**Arc Welding Safety**

**Recognize hazards associated with electric welding processes and take necessary measures to avoid unintentional injuries.**

**Reading Guide**

**In your own words describe the hazards associated with electric arc welding. For each hazard that you list, be sure to describe how the risks associated with each**

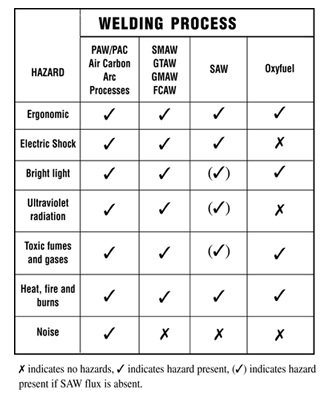
**of these hazards can be reduced or eliminated.**

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**Electric Arc Welding**

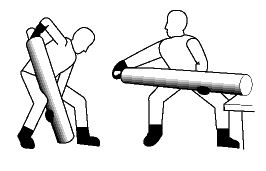
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***Electric arc welding is a joining process in which metals, are heated, melted and mixed to produce a welded joint. This welded joint should have properties, which are similar to those of the materials being welded.***

*****What hazards are associated with electric arc welding?***

There are over 70 different welding processes. The most common of which are:

* [Shielded Metal Arc Welding (SMAW),](http://supporting-paa.wikispaces.com/Shielded+Metal+Arc+Welding+%28SMAW%29) also known as Manual Metal Arc Welding, MMAW.
* [Gas Tungsten Arc Welding (GTAW)](http://supporting-paa.wikispaces.com/Gas+Tungsten+Arc+Welding+%28GTAW%29) or Tungsten Inert Gas (TIG) Welding.
* [Flux Cored Arc Welding (FCAW).](http://supporting-paa.wikispaces.com/Flux+Cored+Arc+Welding+%28FCAW%29)
* [Gas Metal Arc Welding (GMAW),](http://supporting-paa.wikispaces.com/Gas+Metal+Arc+Welding+%28GMAW) also known as Metal Inert Gas (MIG) Welding or hard wire welding.
* [Plasma Arc Welding (PAW),](http://supporting-paa.wikispaces.com/Plasma+Arc+Welding+%28PAW) [Plasma Arc Cutting (PAC)](http://supporting-paa.wikispaces.com/Plasma+Arc+Cutting+%28PAC%29) and Gouging
* [Submerged Arc Welding (SAW)](http://supporting-paa.wikispaces.com/Submerged+Arc+Welding+%28SAW-S%29)
* [Resistance Welding (RW) or spot welding](http://supporting-paa.wikispaces.com/Resistance+Spot+Welding+%28RSW%29).
* [Air Carbon Arc Cutting and Gouging](http://supporting-paa.wikispaces.com/Air+Carbon+Arc+Gouging)
* [Oxy-fuel Welding, Cutting and Heating](http://supporting-paa.wikispaces.com/Oxy-fuel+Gas+Welding+%28OFW%29) (oxygen-acetylene [oxyacetylene] or oxygen-propane [oxy-propane] mixtures are the most common fuel mixtures used).

[**Welding Ergonomics**](http://www.ccohs.ca/oshanswers/safety_haz/welding/ergonomics.html) in the workplace is an area of study that focuses on maximizing productivity by reducing operator fatigue and discomfort. Essentially ergonomics examines how we work in order to eliminate or at least reduce Repetitive Strain Injuries (RSI). These injuries are caused by repetitive tasks in uncomfortable postures.



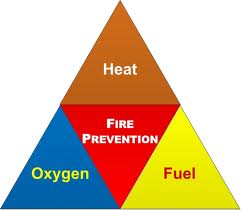
[**Electric Shock**](http://www.ccohs.ca/oshanswers/safety_haz/welding/electric.html) is a hazard associated with arc welding. Arc welding can be electrically hazardous if welding must be performed in damp locations or while wearing wet clothing, on metal structures such as floors, gratings or scaffolds, when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with the work piece or ground.



[Light Rays](http://www.ccohs.ca/oshanswers/safety_haz/welding/eyes.html) - Welders face serious safety risks associated with intense light rays. These intense harmful light rays are emitted from all arc welding and they can seriously burn your skin and eyes. You must guard your body against these harmful light rays by wearing proper personal protective equipment. You must also protect others by putting up screens and warning signs when arc welding, cutting or grinding at work sites in the vicinity of the general public.



[**Fumes and Gases**](http://www.ccohs.ca/oshanswers/safety_haz/welding/fumes.html) **-** Fumes are formed when a metal is heated above its boiling point and it produces very fine, solid particles. Welding gases are gases used or produced during welding and cutting processes like shielding gases or gases produced during the welding process. Welding fumes and gases expose the welder to toxic or even explosive gases.



[**Heat Fire and Burns**](http://www.ccohs.ca/oshanswers/safety_haz/welding/hotwork.html) **–**Almost all Welding involves working with very high temperatures, and in itself this is a risk to welders but when welders work near flammable materials the risk increases dramatically. Before a welder starts to work a risk assessment must be completed, and steps must be taken to prevent burns and fires. Eliminating one or more of heat, oxygen or fuel may prevent fires.

[Noise](http://www.ccohs.ca/oshanswers/phys_agents/noise_basic.html) is one of the most common occupational health hazards welders face. Welders work on heavy industrial and manufacturing environments, and in each of these environments permanent hearing loss is one of the main health hazards. The best method of noise reduction is to use engineering solutions to eliminate the noise source itself. Where technology cannot adequately control the problem, personal hearing protection (such as ear muffs or plugs) can be used..

**Further Reading**

**Welding Ergonomics**

[**http://www.ccohs.ca/oshanswers/safety\_haz/welding/ergonomics.html**](http://www.ccohs.ca/oshanswers/safety_haz/welding/ergonomics.html)

**Electric Shock**

[**http://www.ccohs.ca/oshanswers/safety\_haz/welding/electric.html**](http://www.ccohs.ca/oshanswers/safety_haz/welding/electric.html)

**Light Rays**

<http://www.ccohs.ca/oshanswers/safety_haz/welding/eyes.html>

**Fumes and Gases**

<http://www.ccohs.ca/oshanswers/safety_haz/welding/fumes.html>

**Ventilation**

[**http://www.ccohs.ca/oshanswers/safety\_haz/welding/ventilation.html**](http://www.ccohs.ca/oshanswers/safety_haz/welding/ventilation.html)

**Noise**

[**http://www.ccohs.ca/oshanswers/phys\_agents/noise\_basic.html**](http://www.ccohs.ca/oshanswers/phys_agents/noise_basic.html)

[**Have a question?**](http://www.ccohs.ca/ccohs/contacting.html)

Whether it is a health or safety question about the work you do, or a product support question about our many products and services, the CCOHS Inquiries and Client Services team is dedicated to answering any questions you may have

[](http://www.ccohs.ca/ccohs/contacting.html)