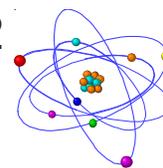


LABORATORY SAFETY FACT SHEET #12



Guidelines for Safe Use of Electrophoresis Equipment

Electrophoresis units can present several types of hazards including electrical, chemical, and sometimes radiological. The general information presented here however, should not be viewed as a substitute for the specific owner's manual and instructions provided by the manufacturer. Below is a link to an accompanying **checklist** to assist researchers in safely operating electrophoresis units.

Proper Equipment Set-Up

Place electrophoresis units and their power supplies so that the on/off switch is easy to reach and the power-indicator lights are easily seen. Locate the equipment where it will not be easy to knock over or trip on.

Because electrophoresis work involves handling conductive liquids around electricity, power supplies should be protected by ground fault circuit interrupters (GFCIs). GFCIs act as very sensitive circuit breakers and, in the event of a short circuit, will stop the power before it can hurt a person. You can identify GFCIs by their "test" and "reset" buttons. They are found on some outlets or breaker boxes. An adapter type, which plugs into a standard outlet and does not require installation by an electrician, can be purchased at local hardware stores at prices starting at \$20.

Addressing Electrical Hazards

Electrophoresis units use very high voltage (approximately 2000 volts) and potentially hazardous current (80 milliamps or more). This high power output has the potential to cause a fatal electrical shock if not properly handled.

Routinely inspect electrophoresis units and their power supplies to ensure that they are working properly. Power supplies should be inspected to ensure that all switches and lights are in proper working condition, that power cords and leads are undamaged and properly insulated, and that "Danger—High Voltage" warning signs are in place on the power supply and buffer tanks.

Inspect the buffer tanks for cracks or leaks, exposed connectors, or missing covers. If your units have such hazards, replace the units with new models that have these safety features built in, or contact EH&S for information on individuals approved to perform retrofitting.

Training and Work Procedures

Principal investigators are responsible for providing instruction on the safe use of electrophoresis units to those in the laboratory who work with them. The instruction should cover the operating procedures written by the manufacturer or laboratory, as well as the associated hazards, the correct personal protective equipment, and applicable emergency procedures. As with all safety training, this instruction should be documented.

Employees must wear all appropriate personal protective equipment when working with electrophoresis units, including lab coats, gloves, and eye protection.

Do not leave electrophoresis units unattended for long periods of time since unauthorized persons may accidentally come in contact with the unit, or the buffer tank liquid may evaporate, risking a fire.

Labs that perform electrophoresis work during off-hours should consider using a “buddy system” to ensure that emergency services can be notified if someone is injured or exposed. It is also recommended that laboratory personnel be trained in CPR and in First Aid.

An **Electrophoresis Safety Checklist** is available via the UC Berkeley website at:

<https://www.ehs.berkeley.edu/sites/default/files/lines-of-services/workplace-safety/04electro.pdf>

The checklist, can be used to determine whether the electrophoresis units and their power supplies are in safe working condition. The equipment should not be used until all hazards have been safeguarded.