



2020 Welding Fume and Respiratory Protection Survey

Introduction

Even with everything that is now known about the dangers of welding fume, only **20%** of Australian and New Zealand welders answered '**YES**' when they were asked if they felt protected from welding fume at work.

Only **11%** of workplaces had engaged an occupational hygienist to conduct air monitoring and the majority of workplaces did not include welders in the PPE decision making process (**53%**) and expected the welders to pay for their own respiratory equipment (**65%**).

Disturbingly, **32%** of welders are not using any form of respiratory protection and **37%** are still unaware that welding fume had been reclassified as carcinogenic by the International Agency for Research on Cancer (IARC). Unfortunately, welders believe that **COST** is the largest barrier and the reason why businesses will not introduce better controls to protect their welders.

With the results above, it is clear Australia and New Zealand have a long way to go in the promotion of the safety and well-being of welders. Increasing the level of knowledge regarding dangers and protective measures was highlighted as the **2nd** largest factor in ensuring welders are better protected in the future. This report, based on the '**2020 Welding Fume and Respiratory Protection Survey**', aims to do just that.



How to use this report

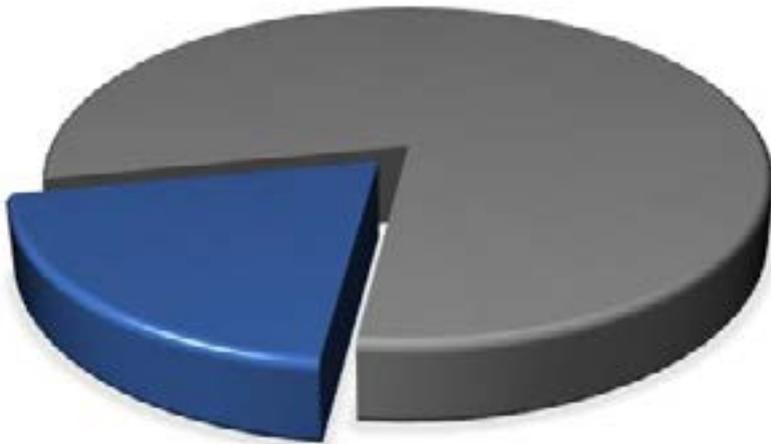
The questions of the survey will be presented with a graphical representation of over 2,400 responses from Australian and New Zealand welders.

- Based on your workplace and experience, answer the question in your own head before reviewing the responses.
- Compare your answer and responses from the survey to the **Information Section** based on what the legislative, regulative or government bodies in Australia and New Zealand have stated.
- Use the helpful links provided for more information.



For detailed information on the survey and sample size please see page 12.

Do you currently feel protected from welding fume at work?



20% responded **YES** to this question.

Information

The employer has the primary responsibility to ensure that welders are not exposed to health and safety risks whilst performing their job. If elimination of the risk is not possible, the employer must minimise the risk.

Where substitution and reduction of hazardous chemicals is not possible, engineering and/or administrative controls as well as personal protective equipment, such as powered air respirators, must be introduced.

The dangers of welding fume are very real, but once qualified and quantified, protecting welders can be straightforward. As a result, all welders should feel protected from welding fume at work.

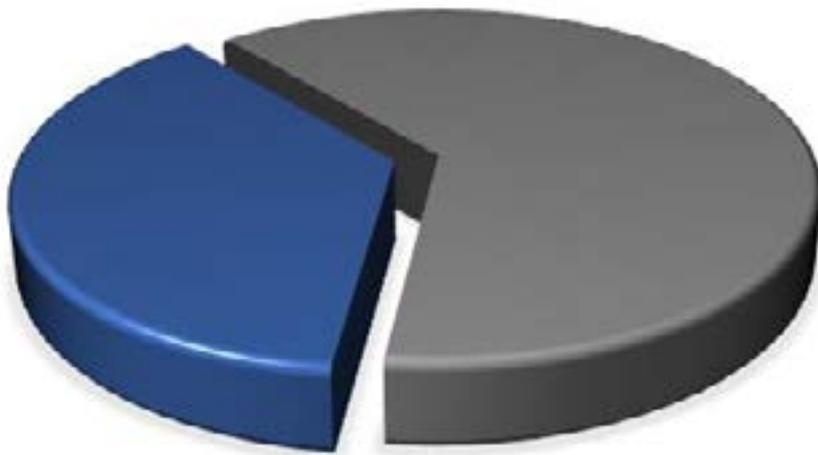
Helpful links

If employers or welders are unsure on what steps to take, start by contacting the WHS regulator in your state or territory for advice.

