

## IAQ RADIO+

Show Number: 766 draft

### Ralph Moon, PhD Jeremy Beagle, CIH

#### Post-Remediation Verification after a Flood or Sewage Loss

Good Day and welcome to IAQ Radio+ episode 766 blog This week we welcomed Dr. Ralph Moon and Jeremy Beagle, CIH to discuss Post-Remediation Verification after a Flood or Sewage Loss. Dr. Moon and Jeremy are science guys with extensive practical field experience.

**Jeremy Beagle** is a CIH and Senior Principal Scientist with SDII Global and has been performing causation assessments and providing expert witness testimony pertaining to water damage, fungal growth, and other indoor environmental concerns in the built environment for over 21 years. Jeremy speaks at conferences, workshops, and provides continuing education in the insurance services, indoor air quality and indoor environmental spaces. He has authored industry-related articles and has published papers as part of the ASCE Forensic Engineering Congress. He is the Vice Chairman of the IICRC S530 Standard for Indoor Environmental Assessment for Suspected Mold Contaminated Structures consensus body and is on the Board of Directors for the Indoor Air Quality Association.

**Ralph Moon, PhD** is a Building Scientist with more than 42 years of consulting experience in the areas of duration of loss studies, material testing, risk assessment, project management, industrial hygiene, and indoor air quality assessment. Dr. Moon has published over 60 peer reviewed and 40 technical articles and papers and is a frequent expert witness on insurance-related claims and projects. Dr. Moon has a unique background that combines extensive field experience, seminar development and presentations, research, and legal services in IAQ, building science and disaster restoration.

Nuggets mined from today's episode:

*In your experience, how often is PRV performed following sewage losses?*

Jeremy Beagle: Predominately sees in healthcare facilities, otherwise not encountered that often.

Ralph Moon: Encounters PRV on sewage losses more often. Ralph commonly encounters situations where only superficial PRV is being done, consisting of a walkthrough, visual observation and one sample. Schools are concerned with potential health risks to young children and faculty. These are not simple toilet overflows situations they are catastrophic flood or sewage related events. PRV is most often requested after the fact.

***Will insurance companies pay for this?*** Ralph Moon: Yes, PRV for sewage losses ranges \$1,800-\$3,000 and up. PRV may be done solo or as part of a team. Issues for consideration include: source of contamination, entry point of contamination, was surface exposure uniform, remediation, sequence of procedures, source removal cleaning and disinfection methods. Th importance of setting expectations before remediation and PRV diminishes problems after. Restorers need to know and agree upon clearance criteria,

### **Post-Remediation Verification Challenges**

The meeting focused on post-remediation verification (PRV) after floods and sewage losses, with discussions on its frequency and effectiveness. Jeremy noted that PRV is less common in residential and commercial settings compared to mold cases, while Ralph suggested it is more frequently requested in schools due to the involvement of children. Both agreed that PRV is often performed superficially, with limited sampling, which may not provide a comprehensive evaluation. The discussion highlighted the importance of thorough PRV, especially in cases involving potential health threats.

### **Post-Remediation Verification Guidelines**

The meeting focused on post-remediation verification (PRV) after catastrophic floods or sewage losses. Ralph presented a detailed presentation on conducting PRVs, emphasizing the importance of cooperation among parties involved and addressing different needs of various facilities. He shared his experience from a trip to Melbourne, where he learned that different business sectors had unique requirements for cleanup and re-opening. The discussion concluded with a question about whether there are any standard guidelines for PRVs, to which Ralph responded that he was unaware of any specific standards from organizations like

AIHA. Jeremy commented that EPA and municipalities provide remediation guidance info.

### **Post-Remediation Verification Assessment Guidelines**

Ralph and Jeremy discussed the evaluation process for post-remediation verification (PRV) of water damage, focusing on the simplicity of initial assessments and the importance of documenting findings. They emphasized the need for proper moisture surveys, using instruments like Tramex meter (penetrating and non-penetrating meters), and plotting results on floor plans to demonstrate dry standards have been obtained. Ralph highlighted the potential liability associated with misapplied disinfectants, urging practitioners to follow label instructions, have specific plans for consistent concentration and application rates, and to document training and qualifications of those applying disinfectants.

### **Disinfectant Selection and Sampling Methods**

Ralph and Cliff discussed the use of disinfectants in remediation work, with Cliff emphasizing the importance of using products that can both clean and disinfect, such as quaternary ammonium compounds (quats). They highlighted the need for proper documentation and communication with customers about potential odors from disinfectants. Suggestion for customer's to sniff test and authorize the disinfectant prior to use. The discussion also covered sampling methods for post-remediation verification, with Ralph noting the importance of having a clear methodology and being able to defend sampling choices.

### **PRV Sampling Process Complexity**

Ralph explained the complexities of sampling during PRV processes, emphasizing the need to clarify whether sampling aims to verify safety or normal conditions, and highlighted the importance of integrating PRV specialists from the project's beginning to ensure effective sampling and analysis. He discussed various sampling methods, including probabilistic and non-probabilistic approaches, and stressed the necessity of being able to defend sampling decisions with references and publications. The discussion also touched on the challenges of defining "background" contamination levels, which vary significantly across different locations.

