



Implementation of *Heating, ventilation, and air conditioning: Addendum to the CCAC guidelines on laboratory animal facilities – characteristics, design and development*

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Heating, ventilation, and air conditioning: Addendum to the CCAC guidelines on laboratory animal facilities – characteristics, design and development (CCAC, 2019) has been developed by the CCAC Air Quality Subcommittee¹, and has been subject to three external reviews². The guidance was developed in response to questions from CCAC program participants interested in maximizing energy efficiency and reducing energy costs while maintaining good air quality.

Institutions now have a choice in regards to their heating, ventilation, and air conditioning systems, either to:

- follow the requirement for clean air specified by Guideline 96 of the *CCAC guidelines on: laboratory animal facilities – characteristics, design and development* (CCAC, 2003):

“The rate of air exchange within a room must be such that clean, fresh air is available to all animals and personnel at all times. For conventional animal holding rooms, the heating, ventilation, and air conditioning system should be capable of supplying and exhausting 15 to 20 air exchanges per hour”;

OR

- implement the appropriate infrastructure and monitoring, and generate the documentation necessary to ensure that clean air is available for animals and personnel at all times.

There is no implementation period for the addendum per se, as currently institutions should be in compliance with Guideline 96 (i.e. supplying 15-20 air changes per hour). For those institutions wanting to lower the number of air changes per hour, the addendum provides guidelines for the air quality parameters that must be met to provide clean air. In addition, the addendum provides details

¹ CCAC Air Quality Subcommittee: Drs. Donald McKay (Chair), retired Director Biosciences, University of Alberta, co-author of the *CCAC guidelines on: laboratory animal facilities – characteristics, design and development* (CCAC, 2003); Christopher Cosgrove, Animal Facility Design Consultant; Germain Rivard, Animal Facility and Cage Design Consultant (resigned 2016); Ken Ugwu, Engineer, Senior Biocontainment Specialist, Global Affairs Canada; Gilles Demers, CCAC Assessment Director (deceased 2016); Gordon Sharp, Chairman Airquity Inc. an energy efficiency company (from 2016), and Ms. Wilma Lagerfeld, Manager, Animal Care Services, Memorial University (from 2016).

² Reviews: peer review from February 17 to March 30, 2015; widespread review from May 30 to August 31, 2016; and final review from April 20 to May 21, 2018. These reviews resulted in 16, 16, and 13 sets of comments, respectively, and included reviewers from Canadian and international institutions and specialists in heating, ventilation, and air conditioning systems.

of validated monitoring instruments which could be used to ensure good air quality. Implementation of the addendum should mean that all institutions will meet one of the two options described above by December 2020. The addendum applies to all rooms in the laboratory animal facility, recognizing that animals may be held for short periods of time outside of the facility.

The impact of air quality on the health and welfare of animals and on research data is an emerging field; hence, the importance of the various parameters may change as research into air quality evolves. To fully understand the impact of air quality (in terms of the welfare of the animals and personnel and the validity of the research), it is beneficial for institutions to monitor their air quality even if they intend to maintain 15-20 air changes per hour.