project but delayed his visit for a day because his young daughter was about to take her first steps. Then, on September 15th, the Justice Department called him to address two urgent problems in their New York City facilities.

The first was continuing symptoms by the attorneys in their offices close to the WTC despite assurances from EPA that their air sampling found conditions to be safe. Ed and his partner Jim Bailey, a mechanical engineer, identified major, ongoing exposures associated with emissions from the ongoing fires and blowing dust from the disaster site, drawn into the Federal Building, where windows were not in place on one floor undergoing restoration and the HVAC had been shut off with exhaust systems left running. Complainant interviews found that symptoms were limited to occupants with pre-existing sensitivities. These folks were experiencing the same symptoms outside the building and in their nearby homes.

BDL's second investigation was in the building across the street from the WTC, which received airplane parts and dust from the collapsed towers and had been vacated immediately and where the Justice Department was a tenant. Ed was one of many CIH's tasked with directing and clearing restoration on behalf of the numerous parties involved. While the other consultants were sampling away, Ed was the only to discover that the contractor was leaving dust behind the unmoved furniture and that the "cleaned" ducts were still grossly contaminated. At the end of the project, the other IH's failed to clear the building for re-occupancy because dioxin exceeded "standards." Ed's research then documented that these were normal background levels found in New York City and the building was cleared. BDL subsequently published a paper in ASHRAE's IAQ Applications demonstrating both false-positive and -negative finds produced by sampling, in contrast with accurate findings based on visual and engineering procedures.

While industrial hygiene assessment methods for workplace exposures rely upon occupation-specific standards verified by sampling., Ed, opined that IAQ assessments are different. Ed commented that IAQ sampling and analysis has become a huge business and continues to be the primary basis for most IAQ findings and recommendations.

Marty King- You had the opportunity to work and collaborate with Marty King. What are your biggest takeaways from working with Marty and what do you think

his biggest takeaways were from collaborating with you? I' grateful to have had Marty as my mentor. His understanding of IAQ was comprehensive and he was truly the pioneer of restoration. Their collaboration began with an informal discussion about mold projects. Marty and Ed then found themselves consulting on the defense side of a large wildfire litigation in California, where homeowners' claims were rejected due to failure to confirm the presence of wildfire related residue based on CIHs working for the insurance companies, using an irrelevant and unsupported method based on carbon content. Ed and Marty's team independently evaluated affected homes, based on restoration industry best practices and confirmed their results through microscope examination of settled dust. While Marty was not a scientist, Ed found Marty's approach to both practical and conclusive. Ed fine-tuned Marty's methodology a bit and added supporting science to his protocol. In turn, Marty respected Ed's approach and trusted him to resolve a major mold growth problem in his church.

Sampling Skepticism- You have often said that sampling is frequently unnecessary and even misleading. If a consultant walks into a building and immediately starts "grabbing air" what are they missing? Prior to even thinking about sampling, a conclusive IAQ investigation must compile the building's history, interview occupants, review building operations with maintenance personnel, conduct a detailed walkthrough, evaluate HVAC systems, and characterize moisture where mold is the issue. If those findings are not sufficient to resolve concerns, testing is useless without a sampling strategy that answers specific questions.

Practice to research- You have been known to do your own research on projects. Can you share an example(s) of when your "on-the-ground findings" contradicted the prevailing scientific consensus at the time. Ed worked with AIHA to create guidance for the assessment of "Chinese drywall." At his own expense Ed traveled to Louisiana to gain firsthand experience with "Chinese drywall under reconstruction in Katrina-flooded homes. He found that air sampling methods being used by both practitioners and researchers were not correlated with corrosion and reported symptoms. Rather than testing for specific sulfides inf the air, Ed developed a new method to test for "air corrosivity,' which was subsequently used to clear Chinse Drywall restoration projects. In a Florida retirement community, classified Chinese drywall exposures on his own nickel; and had a retired occupational physician diagnose the occupants. According to Ed, the government spent millions on "Chinese drywall" research but failed to develop effective methods for assessment and was unable to produce an accurate risk

assessment. Ed's published research papers were developed without the support of research institutions and grants.

RAPID FIRE:

Other than your eyes and nose, what is your favorite piece of equipment? Smoke tube and moisture meters.

What is the most underrated IAQ tool? Smoke tube

What is the most overrated IAQ tool? Spore traps, ERMI

What about thermal imaging? Interpretation of the image is key.

ED's ADDITIONAL COMMENTS

- Ed credits restoration people with his broader understanding of IAQ than most "experts."
- IAQ is a multidisciplinary issue.

Environmental investigators and medical professions must work together to determine causation of symptoms attributed to building exposure.

Although Ed recognizes that some occupants are hypersensitive and may experience building-related symptoms not generally accepted based on conclusive research, Ed does not agree with findings of the few physicians who attribute a wide range of illnesses to mold exposure and then have their patients continue to see them for unsupported, ongoing treatment.

Final Questions:

If you could either "strike" or "add" a standard remediation or industrial hygiene practice, what would it be? Do not base IAQ conclusions and recommendations on measured contaminant concentrations. Before consideration of sampling, investigators should compile the building's history, interview occupants, review building operations, conduct a detailed walkthrough, evaluate HVAC systems, and characterize moisture, where relevant.

From the professional perspective, how do you wish to be remembered? As someone who developed practical methods to understand and resolve IAQ concerns which actually work.

Biggest mistakes with COVID? Most research conducted and guidelines issued were not multi-disciplinary, and thus failed to consider information needed to understand occupants became infected and which control measures were effective. Based on lessons learned, schools could have safely reopened based on infection control measures demonstrated to be effective. On the other hand, HVAC modifications and equipment installation contribute little to the actual reduction of COVID cases.

ROUNDUP

4 generations of scientists and IHs. Ed's Grandfather was a poor immigrant who went on to earn a degree in chemistry, then become a chemist for Stanley Tools as their plant chemist. In that position, he dealt with occupational health questions in the early 20th century. Ed's father then became a chemist whose work included evaluation of worker exposure issues in the 1950's. Ed's daughter is now a planetary scientist.

Z-Man signing off

TRIVIA:

Name the research arm of the U.S. Administration responsible for worker safety?

Answer: National Institute for Occupational Safety and Health (NIOSH)