

# Job Hazard Analysis

JHA Name: Bunsen Burner & Glassware Use in Laboratories



Assessment Date: 05-27-14

Revision Date: 04-14-17

Building or Location: Faribault & North Mankato Campuses

Department or Program: Biology, Chemistry

Description of Individual Tasks or Assignments: Operating Bunsen Burner During Laboratory Activities

Tools, Equipment, or Machinery Used when Performing Task: Bunsen Burner, Ring Stand with Wire Screen and Clamp, Fuel Hose, Striker, Matches, Beaker Tongs, Test Tube Clamps, Fuel (Natural Gas), Glass Beakers & Test Tubes, Various Laboratory Chemicals (see SDS for specific information)

Hazard Type(s) Associated with Task or Assignment:		Check for Exposure:	Specific Hazard Exposure:	Check if Exposure Recommends or Requires a Style of PPE?
1	<b>Impact</b> <u>Example:</u> Person(s) can strike an object, or be struck by a moving or flying/falling object (e.g., fragments, chips, particles, sand, dirt/debris).	X	Potential exposure to flying glass fragments and debris generated from glass failure/breakage by the application of heat and flame (e.g., injuries to eyes and unprotected skin)	X
2	<b>Penetration or Cut</b> <u>Example:</u> Person(s) can strike an object, be struck by an object, or fall upon an object or tool that would cut or otherwise break the skin.	X	Same as "Impact Hazard Exposure."	X
3	<b>Crush or Pinch</b> <u>Example:</u> An object(s) or equipment/machine may crush or pinch a body or body part			
4	<b>Chemical or Harmful Dust</b> <u>Example:</u> Exposure to chemicals (i.e., hazardous substances and harmful physical agents), infectious agents from spills, splashing, physical contact, and/ or exposure to dusts, vapors, fumes, or gases that could cause illness, irritation, burns, asphyxiation, breathing/vision difficulty, sensitization, infection, or other toxic health effects (i.e., acute or chronic). Note: "May also have or create ignition potential."	X	Potential exposure to flammable vapors from excessive gas flow or leaks in the system (e.g., flammable atmosphere), chemical splash, chemical absorption, chemical inhalation when handling chemicals (e.g., injuries to eyes/skin, respiratory illness)	X
5	<b>Heat</b> <u>Example:</u> Exposure to radiant heat sources, sparks, and splashes or spills of hot material	X	Potential exposure to heated equipment and open flames (e.g., burns to exposed skin and fire hazards)	X
6	<b>Light (optical) Radiation</b> <u>Example:</u> Exposure to strong light sources, glare, or intense light exposure which is a byproduct or a process. Note: "This category may also include hazards presented from lack of light (e.g., working in dark spaces/areas)."			
7	<b>Electrical Contact</b> <u>Example:</u> Exposure, contact, or proximity to live or potentially live electrical objects.			
8	<b>Ergonomic/ Human Factors</b> <u>Example:</u> Working in cramped spaces, repetitive movements, awkward postures, vibration, heavy lifting, etc... Note: "This category may also include unique hazards presented from tasks that require demanding or challenging degrees of mental and/or physical effort to be exerted by an individual. See <i>Physical Effort Definition/Examples</i> category for further explanation of physical effort."			
9	<b>Environmental</b> <u>Example:</u> Exposure to noisy environments, hot or cold work environments, poor weather conditions, working at a height, and any other conditions in the workplace that could cause danger, discomfort, and/or negative health effects.			

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## Personal Protective Equipment Requirements:

<b>Eyes &amp; Face:</b>	Safety Glasses with Side Shields or Goggles (Requirements depend on laboratory work performed and any specific laboratory requirements), OR Face-shield worn over Safety Glasses with Side Shields or Goggles (Requirements depend on laboratory work performed and any specific laboratory requirements)
<b>Head &amp; Ears:</b>	
<b>Whole Body:</b>	Lab Coat and Long Pants (Requirements depend on laboratory work performed and any specific laboratory requirements), AND/OR Chemical Apron (Requirements depend on laboratory work performed and any specific laboratory requirements)
<b>Feet:</b>	Closed-Toe Shoes (Required during all laboratory work)
<b>Hands:</b>	Chemical Gloves (Requirements depend on laboratory work performed and any specific laboratory requirements) " <i>Specific glove type is dependent on laboratory work being performed and laboratory-specific requirements</i> " Heat Resistant Gloves (Required if handling potentially hot containers by hand)
<b>Respiratory:</b>	Respirators (Required when working in areas where chemical/hazardous contaminate levels exceed OSHA PELs)
<b>Other:</b>	"Note: Personnel must change from loose clothing, tie back long hair, and take off jewelry that could become entangled, snagged, or otherwise interfere in laboratory experiments"

