Abstract #: 339

Presented by: Archana Manapragada, BS, Graduate Student

Uncovering Safety Silence

Archana Manapragada, Ramses Corzo & Valentina Bruk-Lee, Florida International University Department of Psychology

Keywords: safety silence, safety violations, accidents, injuries, justifiable violations

Objective: The objective of this exploratory study was to examine the construct of safety silence (SS), which is an employee's act of not addressing the occurrence of an unsafe event that he/she has witnessed in the workplace. SS can occur in relation to unsafe behaviors (e.g. safety violations & errors) or safety outcomes (e.g. accidents & injuries). SS can pose as a barrier to increase or maintain workplace safety by not giving employees and management the opportunity to take corrective and preventative measures against unsafe events.

Methods: Twenty six individuals employed in organizations required to follow OSHA standards participated in this study. Sixteen individuals participated in focus groups and ten were individually interviewed. Participants were asked a list of general discussion questions and were also asked to provide two or more critical incidents in which they chose not to speak up about unsafe events that they have witnessed.

Results: Findings suggest that SS does exist and the main safety issues that employees choose to stay silent about are safety violations, followed by safety hazards, injuries, and accidents. Several motives were also found behind SS behaviors. Justifiable violations, which are violations that are rationalized by coworkers witnessing the event, were found to be the main reason for why employees decided to engage in SS.

Conclusion: By exploring the construct of SS further, tools to measure, identify, and reduce SS can eventually be developed. However, there is much more to be researched in this area before such objectives can be met. Nonetheless, this study makes a significant contribution to the safety literature by uncovering the construct of SS and taking positive steps towards determining why it exists.

Abstract #: 340

Presented by: Adam Marty, MSPH, Graduate Student

Characterization of a Nano-Aerosol Using a Portable Scanning Mobility Particle Sizer and Electron Microscopy

Adam Marty, MSPH, Dr. Yehia Hammad, D.Sc., USF Sunshine ERC Industrial Hygiene Program

Keywords: nanoparticle, aerosol, microscopy, SMPS, distribution

Objective: Portable scanning mobility particle sizers (SMPS) offer convenient means to collect information about nano-sized aerosols because they provide real-time distributions. Electron microscopy (EM) applied to a filter sample has been considered the traditional method for the sizing and counting of small particles. However, the later method is time consuming. The objectives of this research are to generate a stable and reproducible sodium chloride aerosol and to compare the size distributions obtained from SMPS and EM.

Methods: A sodium chloride aerosol was generated and introduced into a sample chamber. The size of the generated particles ranged from 20 to 250 nm. The consistency of the aerosol concentration was monitored using a particle counter. A portable SMPS was used to determine the size distributions of the generated aerosols. Polycarbonate membrane filters were used to collect the aerosols for subsequent EM analysis. The particle size distributions were determined from photographs of the membrane filters. SMPS and membrane samples were collected simultaneously.

Results: Background counts were less than 0.3 particles/cc. Conditions during data collection showed that target particle size, particle concentration, and relative humidity were well controlled. SMPS data yielded log-normal size distributions with a geometric means between 65 to 80 nm. EM analysis of the particles collected yielded log-normal size distributions with a geometric means between 40 to 42 nm.

Conclusion: A well characterized aerosol could be generated and reproduced. Physical counting methods using EM were cumbersome and different than those obtained from SPMS. The differences in the results could be attributed to the sensitivities of the methods used in this study.

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