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# Tools – Hand and Power

- *§29 CFR 1910 Subpart P*
- *1910.242 through 1910.244*

# Objectives

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In this course, we will discuss the following:

- Minimum requirements
- Safe design, installation and use
- Hazard identification
- Abatement methods



# Common Hand and Power Tools

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<b>Power Tools</b>	<b>Hand Tools</b>
Electric/air/powder	Hammers
Drill motors	Saws
Nailers/staplers	Chisels
Impact wrenches	Shovels
Impact/roto hammers	Pry bars
Jackhammers	Pliers
Soil tampers/compactors	Screwdrivers
Grinders	Wrenches
Bandsaws/block saws/ table saws	Measuring tools
Powder actuated tools	
Concrete mix/vibrators	

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# Basic Tool Safety Rules

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- Maintain on a regular basis
- Inspect before use
- Operate according to manufacturers recommendations
- Use the right personal protective equipment (PPE)
- Use guards





# Hand Tool Hazards

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- Hazards caused by misuse or improper maintenance
  - Screwdriver used as a chisel
  - Using impact tools with mushroomed heads
  - Using wrench with sprung jaws
  - Using hammer with cracked handle

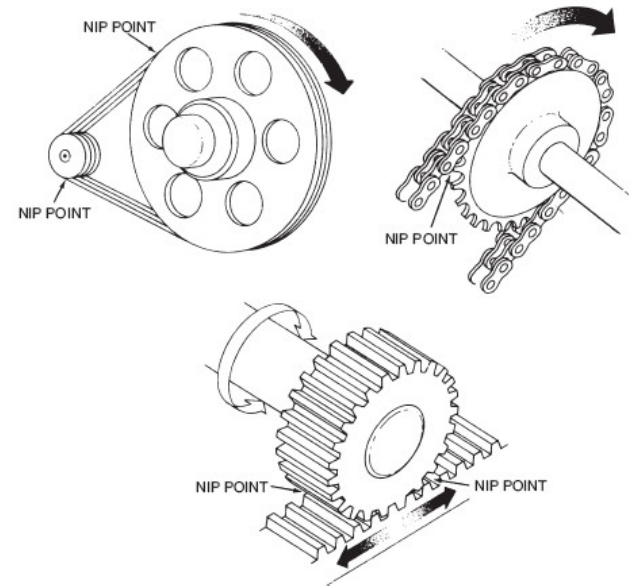


# Hazardous Motions

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- Basic types of hazardous mechanical motion and actions:
  - Rotating (including in-running nip points)
  - Reciprocating
  - Cutting
  - Punching
  - Shearing
  - Bending

*Examples of In-running Nip Points—Rotating and Tangentially Moving Parts*



# General Requirements

1910.242(a)

- All hand and power tools must be maintained in a safe condition.



# Use of Compressed Air

1910.242(b)

- Compressed air must not be used for cleaning purposes.
  - Except where reduced to less than 30 p.s.i. with effective chip guarding and PPE







# Methods of Guarding

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1910.243(a)(1)

- All portable, power-driven circular saws having a blade diameter greater than 2 inches shall be equipped with guards above and below the base plate or shoe.



# Switches and Controls

1910.243(a)(2)(i)

- All hand-held powered tools, electric, hydraulic, or pneumatic shall be equipped with a constant pressure switch.



# Switches and Controls

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1910.243(a)(2)(i)

- All hand-held gasoline-powered, drills, gasoline-powered chainsaws etc. shall be equipped with a constant pressure throttle control.



# Switches and Controls

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1910.243(a)(2)(ii)

- All hand-held powered tools with wheels **greater than** 2 inches in diameter, tools with blade shanks **greater than** one-fourth inch, and other similarly operating powered tools shall be equipped with a constant pressure switch or control.