[Worksafe Regulators in Australia](#)

[Worksafe in NZ](#)

Are you aware that the IARC classified welding fume as carcinogenic?



37% responded **NO** to this question.

Information

In March 2017, scientists from around the world met at the International Agency for Research on Cancer (IARC; Lyon, France) to evaluate the carcinogenicity of welding fume.

Based on substantial new evidence through observational and experimental studies, welding fume has now been reclassified from 'possibly carcinogenic to humans' as it was originally classified in 1989 to its new Group 1 classification as 'carcinogenic to humans'.

The working group concluded that there is "sufficient evidence in humans" that welding fumes cause lung cancer and limited evidence for kidney cancer.

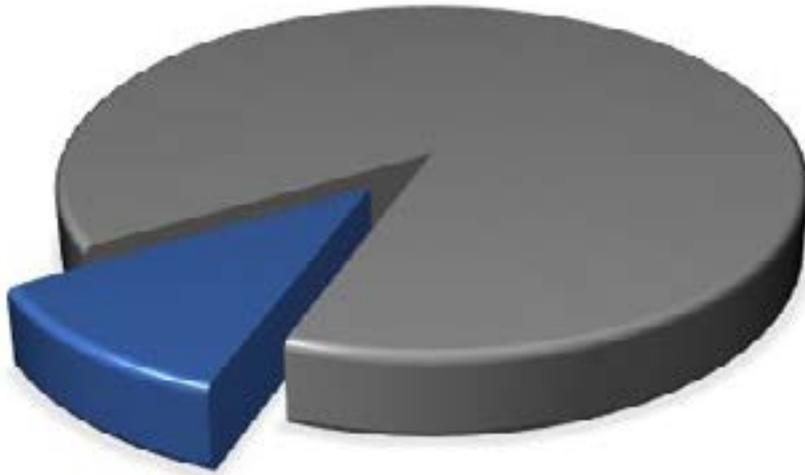
TheLancet.com/oncology volume 18 May 2017

Helpful links

For more information on the reclassification of welding fume use the link below.

[Welding fume: a known carcinogen](#)

Has air monitoring been conducted at your workplace?



11% responded **YES** to this question.

Information

The employer must ensure that air monitoring is carried out for welding fume if:

- They are not certain on reasonable grounds whether the airborne concentration of the substance or mixture at the workplace exceeds the relevant exposure standard, or
- Monitoring is necessary to determine whether there is a risk to health.

Welding processes Code of Practice, Safe Work Australia, May 2018

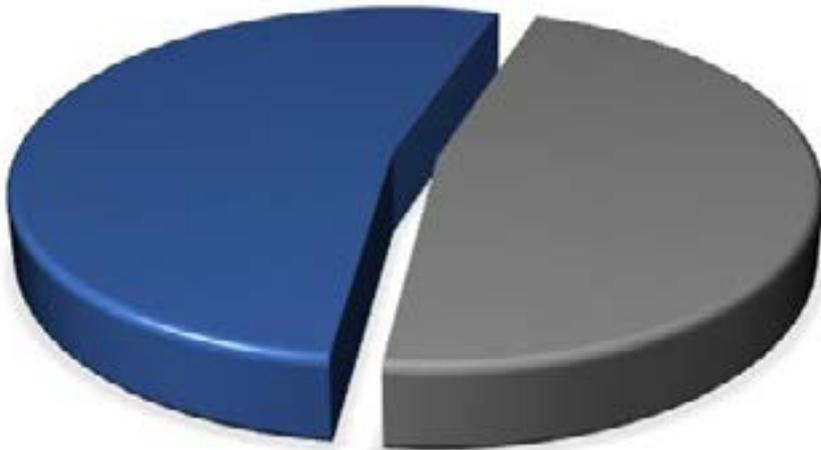
Helpful links

For expert guidance on air monitoring in Australia or New Zealand, please contact:

[Australian Institute of Occupational Hygienists](#)

[New Zealand Occupational Hygiene Society](#)

Are welders included in the PPE discussions and decisions at your workplace?



