

## FACT SHEET

# FIXED AND HAND-HELD GRINDERS

**A grinder spins a disc or wheel of bonded abrasive to grind or cut metal. In this factsheet, the terms “disc” and “wheel” are used interchangeably.**

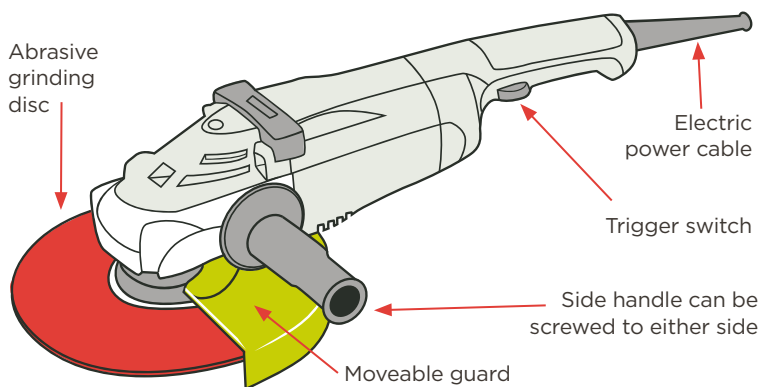
An angle grinder is a hand-held tool carried to the work, with the disc secured at an angle to the body of the grinder.

An offhand grinder, which may be fixed to a bench or a pedestal, is usually fitted with

one or two abrasive discs revolving at right angles to the spindle turned by a motor. Figure 2 shows a wire wheel on the left, and an abrasive wheel on the right.

Abrasive discs may be replaced by wire brushes for cleaning, or cloth buffs for polishing. Angle grinders used to cut tiles may be fitted with a diamond-tipped blade.

**FIGURE 1: ANGLE GRINDER**



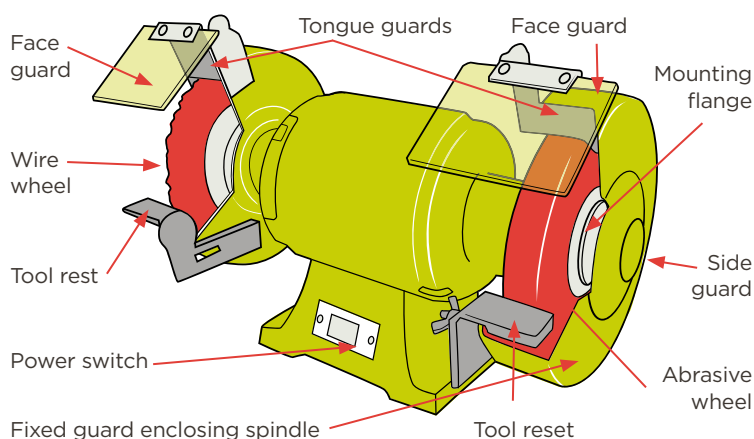
**HAZARDS:**

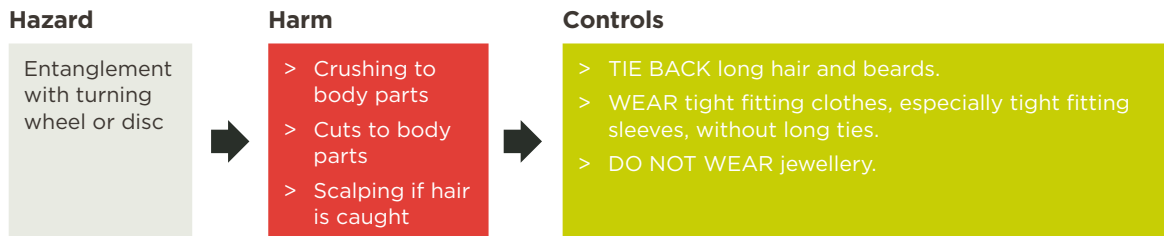
- > Entanglement with turning wheel or disc
- > Projectiles
- > Contact with uncontrolled grinder
- > Electrical current
- > Noise
- > Sparks & hot metal
- > Fumes & toxic dust
- > Slips, trips & falls
- > Accidental starting causing projectiles