# Switches and Controls

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1910.243(a)(2)(ii)

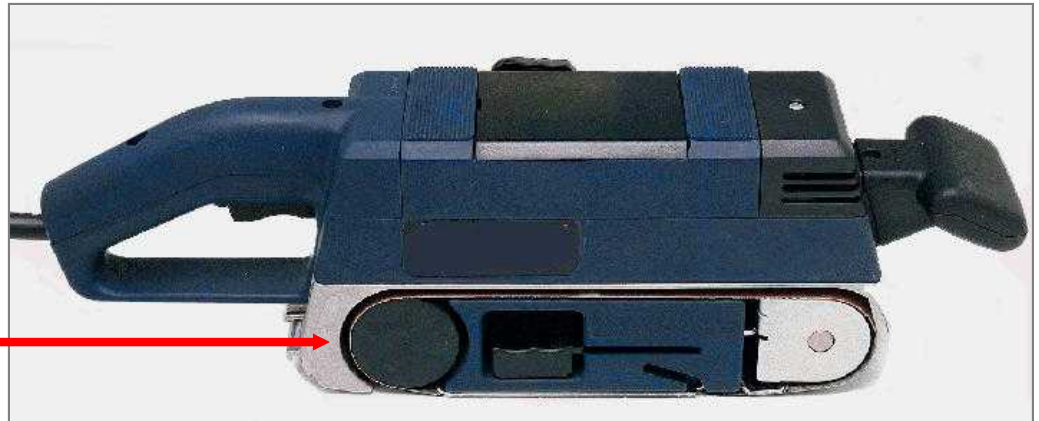
- All hand-held powered tools with wheels or discs 2 inches in diameter **or less** and tools with blade shanks one-fourth of an inch wide **or less**, may be equipped with either a positive “on-off” control.



# Portable Belt Sanding Machines

1910.243(a)(3)

- Shall be provided with guards at each nip point where the sanding belt runs onto a pulley
- Unused run of the sanding belt shall be guarded against accidental contact



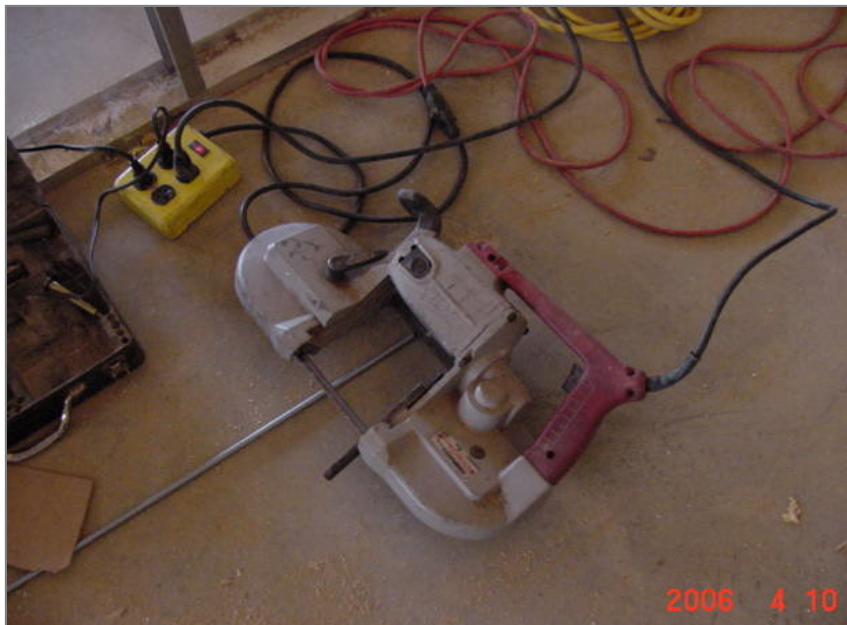


# Grounding

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1910.243(a)(5)

