

Biology and Wildlife  
**STANDARD OPERATING PROCEDURE**  
Bunsen Burners

**Location(s):** Murie 202, 203, 204, 206, 209, 211, 302, 303, 304, 306, 307, 309

**Chemical(s):** Propane (CAS # 74-98-6) is the fuel source for Bunsen burners used in Murie.

**Specific Hazards:**

- Propane: Danger. Extremely flammable gas.
- Leaks can cause fires and explosions when exposed to ignition sources.

**Contact Information:**

Laboratory Supervisor: Denise Kind    dmkind@alaska.edu    474-6298

Laboratory Manager: Patrick Knavel    pdknavel@alaska.edu    474-5622

**1. Purchasing:**

Contact the Laboratory Supervisor and Laboratory Manager if wear is noted on Bunsen burners, strikers, or hoses.

**2. Storage:**

Bunsen burners can be stored in the labs unsecured.

**3. Authorized personnel:**

- TAs and instructors must have completed all required employee and laboratory safety training.
- Instructors are authorized to train their TAs on the use of Bunsen burners.
- Once trained, TAs are authorized to train students on the use of Bunsen burners.
- Students may use Bunsen burners for lab exercises once trained by their TA or instructor.

**4. Training requirements:**

The user must demonstrate competency and familiarity regarding the safe handling and use of these materials prior to using them. Training shall include the following:

- Review of this SOP
- In-person review of procedures

**5. Use location:**

- Bunsen burners may be used on laboratory benches and/or in fume hoods.
- Bunsen burners should not be used near flammables.
- The use location must be clean and uncluttered.

**6. Personal protective equipment (PPE):**

- Long hair must be firmly secured behind the head.
- Long sleeves must be close-fitting, not loose.
- As for all lab work, closed-toe shoes and covered legs are required.
- Clothing must be made of material that is not flammable or subject to melting if exposed to fire. Cotton, wool, and other materials with low flammability are appropriate. Synthetics that burn or melt if exposed to flame are not permitted. The use of an appropriate lab coat is recommended.
- Safety glasses or goggles. Goggles are recommended to prevent heated liquid from being splashed into the eye or pieces of material from being thrown into the eye if something breaks.

- Gloves may be required based on what is being heated, but are not necessary for the use of a Bunsen burner in and of itself. Consult the Safety Data Sheets for any chemicals being used to determine the need for gloves.

## **7. Spill equipment:**

It is not possible to contain a propane spill (leak) in the teaching labs. See section 12 below for dealing with leaks.

## **8. Procedures:**

### **Materials needed:**

- Bunsen burner
- striker (for lighting the burner)
- appropriate latex or other hose (for connecting burner to gas supply)

### **Procedure notes:**

- A Bunsen burner shall never be left unattended while lit.
- The work area must be arranged to avoid injury and accidents. Bunsen burners should always be placed so that the flame will not heat anything nearby. Placement of Bunsen burners should keep them clear of other work going on in the lab so that they cannot be accidentally contacted.

### **Procedure steps:**

1. Don PPE.
2. Check hose for leaks or cracks. If the hose has any leaks or cracks, replace it before beginning.
3. Inspect the Bunsen burner. It should not have any signs of rust. Adjustments should operate freely. If a burner appears to have something wrong with it, do not use it – label it as not in working order and report the problem to the Laboratory Manager. Use a Bunsen burner that is in working order.
4. Make sure that the hose is firmly connected to the gas inlet on the Bunsen burner and to the gas outlet on the benchtop or wall.
5. Check that the striker is working. The flint should readily produce a spark. If the flint appears worn and is in need of replacement, the TA, instructor or Laboratory Manager should be notified.
6. Turn on the propane at the valve and light the burner with the striker. Be careful not to lean over the burner when lighting it; keep face and hair away from the burner area.
7. Adjust the flame on the burner as necessary.
8. Monitor the Bunsen burner the entire time it is in use.
9. When done, turn off the gas using the valve.

## **9. Waste disposal and clean-up:**

Follow procedures for any wastes generated in your particular lab exercise. There is no waste disposal or clean-up required for Bunsen burners themselves.

## **10. Decontamination:**

None.

## **11. Exposures:**

### **If you begin to smell propane gas during a lab:**

- check that the gas valves are off.
- if there may be a leak, turn off the propane to the room using the emergency shut-off valve in the front of the room. This is behind a clear plexiglass plate. You can slide the plate to the side to remove it, then turn the handle so that it is at a 90° angle to the pipe.
- notify the Laboratory Supervisor and Laboratory Manager immediately. If you cannot contact them, call Facilities Services at 474-7000 to report the problem.

### **If you notice a propane gas odor when you walk into a room:**

- do NOT turn on anything, including the lights.
- if it is safe to do so, turn off the propane to the room using the emergency shut-off valve.
- notify others as appropriate:
  - if the odor is minor and there is no indication of an immediate threat to life and safety, notify those working nearby of the possible hazard. Notify the Laboratory Supervisor and Laboratory Manager immediately. If you cannot contact them, call Facilities Services at 474-7000 for assistance. If you cannot reach anyone at 474-7000, call University Dispatch at 474-7721 to report a possible propane leak. Any potential leak should be taken seriously and reported.
  - if the odor is strong and you have any concerns that an explosion or fire is imminent, evacuate to a safe location and call 911 to request emergency assistance.

### **Exposure to a lit Bunsen burner can cause burns ranging from minor to life-threatening.**

It is critical that the TA and/or instructor teach students the proper and safe use of Bunsen burners. TAs and/or instructors are also responsible for ongoing monitoring of students to ensure that they follow this Standard Operating Procedure and all other laboratory procedures as specified.

