

## COMMON USES

*Oxygen-fuel torches* are often used to join metals, for sealing samples in glass tubing and relieving stress in glass systems.

Operators need to ensure that the work place is free of combustible and flammable materials. The clearance should be graded to the hazard... flammable vapors may travel great distances to an ignition source.

Appropriate Personal Protective Equipment is required specific to the task, such as eye and face protection, appropriately filtered/tinted glasses, heat-resistant gloves, lab coats, aprons and solid-toed shoes. Leather is the first choice in protective apparel, with wool second and cotton last. Clothing rated as **FR** (Flame-Resistant) is available from several providers.

Synthetic fiber fabrics should never be worn around a hot work process as the material will melt into the skin causing serious injury.

*Lab burners*, such as Bunsen burners, are useful for heating materials in a process. Again, the area should be free of combustible and flammable materials, with attention given to separation of the process from flammable vapors. PPE should be selected appropriate for the hazard, commonly heat-resistant gloves, lab coats and face protection.

## TYPES OF TORCH WORK

*Designated Area* describes those sites where torch work is done routinely, such as a glass working bench or welding/soldering table. The Designated Area is evaluated during Readiness Review, annual Independent Walkthroughs, Program Walkthroughs, and routinely by Plant Protection officers. Contact ESH&A at 4-2153 to discuss establishing a new Designated Area.

*Transient Work* is done on an “as-needed” basis, typically leak repairs or short installation jobs. As the work is often done by trained staff unfamiliar with specific work site conditions, a Hot Work Permit is required for each Transient Work task. Permits are issued by an authorized person. The Permits are kept in Plant Protection, and last for one day only.

Contact ESH&A at 4-2153 with questions.



## FOUR PRACTICES

### *Pre-Plan the Job*

Is this a Designated Area or Transient Work task? Assess the hazards of materials involved, anything new?

### *Personal Safety*

Are there toxic substances or fumes involved? Are work surfaces heat and flame resistant? Do you need Engineering Controls (Hood or Duct for fumes)? As a minimum, eye/face protection is required, but will other PPE (heat-resistant gloves, lab coat, filtered/tinted glasses) be needed?

### *Work Area Safety*

Move combustibles and flammables from the work area. Cover floor/wall openings to prevent hot slag or sparks from escaping the area. Don't create tripping hazards with hoses or cables. Ensure the exit path remains clear. Purge chambers/vessels of flammable or toxic materials before heating. Do you need a Fire Watch for property or personnel safety?

### *Equipment Safety*

Inspect all connections before using equipment. Look for loose fittings, hoses, clamps, cables; look for abrasions. Tag defective equipment Out Of Service. Refer to manufacturer's material for specific inspection criteria.

## LEAVE NOTHING UNATTENDED

Turn off the torch when you leave the room.

Turn off the gases at the cylinder at the end of the day, or when you leave the area for any length of time.

## TURN IT OFF WHEN YOU'RE DONE



**If you have any questions regarding torch work in a laboratory setting, contact Environment, Safety, Health and Assurance at 4-2153.**

## ROLES AND RESPONSIBILITIES

**Program Directors** shall ensure Group Leaders implement, maintain and document the ES&H program within each group.

**Group Leaders** function as the first line managers for the day-to-day operational ES&H in their areas. Group Leaders are responsible for:

- Completing Readiness Review for all activities.
- Ensuring employees receive institutional training.
- Providing job-specific training (i.e., torch operation, glass working practices and principles, and determination of task-specific Personal Protective Equipment).
- Ensuring the health and safety of their employees.

**Environment, Safety, Health and Assurance** is responsible for institutional training such as Personal Protective Equipment, Cylinder Safety, Chemical Hazard Communication, and Hazardous Waste Generators Training. ESH&A also serves as a resource for Program Directors, Group Leaders and employees.



## TORCH SAFETY AT AMES LABORATORY

Torches and open flames are useful tools for research. However, by their nature, there is a risk that needs to be evaluated and controlled.

## RESTRICTIONS

The sprinkler and fire detection systems must be operational during all torch operations. Work on structural members (such as scaffolding, stairs, ladders and stands), utilities (gas, air, helium recovery, domestic/de-ionized water) and pressure vessels is restricted to Facilities Services and Engineering Services staff.

If you have questions regarding these definitions, call ESH&A at 4-2153, Facilities Services at 4-3756, or Engineering Services at 4-3758 for assistance.