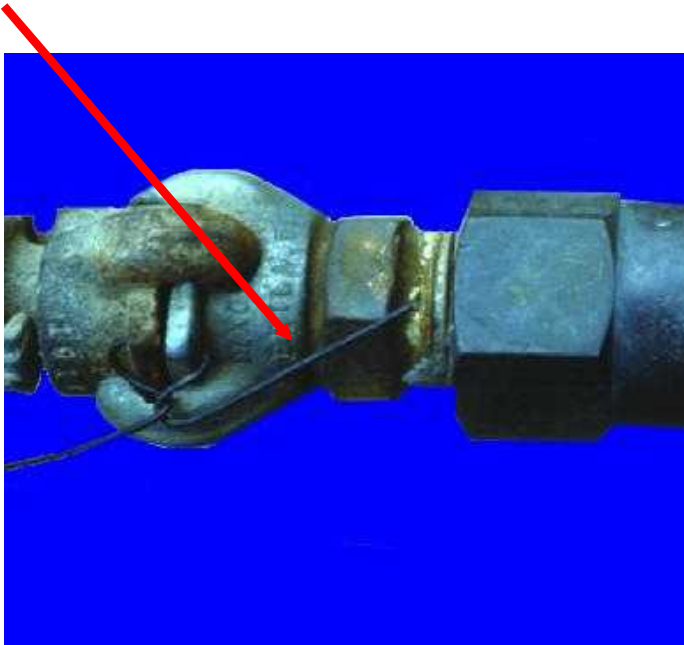
- Portable electric powered tools shall meet electrical requirements of Subpart S.



# Pneumatic Powered Tools

1910.243(b)(1)

- Tool retainer shall be installed on each piece of utilization equipment which, without such a retainer, may eject the tool.





# Airhose

1910.243(b)(2)

- Hose and hose connections used for conducting compressed air shall be designed for pressure and service to which they are subjected.





# Portable Abrasive Wheels

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1910.243(c)

- Abrasive wheels shall be used only on machines provided with safety guards.
- Bench grinders shall meet requirements of the machine guarding standard 1910.212 for tongue guards and tool rests.



# Inspection of Abrasive Wheel

1910.215(d)

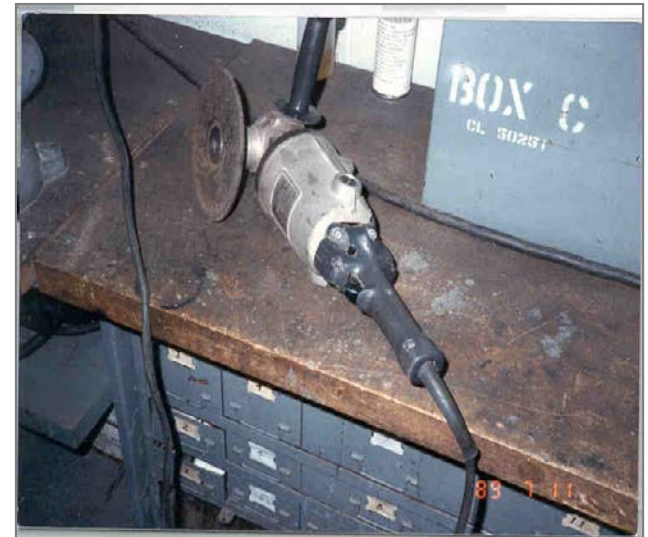
- All abrasive wheels must be closely inspected and ring-tested before mounting to ensure that they are free from cracks and defects.



# Vertical Portable Grinders

1910.243(c)(3)

- Vertical portable grinders must have safety guard on tool with a maximum exposure angle of 180 degrees.
- Proper guard located between the operator and the wheel during use.
- Guard adjusted to deflect broken pieces of wheel away from operator.





# Explosive-Actuated Fastening Tools

1910.243(d)

- American National Standard Safety Requirements for Explosive-Actuated Fastening Tools, ANSI A10.3-1970

**QUALIFIED OPERATOR**  
Powder-Actuated Tools

DATE: 22 Feb 93  
6 June 96

32529074  
SERIAL NUMBER

This certifies that Michael J. Anderson  
has received the prescribed training in the operation of powder-actuated tools manufactured by

H. I. O'Connell, O'Connell, O'Connell, O'Connell  
NAME OF MANUFACTURER

Michael J. Anderson  
SIGNATURE

I have received the instruction in the safe operation and maintenance of powder-actuated fastening tools of the make and model specified and agree to conform to all rules and regulations governing their use.

