



Engineering Sciences Section – 2005

C55 Forensic Investigations of Chemical and Biological Contamination in Buildings

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After attending this presentation, attendees will understand procedures for conducting IAQ investigations; understand common mistakes that can lead to incorrect conclusions; and gain information from real-life case studies that demonstrate the procedure with respect to both chemical and biological contamination.

Experience has been that many IAQ investigators conduct investigations without a clear hypothesis of the problem that lead to complaints about the air quality in a building, or they develop hypothesis based only on past experience without full considering site-specific factors. This presentation will impact the forensic community and/or humanity by presenting investigation procedures that have been proven in numerous studies and will facilitate the correct diagnosis of indoor air quality problems in buildings.

The goal of the forensic building investigation is to determine the cause of an Indoor Air Quality (IAQ) complaint or problem and resolve the issue in a way that (1) prevents it from recurring, (2) addresses all concerns relative to the occupant risk, (3) addresses liability, and (4) does not create other problems. The process for diagnosing IAQ complaints in a building include: 1) an initial walkthrough, 2) interviews with occupants and building maintenance staff, 3) collection of preliminary data (visual and analytical), 4) the development of one or more hypotheses, 5) collection of data needed to test the hypothesis, 6) evaluation of data to determine if results support the hypothesis, 7) implementing the control strategy, and 8) validation to determine if the control strategy is effective. Not every step is necessary in every case.

While many IAQ problems can be resolved by in-house personnel that are trained and knowledgeable of a building, diagnosing some IAQ problems may require equipment and skills that are complex and unfamiliar. Risk Management & Engineering, Ltd. will present two case studies that illustrate the process for solving IAQ complaints. One case study will address an odor complaint that is related to chemical contamination caused by an off-site source. In this case, it was also determined that the affected property contributed to the cause of the indoor odor due to unique features related to the heating, ventilation, and air conditioning system (HVAC). The second case will address an odor complaint related to biological contamination. In this case, the biological contamination was caused by poor construction related to the exterior of the building. The two case studies represent a range of complexity in forensic investigation of IAQ problems.

Indoor, Air, Quality