

Job Hazard Analysis

JHA Name: Grinder, Angle (Electric & Pneumatic)



Assessment Date: 07-25-13

Revision Date: 04-17-17

Building or Location: Faribault & North Mankato Campuses

Department or Program: Multiple Departments & Programs

Description of Individual Tasks or Assignments:

Grinding Tasks (e.g., Grinding, Sanding, and Polishing Objects; Correcting Surface Defects; Preparing Surfaces for Further Finishing; etc.)

Tools, Equipment, or Machinery Used when Performing Task:

Angle Grinders (e.g., Electric and Pneumatic Types)

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	Impact <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 fragments, particles and debris generated from grinding (e.g., injuries to eyes and face)	X
2	Penetration or Cut <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	Potential exposure to cuts and abrasions when handling metal pieces with rough or sharp edges, and from accidental contact with grinding wheel/disc (e.g., hand and finger injuries).	X
3	Crush or Pinch <u>Example:</u> An object(s) or equipment/machine may crush or pinch a body or body part	X	Potential exposure to crushing and pinching hazard from dropping metal pieces and fixtures (e.g., injuries to feet)	X
4	Chemical or Harmful Dust <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 hazardous dusts (dependent on type of materials or metals being ground, surface coatings, fiber discs/hard wheels used; as well as, the amount of ventilation) (e.g., respiratory illness)	X
5	Heat <u>Example:</u> Exposure to radiant heat sources, sparks, and splashes or spills of hot material	X	Potential exposure to flying sparks generated from grinding (e.g., injuries to eyes/face, fire hazards)	X
6	Light (optical) Radiation <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	Electrical Contact <u>Example:</u> Exposure, contact, or proximity to live or potentially live electrical objects.			
8	Ergonomic/ Human Factors <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."	X	Potential exposure to source of vibration (grinders) (e.g., injuries to hands, arms), potential exposure to repetitive movements, lifting light to moderately heavy loads, and bending (e.g., Back and other Muscular Skeletal Disorders)	X
9	Environmental <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.	X	Potential exposure to loud/prolonged noise (grinding process)	X

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Personal Protective Equipment Requirements:

Eyes & Face:	Face-shield worn over Safety Glasses with Side Shields (Required when operating portable grinders)
Head & Ears:	Hearing Protection Devices (Required when operating portable grinders)
Whole Body:	
Feet:	Safety Shoes (Required when handling heavy metal parts/pieces)
Hands:	Cut Resistant/Anti-Vibration Gloves (Required when operating portable grinders)
Respiratory:	N95 Particulate Masks (Optional/Available when working around nonhazardous levels of grinding dusts), Appropriate 1/2 Mask, Full Face, Supplied Air, etc. (Required when grinding dust levels exceed OSHA PELs)
Other:	"Note: Personnel must change from loose clothing, tie back long hair, and take off jewelry that could become entangled or snagged in moving grinding wheels"

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

#4) Chemical or Harmful Dust Hazards: Personnel should receive Right-to-Know training (e.g., regarding chemical & physical hazards). SDS should be provided/available for all hazardous chemicals. Grinding areas should have Industrial Hygiene sampling performed to determine if hazardous contaminants are present. If hazardous contaminants are detected periodic Industrial Hygiene testing should be performed per regulatory requirements, at regular intervals, and whenever there are: changes in grinding processes, materials, or equipment; significant increases or decreases in personnel grinding; air quality complaints/concerns, etc... Respirators are available for personnel experiencing respiratory discomfort from grinding dusts 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. Local Exhaust Ventilation (LEV) and dust collection systems should be provided/maintained to reduce exposure levels of grinding dusts in all grinding areas.

#5) Heat Hazards: All grinding should be performed in areas designated for hot work operations. Grinding performed in areas not designated for it must be conducted through a Hot Work Permit Program. A Hot Work Permit Program takes proactive actions to reduce chances of fires. This includes: removing or covering potential fire/ignition hazards, performing housekeeping tasks, providing adequate fire protection equipment, conducting fire watches, etc... Never use grinder in flammable/explosive atmospheres as the normal sparking of the motor can ignite vapors.

#8) Ergonomic Hazards: Personnel should receive Ergonomics training (including warning signs and conditions of ergonomic/human factors hazards). When possible set up workstation or immediate job site to help minimize reaching, and/or sitting or working in awkward positions to prevent strains, soreness, and other discomfort. Grinders should be selected in anticipation of the operator's need (e.g., type of material or part being ground) and physiological stature (e.g., ergonomic/human factors considerations). Always use two hands on portable "two-handed grinders." Grinder transfer vibrations can be reduced/minimized by regular preventive maintenance of the equipment (keeps equipment running smoothly). "NOTE: Grinders are only operated for very short periods of times in most College environments in comparison to other General Industry applications." Make sure your grip and footing are secure when using grinders to prevent strains and slips. Material handling equipment should be used to reduce lifting and carrying materials. Use jigs to support heavy or awkward work pieces being ground, and clamp small parts/pieces to keep hands away from danger.

#9) Environmental Hazards: Personnel should receive Hearing Conservation training (e.g., regarding noise hazards), and be included in the Hearing Conservation Program when potentially exposed to a TWA of 85dB. **Miscellaneous Considerations:** Pneumatic grinders may only be operated at or below its recommended PSI. Always allow grinder to reach full speed before applying it to work pieces. Make smooth contact with work pieces (avoid bumping or applying excessive pressure). Maintain an angle of approximately 15 to 30 degrees between the disc and work piece when operating grinders. Always direct sparks away from yourself and others. Never apply "side pressure" on grinding wheels or fiber discs. Never operate portable grinders above shoulder height. Never modify the (On/Off Switch) or secure it to prevent it from turning off. If starting a cold hard wheel or fiber disk, apply it to the work piece slowly until the wheel warms up. Always let the grinder come to a complete stop before laying it down. Always disconnect grinders from their power sources before changing discs/wheels, and always perform a "Ring Test" on hard wheels before installation. Never use portable grinders to sand other fiber disks in an attempt to expose more abrasive on the disc. Operators of tools, equipment, and machinery should read and follow all Manufactures' 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: 04-17-17