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Joe Spurgeon, PhD
Life & Times: A Career in Research, Field Investigations & Expert Testimony, Part 2

Today, Dr. Joe Spurgeon, rejoined IAQradio for: Part 2 of *Life & Times: A Career in Research, Field Investigations & Expert Testimony.* We continued our conversation exploring his extensive career in environmental health, government research, laboratory investigations, and indoor air quality. Dr. Spurgeon shared lessons learned from his decades of experience in building investigations, microbial contamination, sampling strategies, interpreting laboratory data, and the challenges of presenting scientific findings in litigation.

Joe Spurgeon, PHD, has a multidisciplinary doctorate degree in Analytical Chemistry and Environmental Health from the University of Pittsburgh; and was a Certified Industrial Hygienist from 1993 – 2013. His career has included working as a research chemist on the NBS Lead-Paint Poisoning Program, directing the FAA's Combustion Toxicology Laboratory, performing Health Assessments for CDC/ATSDR, implementing US EPA's Laboratory Exposure Assessment Project, and working as a consultant specializing in microbial indoor air quality for US PHS. He has performed numerous residential and commercial investigations involving water intrusions and microbial contaminants; has taught courses on mold investigations, sampling, and data interpretation methods; and has served as an expert witness in numerous mold cases. His books are available at http://expertonmold.com/

Nuggets mined from today's episode:

A tale of four Photos:

- Dr. Spurgeon at the podium discussing a high-profile mold problem in a Los Angeles office building.
- Dr. Spurgeon conducting a mold course.
- The Bi-Air filter cassette developed by Dr. Spurgeon being used to collect personal samples in the breathing zone of a mold remediation worker inside the dusty environment of a containment.
- Bi-Air filter cassette. A 25mm mixed cellulose ester filter used for collecting replicate area and personal mold samples that can be analyzed by microscopy, culturing, and/or qPCR. "If microscopy of the first sample trace doesn't indicate contamination we stop. if it indicates contamination, we can submit the second sample trace for culturing and/or qPCR."
- Voice recording studios are concerned about mold because of potential adverse effect on vocal cords.
- The Bi-Air filter cassette can be used for collecting airborne mold spores at 100% efficiency for short-term (5-10 min) and long-term (60 min – 8 hr) sampling times. In comparison, slit impaction cassettes collect about 50% of Asp/Pen spores and about 5% of Chaetomium spores and are limited to short sampling periods.

Teaching, interpretation, and professional judgment

You have taught courses on mold investigations, sampling, and data interpretation. What are the most important principles you want students to take away from those courses?

- It's difficult as an IAQ instructor to communicate effectively with students unless they first have a factual understanding of basic technical principles, so a "prerequisite" course would be beneficial prior to the initial IAQ course.
- What students learn in their first course is imprinted on them, including any misinformation.
- Understand the limitations of the methods and procedures you use.
- The most widely used sampling methods and data interpretation methods may not work, but there are methods that do work and I teach those methods in the class.

- Don’t interpret sample results directly from laboratory reports. Transfer them to data tables in the report first. This is one of the most important concepts in assessing sample results. "When I assess data, I'm looking for patterns and concentration gradients in the data. I first need to use sampling methods that produce data that are representative of the environment that was sampled." He emphasized creating clear connections: "I want to come up with conclusions that are associated with those data. And recommendations that are then associated with those conclusions. So that there's a clear pathway between those three elements. And I'm trying to minimize opinions and as much as possible, stay with facts.
- Select the appropriate sampling and data interpretation methods.
- Ensure the data is representative of the area sampled.
- Look for patterns and concentration gradients using data tables.
- Associate data, conclusions, and recommendations, minimize opinions.

How important is the investigators understanding of building science, moisture dynamics, and HVAC systems when performing microbial inspections?

- A knowledge of moisture and HVAC parameters is especially important, but he views them as separate from the inspection protocol itself.
- Dr. Spurgeon considers each to be a separate domain and opines that it is unfortunate that they are sometimes not recognized as such.

What advice would you give a younger industrial hygienist or indoor environmental professional who wants to become a better investigator?

- *Learn the required technical skills.*
- *Learn how to gather evidence while keeping an open mind.*
- *Select the methods and procedures you will use with care and learn when to use each method.*
- *Understand the difference between data collection methods and data interpretation methods.*
- Learn to assess the clients’ needs, not just their wants.
- Learn to associate data, conclusions and recommendations.
- Identify mentors and learn from them.

Expert witness work and mold litigation

How did you first become involved in serving as an expert witness in mold cases?

- Right time, right place. It was not planned. [Opportunity came while Joe was working in California, when an attorney familiar with Joe's experience and skills asked him to assist in a case.]

What changes when you go from investigating a building to explaining your findings in a legal setting?

- If there is no monetary judgement possible, the case won't go to court.
- You are now an actor in a screenplay. There's a producer (judge), directors (attorneys), actors (experts), writers (litigants), and critics (jury).
- It's your job to defend your client, not your attorney.
- Be honest, no need to ever lie.
- Joe's strategy when testifying is when data supports his client his answers are short and simple, when data doesn't support his client, he provides long rambling answers peppered with scientific jargon.

In your experience, what makes an environmental investigation and its conclusions defensible under scrutiny?

- The quality of the mold inspection
- Documenting the field inspection
- The use of appropriate sampling and laboratory methods
- Assessing the data rather than just collecting it
- Relying on facts rather than opinions.

What are the most common weaknesses you encounter when reviewing the work of another investigator in a disputed mold case?

- Lack of documenting the field inspection
- The use of inappropriate sampling and laboratory methods
- Collecting the data rather than assessing it.
- Relying on opinions rather than facts.
- Recommendations of habitability. (Only physicians are qualified to opine on occupancy.)

