Abstract #: 343

Presented by: Marysel Pagán-Santana, BS, Graduate Student

Students Perception of Safety in the UPR-Medical Sciences Campus Educational Laboratories

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Keywords: Safety Culture, Educational Laboratory, Safety Perception, Students

Objective: Laboratory safety in universities is generally observed in terms of security measures in structures and law requirements, while safety components like safety management, safety knowledge and safety culture usually take a back seat in terms of regulations and policies. This study aims to evaluate the safety climate in teaching laboratories at the UPR-Medical Sciences Campus based in the student perception of safety.

Methods: The study asks a sample of UPR-Medical Sciences Campus' students to answer a series of pre-established questions that will measure their perceptions about their laboratory work site and its management. Study data is collected and managed using Research Electronic Data Capture (REDCap) electronic data capture tools. The survey questions are categorized into relevant safety culture areas to include Supervisor and Coordinator Execution, Student Execution, Safety Training and Reinforcement, and Organizational Factors.

Results: Responses for each of the statements are ranked using the Likert Scale, commonly known as an agreement scale. In the analysis of the survey's results, mean average Likert Scores are calculated for every statement, as well as percentages for favorable, unfavorable and neutral responses.

Conclusion: After the analysis and evaluation of the responses and their resulted ranking, the percentages obtained indicate the need for intervention in one or more of the areas investigated in the survey. A lower percentage in the score points to a higher need for attention. Understanding the safety culture of this kind of academic environment provides a pathway to improvement in safety education and awareness of students in the campus.

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Abstract #: 344

Presented by: Laura Riley, PhD, Graduate Student

Expansion of the Performance Capabilities of the USF Inhalation Challenge Chamber

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Keywords: aerosols, chamber, thoracic, impactor, inhalation

Objective: This study enhances the capabilities of a whole-body human exposure chamber and determines the largest particle size that can be generated consistently. Once this size is determined, the inhalable and thoracic fractions of the dust cloud are determined. This chamber is located in the Breath Laboratory of the Sunshine ERC at the University of South Florida, College of Public Health. The chamber is Plexiglass, has a volume of 75 ft3, and is operated at a flow rate of 33.8 ft3/min. Both makeup and exhaust air are HEPA filtered.

Methods: Previous work has been conducted with this chamber to generate respirable dust fractions only, using an elutriator to eliminate larger particles. A direct-reading instrument (TEOM) was used to determine particle concentration. In this work the generated thoracic dust fractions were sampled using gravimetric and direct-reading instruments.

Results: Total dust concentrations in µg/m3 measured by the TEOM at various RPM settings of the Wright Dust Feeder were 110 + 2.8, 173 + 8.5, 398 + 20 and 550 + 17. Total dust concentrations as measured by gravimetric analysis, in µg/m3, at various RPM settings of the Wright Dust Feeder were 135 + 21, 200 + 35, 333 + 18 and 891 + 27. Similar results were found for the inhalable fraction and lower concentrations were found for the respirable fraction. Dust concentrations measured at different points within the chamber showed uniform distribution with variability less than 10%. The particle size distributions were consistent across the different RPM settings.

Conclusion: By determining the largest particle size that can be consistently generated, future inhalation challenge studies using inhalable and thoracic-size particles will be possible with this chamber.

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