

THE BASICS OF WELDING SAFETY: THINGS EVERYONE SHOULD KNOW



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This is a good place to start if you're looking for information about welding safety. Safety can mean a lot of things depending on your industry and finding relevant information can be a challenge. But the process can be streamlined if you know where to begin your search.

In general, welding and cutting are hazardous to the welder and anyone near the weld zone that is not protected or shielded. Safety is based on having adequate knowledge about the situation. Many things can influence potential hazards such as the process, location and overall conditions. Knowing how to identify and deal with potential hazards will improve your safety.

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Dear Friend,

*I hope you find this informative and useful.
The contents are universal, so it should be a good
read to anyone who is interested in this topic.*

Be Safe!



About the author:

Brent Williams is a welding professional with more than 20 years of experience in industry. He has been directly involved with welding safety as a manufacturer, supplier and end-user throughout his diverse career. A degreed welding engineer and arc welding specialist, Brent also worked in product management and became versed in standards like welding safety. Throughout his career, he's observed the welding culture change to be more safety oriented. At the same time, there continue to be many people involved with welding that do not have proper safety training or adequate knowledge. That sparked the idea for this document, a guide to finding relevant, practical safety information that you can apply.

Explanation & Purpose:

The purpose of this is to share knowledge and experience that could help others improve their own welding safety by guiding them to the most likely and relevant sources. It's not a technical document, but rather it includes information from a variety of technical sources. The benefit? I've done the research to establish a baseline of information and additional sources into a format that's easy-to-read, understand and relate to. It explains a practical approach and offers insight on where to begin ... it is not the END.

Welding safety is an important topic because the process of joining and cutting are dangerous to the person involved and anyone nearby in the weld zone. Common hazards exist with any welding operation and situational factors can increase potential risks based on the conditions. However, using the right gear, equipment and procedures can protect you and others from hazards. This document lays the foundation and shows you where go next for information that you need.

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Topic: The Basics of Welding Safety - Things Everyone Should Know

Fact: Welding and cutting are hazardous and you need to take precautions to avoid injury, property damage and even death.

Think about the last time you struck an arc. Did you wear the proper gear and take necessary precautions? Did you warn others and shield them from arcs and sparks? Maybe you walked through the shop and noticed the “bright light” from welding. If you weld or could potentially come into contact with welding, you should understand the basic hazards and follow safety protocol.



Safety is extremely important to those directly involved with welding and also to others that work in or near the welding area. It may be obvious that the person welding should be trained and follow safe practices. But, it may not be so obvious that others also need training. The reason is simple, knowledge and training allows everyone to recognize the hazards of welding so they can protect themselves and others.

If this sounds like you, the Basics of Welding Safety is a good place to start because this info segment outlines the common safety concerns for anyone who may come into contact with welding. It's not highly technical, but instead is an easy-to-understand summary that can be understood by anyone - especially those that are not technical, are just beginning or just want a clear explanation of what applies to them. As your involvement with welding increases, you'll need further training. But, by knowing the basics you'll have the information to prevent potentially uncomfortable and dangerous situations.

The Basics:


- 1. Information Sources:** Understand the best places to find safety information that's relevant to your situation.
- 2. Arc Welding Hazards:** Learn the true facts about arc welding hazards and understand how you could encounter those situations.
- 3. Protection Methods:** Understand proper procedures and protective equipment to address those hazards.

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Topic: Safety Information Sources - The **3 Best Places** to Find Relevant Safety Info

There are many sources of safety information, some more reliable than others. As you search through all the available information, how do you determine what is relevant to you and your situation? While the internet is a great resource, you should focus your search in key areas for best results.


The **top 3 best places** to find important safety information for your welding operation are:



1. Owner's Manuals: Always begin with the owner's manual because they contain important safety information about how to use and maintain your equipment safely. A welding system may have one manual for all components or a series of manuals for each individual component. Refer to safety data sheets for hazards related to the materials, electrodes and other consumables used that are not covered in the manuals.



2. Product Labels: Welding equipment and accessories should be marked with labels to indicate warnings, hazards and other important information about safe operation. You should locate, understand and follow the labels - and use your owner's manual to look up any that you don't understand. You may even notice that some labels are only symbols and don't contain any words at all.



3. ANSI Z49.1: If you still have questions that weren't answered by the owner's manual, safety data sheet and product labels or if your situation involves special welding conditions, refer to the industry standard for welding safety - ANSI Z49.1 for Safety in Welding, Cutting and Allied Processes. This standard has safety guidelines for nearly every situation and contains some important information for situations you may not have considered.

Your search may continue to other sources, but these are often the best place to start so you can narrow in on what safety information is important and relevant to your welding situation. Do your homework and know your stuff about welding safety, so you can protect yourself and others while you get the job done safely.