### **Sampling and Cleaning Prioritization Protocol**

Ralph discussed the importance of judgment in sampling and cleaning, particularly in high-touch versus low-touch surfaces. He explained a hierarchy for sampling and cleaning, with high-touch surfaces being prioritized. Ralph also emphasized the need to document the disposition of salvaged contents after a sewage loss to mitigate potential liability issues.

### **Early Dispute Resolution in Projects**

Ralph emphasized the importance of controlling potential disputes at the outset of a project by forming a team to discuss expectations and resolve issues. He also highlighted the need for PRV specialists to use judgment and explain their sampling methods, especially when statistics are not applicable. Jeremy agreed with Ralph and added that PRV should focus on objective observations and measurements, rather than relying heavily on sampling. He stressed the limitations of sampling in determining the effectiveness of remediation and the importance of considering other factors beyond bacterial presence when assessing sewage impact.

### **Cleaning Protocols and Disinfection Methods**

The group discussed cleaning protocols, with Cliff seeking opinions of the use of bacteriostatic or fungistatic treatments to provide longer-term protection, though Ralph noted these treatments might only provide protection for a few hours on high touch surfaces. Jeremy emphasized that most environments are not sterile, and focusing on good housekeeping and residential hygiene is more effective than using additional disinfectants. The discussion concluded with Cliff sharing his experience with the “Pittsburgh Protocol” a wet cleaning method involving foaming and pressure cleaning, which he found effective. Cliff discouraged the process of re-flooding effected areas with disinfectants that is recommended by some others.

### **ATP Testing in Restoration Challenges**

The meeting focused on the use of ATP testing in restoration and the challenges of microbial testing in the industry. Pete Consigli discussed the history of ATP use, starting with its introduction in the 1990s for sewage backups and its evolution for mold testing. Ralph Moon emphasized the practicality of ATP for high-touch, critical surfaces and areas with slow return to pre-loss conditions. Jeremy Beagle expressed concerns about the reliability of sampling and highlighted the importance of physical inspection. The group also discussed the categorization of water damage and the rapid growth of mold in moist environments. The

conversation ended with a discussion on discouraging the challenges of “zero tolerance” for microbial spores and the need for clear criteria in microbial testing.

***Licensing issues?*** Antimicrobials and their application are regulated by the EPA under FIFRA (Federal Insecticide Fungicide and Rodenticide Act). Some states enforce that applicators of antimicrobials be licensed. Ralph encounters licensed Infrared Cameras who claim that the temperature differentials represent “wetness” of materials.

**Pre-Existing Contamination Ralph;** Richard Shaughnessy is trying to qualify a baseline for preexisting microbial background indoors. There is NO Right or Wrong with sampling methods. The sampling method should be applicable to the circumstances and is determined by the person performing the PRV. Is the sampling method appropriate for protection of life and health?

**Hierarchy in Healthcare of surfaces and soiling.** Ralph: More sampling needed on high touch surfaces than low touch surfaces. Door handles are considered high touch surfaces and walls and floors are not. Corresponding sampling hierarchy of critical surfaces and noncritical surfaces. More sampling is needed on critical surfaces than on non-critical surfaces.

***Z-Man: Does category 2 water become category 3 water over time?*** Ralph has studied the effect of water on various materials by pre-cleaning them with alcohol prior to wetting them (wood, metals, OSB, etc.) and found a radical change of microbial counts in high oxygenated water over time.

**Thoughts on “Pittsburgh Protocol”?**

Ralph: It’s practical, quick and effective.

Jeremy: It’s a wet process and wet process is what is needed.

## **ROUNDUP**

Pete Consigli, Global Restoration Watchdog, Industry Historian, Moisture Mob Consigliere

- A multidisciplinary sewage backflow remediation guideline precedes the IICRC S500 Water Damage Restoration Standard.

<https://inspectapedia.com/septic/Sewage-Backflow-Remediation-Guidelines-Berry.pdf>

- In the early to mid 1990s Pete handled many sewage claims in the San Francisco Bay area Property whose owners and occupants wanted assurances that properties were properly remediated. Peter Sierck and David Bierman (pioneer IEPs and Occupational and Environmental Health practitioners) provided remediation protocols and sampling and analysis guidance. The clearance criteria for these projects was “zero tolerance” for E. coli or enterococcus.

### Ralph Moon

- We live in a litigious environment.
- From experience Ralph has learned to be wary of curious opposition attorneys; so Ralph thinks, acts, and that we think defensively, our actions must be defensible.
- Prevent potential disputes upfront.
- Set expectations upfront.
- Obtain agreement on what is acceptable upfront.
- PRV specialists have incredible discretion as to sampling methods.
- Fertility clinic had a roof leak in 1 corner of the building, when buttons critical to the work were sampled fungal contamination was found.

### Jeremy Beagle

- We don't live in sterile environments.
- Good housekeeping is important.
- Overreliance on sampling.
- Is it clean, is it dry was the remediation work thoroughly done!
- Coliforms are commonly found in background and do not indicate fecal contamination. E. coli and enterococcus are indicators of fecal contamination.
- Get everyone to agree on the PRV criteria.

### *Z-Man signing off*

### **Trivia:**

At the 2004 annual Senate class photo, in a verbal exchange with Senator Patrick Leahy, Vice President Dick Cheney dropped an “F bomb” on the Senate floor.

Name the journalist who wrote an opinion piece in favor of use of the word in the Washington Post?

Answer: Charles Krauthammer

Sorry, no correct answer was submitted.