

# Spotlight Feature

## Biosafety: not just hoods

In an animal facility, it is important to keep the animals safe from biological hazards and the workers safe from allergen exposure. Thus, the interface between the animal and caregiver must be a kind of protective bubble. Certainly, as last month's feature showed, personal protective equipment (PPE) is important for protecting animal care staff from animal allergens.

But there is furniture-like equipment, too, that protects animal care staff from animal allergens. If an animal is being treated with chemical or biological agents that create a danger for the staff, such equipment can protect them. And equipment can also protect the animal from picking up infectious agents carried by humans, in their bodies and on their clothing.

Biological safety cabinets are used as a primary means of containment. Cabinets allow researchers and animal care staff to work with an animal without exposing themselves to animal allergens. According to an executive at an Asia-based firm that sells biosafety products worldwide, these cabinets are used in all European animal laboratories. There are differences in the types of cabinets used in different parts of the world. They come in several sizes; 4-foot (1.3-m) and 6-foot (2-m) sizes are the most commonly used. They also come in several classes, depending on their air circulation. In Europe, laboratories use Class 2 cabinets. Cabinets can come with larger doorways, allowing larger animal cages into the cabinet. And some companies will even manufacture cabinets to a user's specifications.

Mobile animal cage-changing stations are a type of cabinet that can be rolled directly into the animal room and taken up to the cage rack or individually ventilated cage (IVC) rack. Animal care staff can then remove the animal cage, put it into the changing station and place the animal into a clean cage that was set up within the changing station with clean bedding material, food and a water bottle. One company has a mobile animal changing station with two openings so that two people can work on changing cages at once.

Once an animal is safely ensconced in its clean cage with clean bedding, the soiled

cage may be brought to a separate enclosed station, a bedding disposal workstation. This is a glorified biological safety cabinet with a trash can on wheels under an opening in the worktable space.

All of these cabinets should have air filtration mechanisms. The manufacturer from Asia, for example, includes a disposable pre-filter and activated carbon filters. These help remove animal odors from the cabinets.

### **Air showers: getting clean without getting wet**

A unique product for animal laboratories is the air shower. It's set up like a regular water shower, but instead of pouring water on a person, it showers him or her with air. The reason, said the Asian company's executive, is "controlling contamination in both directions." It prevents people from bringing outside contamination into the animal facility and prevents workers from carrying animal allergens outside the animal room.

### **Suppliers of Biosafety and Containment include:**

Edstrom Industries  
Surrey Diagnostics  
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For a more extensive list of suppliers please refer to the Lab Animal Europe Buyers Guide. Copies available on request from [info@labanimaleurope.eu](mailto:info@labanimaleurope.eu)

### **Water must be clean, too**

Although laboratories may be fastidious about the food the animals are fed, the quality and cleanliness of animal bedding and use of disposable or frequently washed cages, the one thing labs often are less fussy about is the source of drinking water.

The business development manager of a US-based company that supplies automated watering systems to animal laboratories points out that there are no water quality standards for animal laboratories. This, he explains, is not a new problem. Back in 1980, at a Charles River Symposium,

Gordon Newell told the participants that water quality for lab animals needed to be standardised, the business development director says. He reports that Newell said at the symposium, "If we don't standardise the quality, someone's going to mandate to us what we have to do." The manager goes on to say that the only standard for water quality is that "it is potable."

This leaves a laboratory with a lot of options. Tap water, for example, is acceptable for animals because it is potable for human consumption, the company manager states. The attitude is, "If it's good enough for me to drink, it's good enough for them to drink." Adding a filtration system to tap water decreases microbiological contamination. But the addition of chlorine to a city water system may have effects on animals and their responses in research situations, the manager warns.

In an automated watering system, the standard filter is 5  $\mu$ m in size, which allows both microorganisms and elemental chemicals to pass into the water. Even distilled water is not microorganism-free—and it's expensive to make, the company manager notes.

Some laboratories ozonate the drinking water, which does kill microbes, even such difficult-to-kill microorganisms as *Cryptosporidium* cysts. But ozonation can convert organic molecules in water to forms that are potentially dangerous to animals.

Although automated watering systems cannot control for the quality of water put into the system, they can prevent contamination of the water at the animal end. For example, automated watering is a closed system, so there can be no detergent residue contamination of bottles or chance that bottles can become contaminated in the animal cage. In fact, a laboratory can purchase a system that allows filling of vessels with packaged water safely, without handling, in a changing hood.

The business development manager notes that the automated watering systems have been quite popular in the US and that their use in European laboratories is increasing.



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