Environmental Health & Safety Fact Sheet:
10 Tips for Working in Your Biosafety Cabinet

Good technique when working within a Class II BSC will minimize air turbulence and prevent splatter or unwanted spread of aerosols. Here are some tips for good technique that will maximize potential protection of personnel, product and environment.

Tip #1: Know your airflow

Biosafety cabinets provide personnel, product and environmental protection through the use of HEPA filtered air. Knowing how the air is passed through the cabinet is an essential piece of the puzzle to know.

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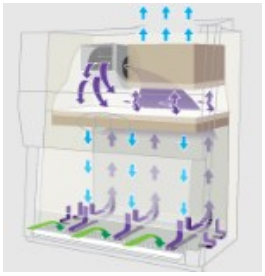

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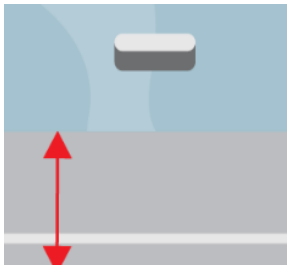

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Tip #2: Work At The Proper Sash Level

Proper airflows are reached by a certifier measuring air speed on an annual basis (or more) to put a stamp of approval that the cabinet is fully operational to provide personnel, product, and environmental protection.

Tip #3: Never Cover The Air Grill

Covering the air grill at the front of the cabinet compromises airflow integrity. Blocking the grill can cause laboratory air to enter the work zone or even work zone air to enter the laboratory environment. PS: this goes for your elbows and arms as well.

Tip #4: Minimize Movement

The rapid movement of a worker's arms in a sweeping motion into and out of the cabinet will disrupt the air curtain and may compromise the partial barrier containment provided by the BSC. Moving arms in and out slowly, perpendicular to the face opening of the cabinet, will reduce this risk. Other personnel activities in the room (e.g.: rapid movement, open/closing room doors, etc.) may also disrupt the cabinet air barrier.

Tip #5: Reduce Splatter

Many common procedures conducted in biosafety cabinets may create splatter or aerosols. Good microbiological techniques should always be used when working in a BSC to minimize this potential. For example, techniques to reduce splatter and aerosol generation will minimize the potential for personnel exposure to infectious materials manipulated within the cabinet. Class II cabinets are designed so that horizontally nebulized spores will be captured by the downward flowing cabinet air within 14 inches (35 cm) of travel. As a general rule of thumb, keeping clean materials at least 12 inches (31 cm) away from aerosol generating activities will minimize the potential for cross-contamination. (continued on next page)

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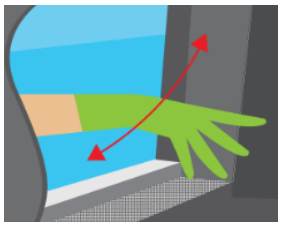

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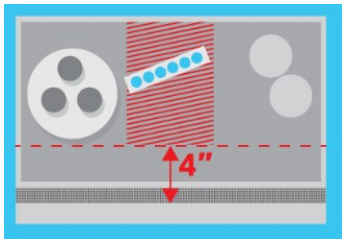

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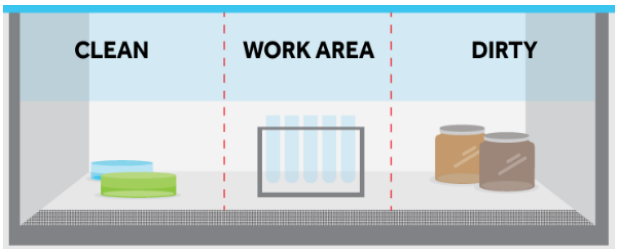

Tip #6: Know Your Work Area

The middle third of the work surface is the ideal area to be used. All operations should be performed at least 4 inches from the front grill on the work surface. Materials or equipment placed inside the cabinet may cause disruption to the airflow, resulting in turbulence, possible cross-contamination, and/or breach of containment.

Tip #7: Work From Clean To Contaminated

Active work should flow from the clean to contaminated area across the work surface. Materials and supplies should be placed in such a way as to limit the movement of "dirty" items over "clean" ones. Maintain proper balance of materials from left to right in order to prevent an airflow imbalance within the work zone. Bulky items such as biohazard bags, discard pipette trays and suction collection flasks should be placed to one side of the interior of the cabinet. All materials should be placed as far back in the cabinet as practical, toward the rear edge of the work surface and away from the front grill of the cabinet. Similarly, aerosol-generating equipment (e.g., vortex mixers, tabletop centrifuges, etc.) should be placed toward the rear of the cabinet to take advantage of the air-split.

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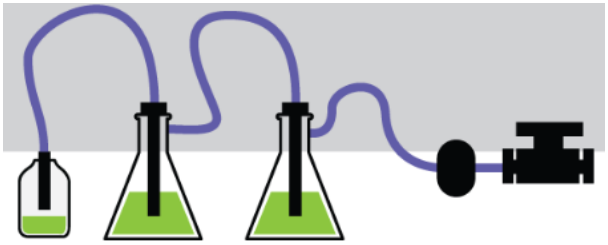

Tip #8: Working With Tubes

Open tubes or bottles should NOT be held in a vertical position. Bottle or tube caps should not be placed on the toweling. Items should be recapped as soon as possible.

Tip #9: Working With Petri Dishes

Investigators working with Petri dishes and tissue culture plates should hold the lid above the open sterile surface to minimize direct impaction of downward air.

Tip #10: Working With Aspirator Bottles Or Suction Flasks

Aspirator bottles or suction flasks should be connected to an overflow collection flask containing appropriate disinfectant, and to an in-line HEPA filter. This combination will provide protection to the central building vacuum pump, as well as to the personnel who service this equipment. Inactivation of aspirated materials can be accomplished by placing sufficient chemical decontamination solution to the flask to kill the microorganisms as they are collected. Once inactivation occurs, liquid materials can be disposed of appropriately as non-infectious waste.

We gratefully acknowledge NuAire© for the text and pictures used in this fact sheet. www.nuaire.com

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