Revocation of card - Failure to comply with any of the rules and regulations for safe operation of powder-actuated fastening tools and be cause for the immediate revocation of this card, and it must be surrendered upon demand of the proper authority.



# Explosive-Actuated Fastening Tools

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1910.243(d)

- Operators using tools shall be safeguarded by means of eye protection.
- Muzzle end of tool shall have protective shield or guard at least 3½ inches in diameter.





# Explosive-Actuated Fastening Tools

1910.243(d)

- Operator shall inspect tool before use
- Defective tools shall be placed out of service
- Tools shall not be loaded until intended firing time
- Tools shall never be left unattended
- Tools shall not be used in an explosive or flammable atmosphere
- Tools used only with correct shield, guard, or attachment recommended by manufacturer



# Power Lawnmowers

1910.243(e)

- Power lawnmowers of the walk-behind, riding-rotary, and reel power shall be guarded in accordance with machine guarding requirements in 29 CFR 1910.212





# Power Lawnmowers

1910.243(e)

- Power-driven chains, belts, and gears shall be positioned or guarded to prevent accidental contact during normal starting, mounting, and operation of the machine.
- Provided with shutoff device to stop operation of motor or engine
- All operating control positions shall be clearly identified.





# Jacks

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1910.244(a)

- Ensure jack has rating sufficient to lift and sustain load.
- Rated load shall be legibly and permanently marked in a prominent location on the jack.



# Jacks

1910.244(a)

- In absence of firm foundation, base of jack shall be blocked.
- Indicated limit shall not be overrun.
- Raised load shall be cribbed, blocked, or otherwise secured at once.
- Properly lubricated at regular intervals.



# Jacks

1910.244(a)

- Recommended inspection schedule

<b>Use of Jack</b>	<b>Inspection Frequency</b>
Continuous/intermittent use at one site	At least every 6 months
Sent out of the shop for special work	Inspect when sent out and when returned
Subjected to abnormal loads or shock	Inspect before use and immediately thereafter

# Abrasive Blast Cleaning Nozzles

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1910.244(b)

- Abrasive blast cleaning nozzles must be equipped with operating valve which must be held open manually.

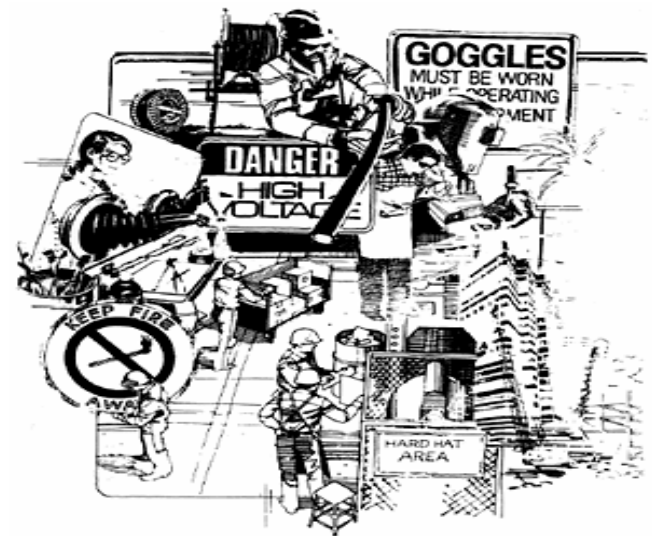


# Summary

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In this course, we discussed:

- Minimum requirements
- Safe design, installation and use
- Hazard identification
- Abatement methods





**Thank You For Attending!**

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**Final Questions?**

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# Handouts

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Place all handouts at the end of this presentation.

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