
9:00 am – 9:45 am

A Shift in the Lab Energy Paradigm: Changes to Fume Hood Minimum Flow Rate

Gordon P. Sharp, Chairman, Aircuity, Inc.

One of the sources of significant lab energy use is fume hood exhaust. Variable Air Volume (VAV) hoods reduce this energy use but only down to the recommended fume hood minimum flow rate resulting in considerable energy use even sashes are closed. Fortunately, both controlling standards (NFPA 45 and ANSI/AIHA Z9.5) have been revised in 2010 to allow for a dramatic reduction in this minimum flow rate. This presentation will discuss the standard changes and how to use them appropriately and safely to significantly reduce the energy consumption of laboratory fume hoods.

9:45 am – 10:30 am

Challenges of Minimizing Energy and Resource Consumption in Laboratories while Maintaining High Levels of Safety and Security

Kevin Humeniuk, Architect, Smith Carter Architects and Engineers Incorporated

This session will discuss the challenges associated with minimizing energy and resource consumption in laboratories while maintaining high levels of safety and security in context of the renovation project for the JC Wilt Infectious Diseases Centre in Winnipeg. The presentation will specifically address the process undertaken to create a customized green building rating system which combines the intent of the Labs21 environmental performance criteria with the requirements and Canadian content of LEED Canada-NC v1.0.

11:00 am – 11:45 am

Due Diligence and Compliance in Canadian Laboratories

Tim Lee, Public Works and Government Services Canada

With decreasing budget and increasing costs of energy, property owners, particularly in laboratories, are always looking at new technology, system designs and operational changes to reduce costs. Many of these changes, negatively impact the safety margin of error historically built into design in the past.

These owners and their operational staff must be able demonstrate the design and operations to provide a safe workplace for other employees. The consequences of not being able to demonstrate this could result in charges under various occupational health and safety (OHS) legislations (federally and/or provincially) or under the Criminal Code Bill C-45.

This presentation will discuss the importance of, and different types of, documentation and how such documentation must be in place before an OHS event occurs and/or charges are laid. Unlike a criminal charge, when you are charged for an OHS incident, you are assumed guilty and the onus is on you to prove your innocence.

The focus of this presentation will be to discuss the risks that new technology, system designs and operational changes pose and what responsible owners and operators must do to demonstrate they are not intentionally compromising the safety of employees.

The design of system monitoring tools must have an all-inclusive focus on providing a safe work environment and not just a performance element such as energy. The value of operating procedures, commissioning, records of non-compliance, etc. will also be discussed

11:45 am – 12:30 pm

The Need for Refurbishment of Existing Laboratories

Steve Yewchuck, P. Eng., Senior Mechanical Project Manager, Hemisphere Engineering

Steve's experience with research laboratories dates back to 1955 in the Nuclear Research facility. During that era safety to the researcher was limited or non-existent. The responsibility weighed upon the individual. Fume hoods were glove boxes, exposure limits were not defined. Needless to say, accidents did happen with some causing long-term disability and death in some cases.

The ventilation was an invention of the users slowly developing safer workplaces. As society demanded better working conditions, more knowledge and standards were required to protect the research people. In addition, new legislation for environmental protection led to the development of design requirements and standards.

In 1974, Steve was engaged in designing mechanically a laboratory to accommodate soft research and toxicology research dealing with H₂S in Alberta. This laboratory was his first exposure to containment of both animal, human and instrumentation standards for design. Ventilation rates were based on general knowledge resulting in development of more sophistication of fume hoods, ventilation standards, filtration, exhaust systems and makeup air. This brought a whole new demand for a mechanical system application for laboratories. As research spread into biosafety and disease control, drug manufacturing suddenly found themselves inventors of how to achieve levels of safety required. As a result, new equipment had to be designed and manufactured.

Today, we have the experience and knowledge with workable tools to design BSL-2, BSL-3 and BSL-4 laboratories along with proper design protocols and procedures. Several of our existing Canadian laboratories are becoming outdated and are not equipped to facilitate the ever changing demands for more technologically advanced spaces and safety of the project or researcher.