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Topic: Arc Welding Hazards - The **5 Most Common** Weld Hazards.

If you've been around welding, it's likely you've heard expressions like "watch the arc!" Ironically, that actually means **don't** look at the arc! This is just one example of how safety hazards can be misunderstood and instructions can be misleading. Knowing the facts will allow you to take adequate measures to protect yourself and others.

The **5 Most Common** welding hazards are:

1. Electricity: Electric shock can kill and arc welding uses electricity to generate heat. Hazards are present during installation, operation and servicing of equipment.



2. Intense Light (UV/IR): Arc rays can burn your skin and eyes. This may be referred to as welder's flash or burn that can lead to a permanent injury.

3. Sparks, spatter and fumes: Clear the "weld zone" and protect yourself. These welding byproducts can cause fire, burns and breathing impairment.



4. Heat Sources and Hot Materials: High temperatures can cause severe burns and fire. Heat from welding and cutting can burn or melt things nearby or in direct contact with the hot metal, electrode or other heat source.

5. Pressurized Gas Cylinders: Pressurized and potentially flammable gases are often used for welding and cutting. There are specific guidelines for cylinder safety and you should know the safety procedures for any gases that are used.

Remember that each process and situation are unique. Don't overlook potential hazards with your project and never underestimate the influence that location, environment and overall conditions can have on safety. Understand the basics as a starting point and remember the key message:

Don't take unnecessary risks and get the job done - safe and incident free.

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Topic: Safety Procedures and Protective Equipment for the Most Common Hazards

Following the proper safety procedures and using personal protective equipment is the key to protection from the hazards and potential dangers of arc welding. Here are some guidelines for dealing with the most common welding hazards. Remember, each situation is unique and may have special requirements that can be referenced in the ANSI Z49.1 standard.

Electricity: Protect yourself and others from electric shock

1. Do NOT touch a live electrode or electrical parts
2. Insulate yourself from the work and ground
3. Always wear dry, insulating gloves
4. Replace worn or damaged cables
5. Keep guards and covers in place
6. Disconnect power before installing or servicing



Intense Light (UV/IR): Protect your eyes and cover your skin.

1. Always wear safety glasses with side shields
2. Use a welding helmet with properly shaded welding filter
3. Wear complete body protection to cover exposed skin in fire resistant material

Sparks, spatter and fumes: Clear the "weld zone"

1. Weld in an area that contains arc rays, sparks and spatter
2. ALWAYS inspect and safeguard against fire
 - Remove anything not fire/flammable resistant
 - NEVER weld around fire hazards or fumes
3. ALWAYS have adequate ventilation and avoid breathing fumes directly.



Heat Sources and Hot Materials: Protect against burns

1. Consider everything "HOT" in the weld zone
2. Use designated tools for handling equipment

Pressurized Gas Cylinders: Handle and store properly

1. All cylinders should be clearly marked
2. Follow specific rules for storing and handling gases
3. Only approved suppliers should fill a cylinder



More details on these and other hazards can be found in the ANSI Z49.1 standard. Know about your situation and weld safe!

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Don't Make Safety An Issue

The basics of welding safety should be a habit for anyone involved with welding. By focusing in these areas, you'll have the basics covered and know where to look for additional information.

1. Standard Information Sources: Read the manual and know your equipment. A good idea with any item, but especially understand the hazards related to welding. If you encounter a situation that is not routine, look it up and get the answers. ANSI Z49.1 covers many topics including additional hazards you may not be aware of. For example, welding in a confined space is a relatively common issue - and it's amazing how quickly that situation could become extremely dangerous. Knowing what to look for will help you avoid incidents.

2. Arc Welding Hazards: Many people know the definition of welding but may not have all the facts. It's important to know about hazards that can effect the welder and everything within the weld zone. Arc flash and sparks can effect those who seem to be a safe distance away from welding. So the message is to understand the hazards so you can assess the scene and use the right procedures and gear to address them.

3. Hazard Protection: Despite the hazards of welding, using proper safety procedures, equipment and gear can provide adequate protection. The term "hazard" means serious business, so protecting yourself is NOT AN OPTION. If you don't use the proper safety gear, equipment and protocol - it could kill you. So, take it seriously - and use the proper protection for your welding situation.

Closing:

The purpose of this document is not to go overboard, but instead to outline the basic things everyone should know about welding safety. We can all avoid incidents and focus on making a great weld if we have good safety habits and apply good judgement. Accidents happen, but mistakes can be prevented.

Learn what you need to know to protect yourself ... and Be Safe.

Sources: Information and data in this document was referenced in ANSI Z49.1, various welding owner's manuals and manufacturer's websites. No information was created for and there are no new findings in this document - it's merely additional insight on existing sources that others may find useful.