



## IAQ RADIO+

Show Number: 775 Blog

**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. He has always stressed the importance of hands on in the trenches people, following the science and being practical.

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 then?*

After earning an interdisciplinary master's degree in environmental science, Ed worked as an environmental scientist at an engineering firm where he testified regarding air pollution at West Virginia state hearings. This led to a job with the state of West Virginia during which Ed needed to choose between becoming a coal mining inspector or state's industrial hygienist. As state industrial hygienist Ed's desk had a stack of complaints filed by mobile home 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.

*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. As asbestos only poses health risks when friable, the group agreed upon in-place management of ACMs in most buildings and circumstances. Government involvement came along with funding and Ed received a \$1M budget to hire staff and follow and enforce EPA's asbestos approach. Ed opined that the EPA's asbestos approach was developed by "ivory tower" people, with no understanding of buildings or public health. The EPA scared everyone into removing asbestos. Of the hundreds of buildings that Ed assessed and worked with, only 3 needed the asbestos to be removed.

**Ed shared his early work at the West Virginia Department of Health IAQ program in the 1980s, where he investigated issues like formaldehyde, asbestos, and sick building syndrome.**

**Opportunity-** While working for the West Virginia government and reporting directly to the governor, Ed found himself at a low government pay grade reviewing poorly written asbestos abatement plans prepared by high priced consultants. Knowing he could do better, and earn substantially more, Ed decided to leave the government and work in the private sector. After several stints with engineering firms; Ed 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 inspected the white house during the Clinton Lewinsky period and advised that part of his assessment included looking 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 were scheduled to be replaced. Ed was to look for conditions, building performance and evaluate ventilation. Ed found the conditions and climate unique. The staff who were permitted a 1-minute shower once per week didn't complain. To Ed the buildings reeked of jet fuel used to heat and power the buildings, with the worst occupant exposure found in the repair shop.

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

Following 9/11 Ed consulted for the Justice Department, regarding complaints from occupants working in a building 1 mile away. In addition, Ed consulted on remediation of a building directly across the street from the towers. According to Ed, other IHs "sampled the hell out of the building". Following good assessment, engineering and practical IAQ procedures Ed's team recommended a practical remediation approach. The IHs neither focused on the problems nor the solutions. The IHs opined that the HVAC system and ducts were clean based upon their sampling while Ed's team found the HVAC system and ductwork heavily contaminated. The IHs were failing the remediators based upon dioxin level testing, Ed demonstrated that following remediation that the dioxin levels were at normal background.

IHs and CIHs rely upon occupation specific standards with heavy emphasis on written standards. Ed, opined that IAQ assessments are different, as IAQ lacks standards for comparison. Ed commented that IAQ sampling and analysis has become a huge business and is often financially driven.

***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 working with you?***

Marty King was impressive and memorable. Marty had good knowledge and understanding of IAQ and remediation. Their collaboration began with an informal discussion of a restoration project. Marty and Ed 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. Ed and Marty independently inspected homes, recommended good restoration processes, confirmed results through microscopy. While Marty was not a scientist, Ed found Marty to be knowledgeable and practical. Ed fine tuned and added science to Marty's interpretations. When Marty's church had a mold problem, Marty recommended Ed to solve it.

***Sampling Skepticism- You've 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?***

Ed recommends prior to sampling: gather info from knowledgeable people about the building's history, interview occupants and knowledgeable people about building operation and maintenance, conduct a detailed walkthrough, follow scientific method, evaluate systems, moisture assessment primary, evaluation of remediation/clearance. Mold sampling is often irrelevant. Sampling is used when toxics are suspected. Sampling is useless without a sampling strategy. Opposing parties often rely solely upon sampling.

***Practice to research- You've 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 found "Chinese drywall" interesting and worked with AIHA to create guidance for the assessment of "Chinese drywall" in situ. At his own expense Ed traveled to gulf states to gain firsthand experience with "Chinese drywall". He found that while

extensive air sampling was being done “Chinese drywall” emissions were hard to measure and correlate and efficacy of remediation was hard to confirm. According to Ed, the government spent millions on “Chinese drywall” and neither understood the problem nor how to measure it.

Find the “Chinese drywall” and remove it.

- How to ID “Chinese drywall”, Key fingerprints to look for. Source ID.
- Secondary sources (adsorption).
- Ventilate,
- Treat/neutralize,
- Contain and remove contaminated dust.

Big “Chinese drywall” litigation. People are getting rich. Some remediation has been successful. Money available.

Rather than approaching the “Chinese drywall” challenge by focusing on trying to sample the chemistry of the air, Ed’s practical approach to sampling and analysis of “Chinese drywall” is focused on corrosivity of the contaminants. Ed adapted standard corrosivity sampling and analysis methods for use on “Chinese drywall” projects.

**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 for teaching him the most.
- IAQ is a multidisciplinary issue
- Working with medical people on Building Related Illness; are the symptoms related to the building or to something else?

- Physicians and specialists often don't understand field exposure.
- There is an over recognition of a small group of doctors who blame mold for everything

### Final Questions:

*If you could either "strike" or "add" a standard remediation or industrial hygiene practice, what would it be?*

Don't sample first, don't just sample, use a holistic process. Occupant interviews, systematic assessment procedure, inspecting the HVAC system, understanding engineering is critical to understanding and solving IAQ problems. Facilities people and building operators understand HVAC.

*From the professional perspective, how do you wish to be remembered?*

Proud of work he has done. Fulfilling to see processes he pioneered and approaches he developed for assessment of IAQ have been adopted by others.

*Biggest mistakes with COVID?*

Opportunity to learn before, during and after. Misunderstanding of airborne infection. Implementation of good infection control could have kept schools open. Engineers approached COVID with limited perspective. Too much concentration on ventilation with massive building HVAC equipment not proven to reduce disease. Not enough concentration on source control.

### ROUNDUP

#### **4 generations of scientists and IHs.**

Ed's Grandfather was a penniless immigrant who somehow managed to attend college and become a chemist who worked for Stanley Tools as the plant chemist and dealt with occupational health. Ed's father was also a chemist who worked as plant chemist and handled IH questions. Ed's daughter is a planetary scientist who worked for NASA.

*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)