Abstract Book

AIHce

INNER HARBOR BALTIMORE

May 21-26, 2016 → AIHce2016.org

www.AIHce2016.org

2016

Pathways to Progress

AIHce 2016

CO-SPONSORED BY AIHA® & ACGIH®

CS-104-07

Serious Questions About Radiation Measurements

R. Johnson, Radiation Safety Counseling Institute, Rockville, MD

Situation/Problem: How often do we find ourselves interpreting data based on someone else's radiation measurements without really knowing if the data are valid? Defensible decisions for radiation safety should begin with good radiation measurements. Unfortunately, many safety decisions are based on measurements with uncertainties, which are either unknown or neglected. Once a measurement is written down, it seems to take on a life of its own and all uncertainties are lost. We may not ask questions to verify the data, especially if the number is above an action level. However, before measurements are interpreted, they are just numbers. Once interpreted the numbers mean whatever people believe, often related to their fears of radiation. There are numerous errors which can result in measurements that do not represent the real world.

Resolution: Before making expensive decisions for radiation safety people need to understand that radiation is a random phenomenon. Even with great care, radiation measurements are only best estimates from a random distribution. When uncertainties are reported for measurements, in most cases they only account for the randomness of radiation. Ideally, they would include uncertainties due to calibration, energy response, and numerous operator judgment factors (geometry, location of measurement, speed of probe movement, etc.). Measurements should not be made in contact with a source without taking into account the location of potentially exposed people and occupancy time. Measurements made for gamma ray exposure should, also, consider a possible beta component. Also, care needs to be taken when reading the scale multiplier.

Results: Many expensive decisions for radiation safety may be avoided by careful evaluation of the quality of radiation measurements. However, because of fears of consequences, people may want to quickly implement radiation safety decisions without confirming the initial measurements. We will review several case studies where protective actions were implemented based on erroneous measurements that would not justify the safety decisions.

Lessons learned: The golden rule for measurements should be to repeat the sample and measurement for confirmation, ideally with different people and instruments, before making an expensive decision. By asking serious questions about radiation measurements, IHs may avoid making expensive decisions that are not warranted by poor quality radiation measurements.

PS402

Poster Session 402

Monday, May 23, 2016, 2:00 PM - 4:00 PM

CS-402-01

Recommendations to Improve Employee Thermal Comfort When Working in 40°F Refrigerated Cold Rooms

D. Ceballos, Environmental Health, Harvard University, Boston, MA; K. Mead and J. Ramsey, CDC/NIOSH, Cincinnati, OH

Situation/Problem: Cold rooms for food storage and preparation are usually kept around 40°F following food safety guidelines. Some food preparation employees may spend 8 or more hours inside cold rooms but may not be aware of the risks associated with moderately cold temperatures. Moderately cold work conditions are not well covered in current occupational health and safety guidelines or educational materials.

Resolution: We characterized work conditions of cold room employees and provided recommendations to improve thermal comfort and prevent health and safety problems. We observed employees in two cold rooms at an airline catering facility, reviewed daily temperature logs, and evaluated employee's physical activity, work and rest schedules, and protective clothing use. We measured temperature, relative humidity, and air velocities at work stations inside the cold rooms.

Results: Employee's thermal comfort was influenced by air drafts at workstations, insufficient use of personal protective equipment (PPE) due to dexterity demands of their food preparation work, and lack of knowledge about good health and safety practices in cold rooms. We measured some air drafts that exceeded recommended guidelines.

Lessons learned: Recommendations included redesigning air deflectors, installing suspended baffles to change air patterns, providing more options on PPE, changing out of wet clothing, providing hand warmers, and educating employees on cold stress. There is a need for guidelines and educational materials tailored to employees in moderately cold environments to improve thermal comfort and prevent health and safety problems.

CS-402-02

Manganese Exposure and the OSHA Standard: The Relevance of the 5.0 mg/m^3 Ceiling PEL

D. Duffy, ESIS, Inc., Chicago, IL

Situation/Problem: OSHA established a Ceiling Permissible Exposure Limit for manganese many years ago. The issue is whether that standard is still relevant and whether ceiling exposures in excess of the 5 mg/m^3 PEL during welding, air arcing and related processes can occur.