Ask the Experts

John H. Keene

Global Biohazard Technologies, Inc., Midlothian, Virginia

Do you have a biosafety question and you’re not sure who to ask? Send your questions to the “Ask the Experts” column and I’ll get them answered for you. Drawing from my own experience or that of other experts in the field, we’ll try to compile a thorough and comprehensive answer to your question. Please e-mail your questions to jkeene@globalbiohazardtechnologies.com or Co-Editor Barbara Johnson at barbara_johnson@verizon.net or Co-Editor Karen B. Byers at karen_byers@dfci.harvard.edu.

Laboratory Doors—Open or Closed?

The following question is paraphrased from a recent post to the ABSA List Serve. I thought it deserved attention because it is a common problem in all laboratories, not just the biocontainment laboratories. Many facilities have laboratories that have doors to public hallways that are kept access-controlled. Within these areas, there are doors to multiple individual lab rooms and shared equipment rooms in which multiple responsible users may be working on a variety of Risk Group 1 and Risk Group 2 projects. Lab personnel are resistant to keeping doors closed because of the inconvenience of moving back and forth to the shared spaces.

Question

Does lab staff need to keep the doors closed? Leaving doors to laboratories in the open position seems to be a universal problem in laboratory facilities, whether they are for biocontainment or other types of research. Researchers and other laboratory personnel feel inconvenienced if they have to open doors to move from one area to another. So why should doors be kept closed?

Answer

First, working in a laboratory can be inherently dangerous. Whenever hazardous chemicals, radioactive materials, or biological hazards are being used, a chance of spill and potential exposure exists. In addition, in many laboratories personnel are working with potentially flammable material and there is the chance of a fire, which can spread to other areas of the building.

Second, it is an established fact that laboratories should be at negative pressure to the surrounding public areas in order to protect non-laboratory personnel from potential exposure to the airborne hazards of the laboratory. The air flow should be from public areas and offices to the laboratories and from areas of lower potential contamination to areas of higher potential contamination within the laboratories. This directional air flow is attained by increasing the amount of exhaust air that is removed from the laboratory to a level higher than that which is supplied to the laboratory. The make-up air then, ostensibly, comes from the corridor or public areas and creates a barrier that keeps contaminants inside the laboratory.

The easiest and most efficient way to provide directional air flow while keeping exhaust air to a minimum is to balance the ventilation system while the doors to the laboratory are closed. If these doors are closed, then the area through which the air flows into the laboratory is at a minimum and the air velocity is increased creating a pressure differential resulting in directional air flow into the lab. If, however, the door is left open, a large opening is created, the pressure differential drops, and the directional airflow, while still present, becomes negligible. Under these conditions the directional airflow is easily overcome by various perturbations and eddy currents in the laboratory and potential contamination can be released to the corridor or adjacent laboratory space.

Open doors are also a particular problem when there is a fire in the laboratory since the heat from the fire can cause smoke to escape into other parts of the building.

Third, while it is possible to provide sufficient directional air flow through open doors, a significant increase in exhaust air would be required. Since the possibility for potential contamination of laboratory air with hazardous materials is substantial, the laboratory ventilation system is generally designed to be single-pass air that is not recirculated to the rest of the building. With the current concern for minimizing energy consumption, any increase in exhausting conditioned air without recouping the energy used to condition that air is not acceptable. The high exhaust air flow would also make it nearly impossible to open or close doors, depending on the swing of the door, and substantial noise would be associated with the excessive air flow. In addition, the increased air flow would cause drafts and perturbations of the air in the laboratory, which would be perceived by the occu-
pants as uncomfortable and could result in increased potential exposure to any hazardous materials being used in the laboratory.

So, should the doors be closed? Yes, the building is designed to work with the doors closed. Are the closed doors really an inconvenience for those working in the laboratory? They may think they are, but considering the alternatives, keeping the doors closed is a small price to pay. Red lights at intersections are an inconvenience to me when I’ve failed to correctly plan how long it will take me to get somewhere, but they are a necessity and I’ve learned to put up with them. The researchers in the laboratory should understand the need for keeping the doors closed and learn to close them for their own safety and for the safety of others in the building.

**Question**

How do you deal with the situation where a number of different researchers share open laboratories and different hazards are present? Should you provide information about all hazards including biologicals, chemicals, and radioactive materials that are present anywhere in the lab to all personnel in the lab?

**Answer**

Yes. In an open lab, a spill anywhere in the lab could affect anyone in the laboratory space and all personnel working in the space must be informed of the potential hazards even if they are not working directly with them. Personnel should also be aware of signs and symptoms of exposure to the hazardous materials and be trained to handle emergency situations should they arise.

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**Capsule**

**Ed Krisiunas**

WNWN International, Burlington, Connecticut

What’s new? What’s hot? What’s timely? If you don’t have time to search the Internet for the latest developments that might impact your work environment, you just might find some of this information in the “Capsule” column. Please e-mail any comments or suggestions to ekrisiunas@aol.com or to Co-Editor Barbara Johnson at barbara_johnson@verizon.net or Co-Editor Karen B. Byers at karen_byers@dfci.harvard.edu.

**Interim Guidance on Infection Control Measures for 2009 H1N1 Influenza in Healthcare Settings, including Protection of Healthcare Personnel**

CDC is releasing updated interim guidance on infection control measures to prevent the transmission of 2009 H1N1 influenza in healthcare facilities. The updated guidance applies uniquely to the special circumstances of the current 2009 H1N1 pandemic and will be updated as necessary as new information becomes available throughout the course of this influenza season. Revisions from earlier guidance include: criteria for identification of suspected influenza patients; recommended time away from work for healthcare personnel; changes to isolation precautions based on tasks and anticipated exposures; expansion of information on the hierarchy of controls that ranks preventive interventions in the following order of preference—elimination of exposures, engineering controls, administrative controls, and personal protective equipment; and changes to guidance on the use of respiratory protection. Available at: www.cdc.gov/h1n1flu/guidance/ill-hcp.htm

**Summary of Notifiable Diseases—United States, 2007**

Published July 9, 2009, Volume 56, Number 53

The *Summary of Notifiable Diseases—United States, 2007* contains the official statistics, in tabular and graphic form, for the reported occurrences of nationally notifiable infectious diseases in the United States in 2007. Unless otherwise noted, the data are final totals for 2007 reported as of June 30, 2008. These statistics are collected and compiled from reports sent by state health departments and territories to the National Notifiable Diseases Surveillance System (NNDSS), which is operated by CDC in collaboration with the Council of State and Territorial Epidemiologists (CSTE). This Summary also includes publications from previous years. Available at: www.cdc.gov/mmwr/summary.html

**Novel Influenza A (H1N1) Virus Infections Among Healthcare Personnel—United States, April-May 2009**

*MMWR*, 58(23), June 19, 2009, pp. 637-660

Soon after identification of novel influenza A (H1N1) virus infections in the United States in mid-April 2009, CDC provided interim recommendations to reduce the