**PPE:**

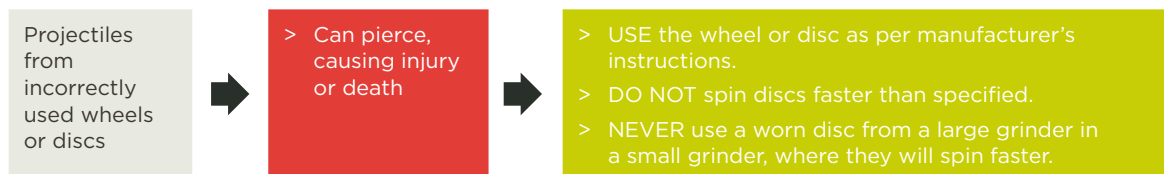


**FIGURE 2: BENCH GRINDER**

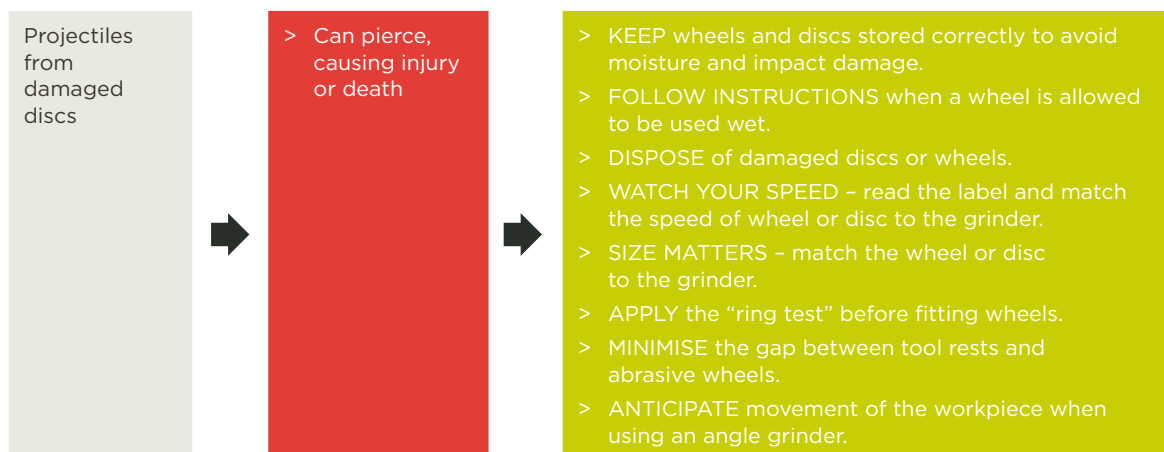




Loose clothing, long hair, or jewellery can wrap around spinning wheels.



Users must know whether discs are designed to be used on the side or on the edge. Working against the wrong surface will damage the disc. Centrifugal forces may break the bonding materials apart, with broken discs forming projectiles. These projectiles have caused serious harm and death.



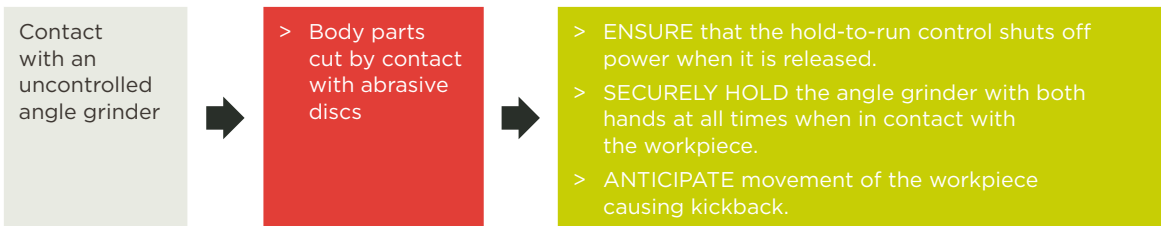
Discs and wheels MUST avoid moisture damage. Workpieces and hand-held grinders move unexpectedly. Workpieces may jam against wheels or discs, breaking them and stopping them from spinning freely, resulting in damage to the disc. Discs and wheels of the wrong size may fly apart by turning at the wrong speed.



Wire breaks from brushes and is thrown towards the operator.