## Other Control Measures or Requirements (Engineering & Administrative Controls):

**#1) Impact Hazards, & #2) Penetration or Cut Hazards:** To prevent glass breakage or shattering, inspect all container for cracks, stars, or other flaws. **#4) Chemical or Harmful Dust Hazards:** Personnel should receive Chemical Hygiene training (e.g., regarding chemical & physical hazards). SDS should be provided/available for all hazardous chemicals. Know location of nearest eyewash station and/or emergency shower. Respirators are available for personnel experiencing respiratory discomfort for chemical vapors generated; however, personnel (desiring to use respirators) and personnel required to wear respiratory equipment should receive a medical evaluation, Respirator training (e.g., regarding respiratory hazards), and fit-testing prior to wearing respirators. **#5) Heat Hazards:** Know location of emergency gas shut off and location of nearest fire extinguisher. Glass and metal containers used in burner operations (whether hot or cold) look the same. Treat these containers with caution. Never heat volatile substances with a Bunsen burner. Instead use a heating mantle or steam bath placed within a hood. Never leave lit burners unattended. **Miscellaneous Considerations:** Prior to lighting the burner perform a visual check and ensure all flammable or combustible materials are removed. Use a burner with a base to prevent tipping. Inspect fuel hose for cracks and any other damage. Fit fuel hose securely to gas outlet and burner intake. Stand back from burner when lighting. If using matches: strike matches away from you; open gas valve after lighting match; and immediately hold match to side of burner tube top when igniting. If using strikers: open gas valve; and immediately use striker to "spark" over top of burner tube when igniting. Immediately turn off gas outlet if burner flame sputters, flares, goes out, or gas is smelled. Only heat open containers. Heated materials (within sealed containers) expand from internal gas pressure and cause closed containers to burst. Heat flat bottom containers on a wire screen of ring stand; narrow-necked containers should also be secured with ring stand clamp. Ensure burner does not make direct contact with container. Test tubes can be heated in water baths. If directly heating test tubes with burner; hold test tube with test tube clamp above the flame; hold test tube at angle pointed away from you and others; continually move test tube back and forth to evenly heat tube. When complete with the experiment shut gas valve and shut off the laboratory's main gas supply valve before leaving the laboratory. Operators of tools, equipment, and machinery should read and follow all Manufacturers' recommendations/requirements (e.g., inspections, servicing/maintenance, safe usage, etc...). Any tools, equipment, or machinery found damaged, defective, or otherwise unsafe should immediately be removed from service and not used until repaired or replaced. Personnel should always consult their Supervisors on the selection and use of PPE for the tasks being performed.

## Physical Effort Definition/Examples

**1.) Physical Mobility-** Movement from place to place on the job, considering distance and speed **2.) Physical Agility-** ability to maneuver body while in place or in static position **3.) Physical Strength (Light to Moderate)-** Ability to handle routine office materials and tools **4.) Physical Strength (Moderate to Heavy)-** Ability to handle 50lbs+ objects, considering frequency **5.) Dexterity-** skill and ability in using hands, fingers, and feet **6.) Physical Balance-** ability to maintain balance and physical control **7.) Coordination-** harmonious functioning of body parts (e.g., eye/hand, hand/foot, etc...) **8.) Endurance-** ability to sustain a prolonged stressful effort or activity with limited opportunity to rest

Note: "This JHA provides only the minimum PPE/safety requirements necessary to safely complete the task or assignment, and the JHA only covers the hazards or exposures that are most likely to be encountered. Nothing within this JHA bars or restricts personnel from requesting higher degrees of PPE or control to mitigate workplace hazards. In addition, South Central College personnel (e.g., employees and students) are required to complete any applicable safety or on-the-job trainings required prior to performing their positions or participating in their programs of study. Finally, South Central College personnel should consult their supervisors/instructors, the college's written safety programs/policies, and/or the Security & Safety Director whenever they have questions or concerns."

**Certification:** This document certifies a hazard assessment was conducted meeting the provisions specified under 29 CFR 1910.132 (d) and South Central College's related safety programs and policies.

Name: Al Kluever

Date: 04-14-17