#### **Burn response general advice:**

- For a small first-degree burn (redness, no blistering or blackening, skin intact), wash the burn with cool water. Do not scrub or apply any soaps or treatments to the skin. Seek medical attention as needed.
- For small second degree burns (blistering, possible open skin due to broken blisters), advise the person to seek medical attention to make sure the burn is cleaned and treated to prevent infection.
- For third degree burns (blackening, charring, broken skin), large first or second degree burns, or burn victims who may be experiencing shock (lightheadedness/dizziness/faintness, loss of coherence/not making sense, loss of consciousness), call 911. A phone is available in each lab's adjoining prep room.
- If you are unsure of the severity of a burn or what needs to be done, call the Laboratory Supervisor at 474-6298 or University Dispatch at 474-7721. Tell them what has happened and allow them to make the decision on whether emergency response is needed.

#### **If an individual's hair or clothing catches fire:**

- Instruct the person to lie down and roll to smother the flames. Assist by smothering the fire with the emergency blanket located in the lab. TAs and instructors must make sure they know the location of the blanket at the start of the course. The emergency shower may be used to douse the flames if safe to do so. If the shower is used to douse flames, turn it off once the flames have been extinguished unless there are hazardous chemicals that must be washed off

the victim. Be prepared to cover the burn victim with a blanket or lab coat to keep them warm and minimize hypothermia and shock.

- Immediately call or direct someone to call 911 and request an ambulance.
- Instruct students to turn off all equipment, including Bunsen burners and quietly wait in the hall or lounge area, out of the way of emergency responders who will be arriving.
- If you do not have emergency medical training, ask if anyone present has emergency medical training. If others have emergency medical training, they may remain to assist the victim while waiting for professional responders to arrive.
- Do NOT attempt to remove burned clothing from the victim or treat the burn beyond extinguishing it and cooling the burned area if possible and appropriate. Keep the victim still and calm; encourage them to lie down if possible. If the victim is seated in a lab chair that has wheels, ask them to sit or lie on the floor instead because a chair with wheels is not sufficiently stable. If possible, try to keep the victim talking to you; this will help you make sure s/he isn't going into shock and can give the victim something to focus on besides any injuries sustained.
- Do NOT move an unconscious person unless there is an immediate threat to life or safety that requires evacuation of the person from the area (for example, if the lab is on fire, it may be necessary to move the victim. Only attempt to move a victim to safety if doing so does not endanger additional people.).
- As soon as possible after the incident has been resolved, contact the Laboratory Supervisor for help filling out a report. This must be done even if it is after hours. If a TA or Instructor was injured, EHSRM must be contacted immediately, as they have an 8-hour reporting deadline for employee injuries that must be met under Federal regulations.

If there is a fire in the room:

- If the fire is small and contained, if the fire is not fueled by a propane leak, if you have fire extinguisher training and if it is safe for you to attempt to extinguish the fire, instruct students to calmly exit the room. Use your training to put out the fire; be sure to turn off any sources that could feed the fire. A small, contained fire may also be extinguished using the fire blanket.
- The problem that caused the fire must be corrected before students re-enter the room. Any hazards caused by the fire must be properly taken care of before students re-enter the room. After a small fire is extinguished, students may re-enter the lab once it is safe to do so.
- After you extinguish a fire using a fire extinguisher or fire blanket, you must notify the Laboratory Supervisor and Laboratory Manager so that they can replace used materials and conduct necessary follow-up to prevent a recurrence.
- If you do not have fire extinguisher training, if you are unable to immediately extinguish the fire, if the fire is too big to deal with or may be fueled by a propane leak, or if there are chemical or other hazards that make it unsafe for you to attempt to extinguish the fire, evacuate yourself and your students from the building. If it is safe to do so, turn off the propane to the room at the valve in the front of the room as you exit. Slide the Plexiglas cover off and turn the handle to a 90° angle to the pipe to shut off the valve. Instruct your students to meet you at the emergency assembly point; you will have to account for them after exiting the building. Pull the fire alarm as you exit to alert other building occupants.
- TAs or instructors must account for their students at the emergency assembly point. TAs or instructors must report the status of their students to the building coordinator (Jami Warrick), assistant building coordinator (Jeff Baxter), or directly to emergency response crew members who ask for an accounting of who was in the building.

## **12. Spills**

A propane leak can expose those in the area to the gas and the risk of fire or explosion. There is a room shut-off valve in the front wall of each lab and prep room. The valve is located behind a Plexiglas cover that slides to the side to expose the valve. Turning the valve so that it is at a 90° angle to the pipe turns off the flow of propane to the room.

If there is a propane leak and you turn off the valve, notify the Laboratory Supervisor immediately. Notify Facilities Services directly at 474-7000 if you cannot reach the Laboratory Supervisor. If the propane leak may be severe and pose immediate risk of fire or explosion, evacuate to a safe location and call 911.

## **13. Phone numbers**

Biology and Wildlife Laboratory Supervisor	474-6298
Biology and Wildlife Laboratory Manager	474-5622
EHSRM Hazardous Materials (if Lab Supervisor not available, assistance with a spill)	474-5617
EHSRM Industrial Hygiene (if HazMat not available; assistance with exposure)	474-6771
EHSRM office (if HazMat or Industrial Hygiene not available)	474-5413
University of Alaska Fairbanks Emergency Response (serious accidents, fire)	911

## **14. Other important information**

None