Loosely held workpieces may be thrown from the wheel or disc.

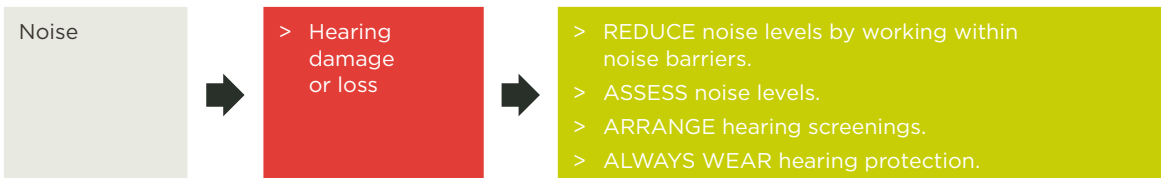


When an angle grinder is put down before the disc stops turning it can spin out of control. There may be contact when an angle grinder kicks back. Discs MUST be securely mounted within the flanges of the grinder. Proper mounting hardware MUST be fitted at the spindle of the grinder and the arbour of the disc. For hand-held grinders, guards MUST be fixed between the wheel and the operator. The handle MUST be screwed in securely on the appropriate side of the wheel.

#### OTHER (NON-MECHANICAL) HAZARDS



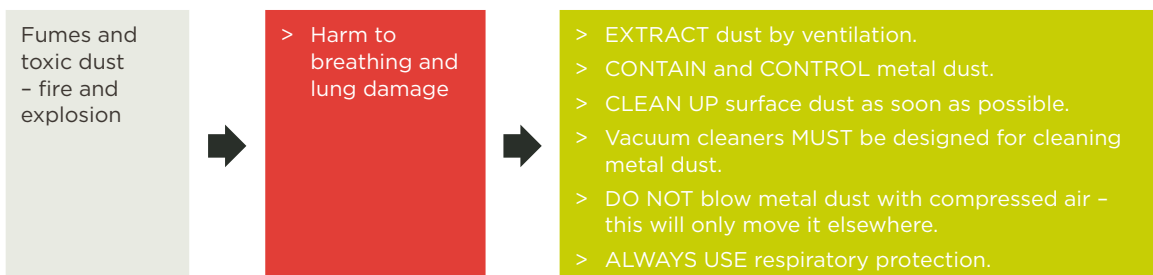
Electrical hazards may make metal components live, especially when wet.



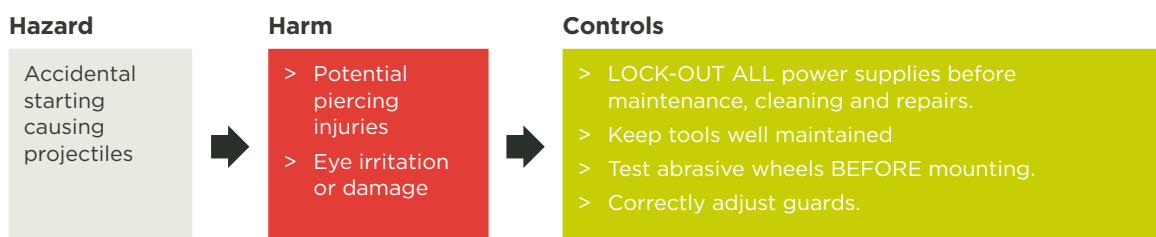
A safe level of noise over an eight hour day is 85dB(A). A grinder may exceed this noise intensity. Noisy angle grinders can also interfere with spoken communication.



Sparks and hot metal may ignite combustible material.



## TASK - MAINTENANCE, CLEANING & REPAIRS



Abrasive wheels for fixed grinders MUST be tested before mounting by hitting with a piece of wood. If the wheel makes a ringing sound it is safe to use, otherwise it is probably cracked and MUST be discarded. Newly fitted abrasive wheels MUST be run for a minute or so to ensure that they do not fly apart. The path of any projectile MUST be clear of people. For fixed bench or pedestal grinders, tool rests, tongue guards and eye shields MUST be in place.

References, current standards and further information can be found on the Safe Use of Machinery project page at: [www.worksafe.govt.nz](http://www.worksafe.govt.nz)

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