Without discussing confidential cases, is there a particular case or experience that changed the way you think about investigations, scientific evidence, or expert testimony?

- What the attorney tells you, or doesn't tell you
- Evidence sometimes makes less difference than you would think.
- 13-hour deposition, 8 attorneys (Joe was an expert witness for the plaintiff. 8 hours general deposition questions and 5 hours of 8 attorneys posing the same question in different ways to discredit Joe's testimony).
- Expert in largest plaintiff's mold award in CA history in 2024. No trial, Joe was not even deposed. Illustrates the benefits of a well-structured report.
- House with 118 windows. Joe's task was to find 5 windows that leaked to which a water penetration test could be done. By wall cavity sampling on 20 windows, Joe was able to identify 5 that leaked. The opposing expert was disdainful of wall cavity testing and Joe was not deposed. The plaintiff was awarded replacement of 100% of the windows when the plaintiff was only entitled to replace 25% of them.
- Importance of understanding your opposition.

Books, professional development, and lessons learned

You have written books on mold and indoor environmental issues, available through Expert on Mold. What prompted you to write them, and who did you have in mind as the primary audience?

- Target audience is mold inspectors (3 books for inspectors, 1 book for homeowners)
- Provide mold inspectors with the opportunity to know that what's commonly done may not be the best approach.
- Show inspectors that many commonly used sampling methods cannot be interpreted. Demonstrate there are sampling methods that can be interpreted.
- Teach them how they could Validate a sampling method using their own data.
- Direct them to sources where his information has been published in literature.

If you could change one thing about how the indoor environmental industry trains and educates investigators, what would it be?

- Joe opines that current introductory and licensing courses often contain misinformation.
- Industry could agree on a minimum curriculum with specifics that instructors could use to then build upon.
- Use OSHA approach of "Train the Trainers" for consistency and better quality.

After a career spanning research laboratories, government agencies, field investigations, teaching, and litigation, what do you consider the most important lessons you have learned about evaluating environmental problems?

- Be honest about our personal biases and how they affect the inspection, we all have them.
- Focus on the client's needs, and use the appropriate methods to meet those needs
- Use validated methods that can provide data that are representative of the indoor environment
- Joe would rather collect ten $40 samples rather than one $400 sample. It's a numbers game.

Are there areas of indoor environmental science or investigation that you believe deserve more attention?

- Epidemiologists in hospitals seem unconcerned about the risks of organ transplant recipients and immune compromised patients going from hospital back to mold contaminated homes. (3 cases, one death)
- Adopt methods that are representative of the sampled environment so, we can eventually examine the association between occupant health effects and microbial exposure.
- We cannot do that with the databases collected using the common mold sampling methods.
- Joe opines methods do exist that can be used to collect such data.

Closing question

Joe, if you could go back to the beginning of your career and give your younger self one piece of advice about science, environmental investigations, or professional life, what would it be?

- At an Entrepreneurial Management class at Wharton, Joe learned most successful people failed an average of five times before succeeding to succeed you don't have to be a genius just be smart enough to keep getting back up and trying again
- Find a mentor
- Select methods carefully
- Learn basics
- Learn details
- Start collecting data, once a total of 50 samples are collected you have a database for comparison.
- Joe doesn't use indoor vs outdoor mold comparisons for airborne samples. He uses the control method or a database method [logistics regression] taught to him by Morton Corn.

Wildfire is the "new mold", would you're sampling and analysis methods be applicable and adaptable to wildfire investigations?

- Joe trained in analytical chemistry, opines that surface or air sampling with treated fiberglass filters with analysis by Thermoluminescence (Thermal–optical analysis [TOA]) for elemental and organic carbon was the better method when compared to replicate sampling with tape lifts and swabs for char and soot to detect wildfire smoke residues in six houses and a control house.

ROUNDUP

Pete Consigli- Industry Historian and Global Watchdog

- Pete reminisces about quality training courses conducted by MEHRC, Richard Shaughnessy, Henry Slack EPA region 4, Air Quality Sciences {Marilyn Black, Elliot Horner, Phil Morey} Harriett Burge, etc.
- Pete shares Dr Joe's concerns about the lack of quality training.
- Babe Ruth held records in same baseball season for most home runs and strikeouts. Swinging for the fences involves taking risks. Pete advises swinging for the fences.

- The phrase "standing on the shoulders of giants" is a metaphor which means "using the understanding gained by major thinkers who have gone before in order to make intellectual progress". Standing on the shoulders of giants (Latin: *nani gigantum humeris insidentes*) and expresses the meaning of "discovering truth by building on previous discoveries".[2] This concept has been dated to the 12th century and, according to John of Salisbury, is attributed to Bernard of Chartres. Its most familiar and popular expression occurs in a 1675 letter by Isaac Newton: "if I have seen further [than others], it is by standing on the shoulders of giants." Wikipedia

- Ai is a double-edged sword categorizing our email for us. Pete asked Dr Joe for his opinion on Ai and Dr Joe said that he's tried it and found that the more he used it the worse it is.
- Pete thanked Joe for sharing his experience.

Dr. Spurgeon's Final Comment:
I've enjoyed the variety of work experiences that I've had.

Z-Man signing off

TRIVIA:
Name the American architect who invented a construction toy for children?
Answer: John Lloyd Wright
Answered by: Doug Kohnen, ERAtech Environmental, Dayton, Ohio

Article mentioned in chat by Dr. Irene Grant.
Evaluation of invasive aspergillosis risk of immunocompromised patients alternatively hospitalized in hematology intensive care unit and at home
S. Rocchi, G. Reboux, F. Larosa, E. Scherer, E. Daguindeau, A. Berceanu, E. Deconinck, L. Millon, A.-P. Bellanger
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