53% responded **NO** to this question.

Information

When selecting suitable PPE, the employer should consult with the welders.

A welder's knowledge, experience and personal preferences improve the overall decision-making process.

As someone who is directly affected by welding hazards, a welder is entitled to take part in the consultation process and selection of suitable PPE.

Welders should aim to educate themselves on the risks, understand the appropriate PPE available and look to involve themselves in the consultation process and ultimate selection of suitable PPE.

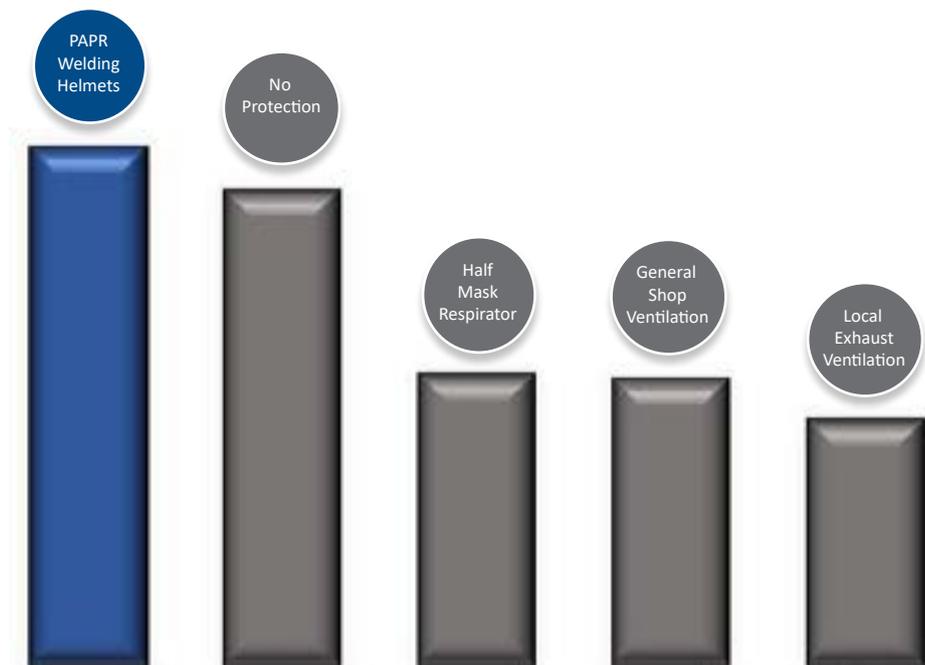
Helpful links

For expert guidance on selecting suitable welding PPE in Australia and New Zealand, please contact AWS:

P: +61 2 9439 0111

W: www.awsi.com.au

What protection measures do welders currently use at your workplace?



Please note that welders had the option to choose multiple selections (eg. Welding Helmets with Powered Air and General Shop Ventilation).

PAPR WELDING HELMETS are the most widely used form of respiratory protection. **32%** of welders still use **NO RESPIRATORY PROTECTION** at all.

Information

Regarding PPE, the Cancer Council have advised that welders should wear either 'air supplied or air purifying respiratory protection' and use 'a full-face welding helmet, with a UV filtered lens'.

A powered air purifying respirator (PAPR) can provide air over 50 times cleaner than the air inhaled by an unprotected welder. When compared to disposable and reusable half mask respiratory protection, a PAPR can provide superior respiratory protection and does not require fit-testing.

Occupational Cancer Risk Series, Cancer Council, 2017

Helpful links

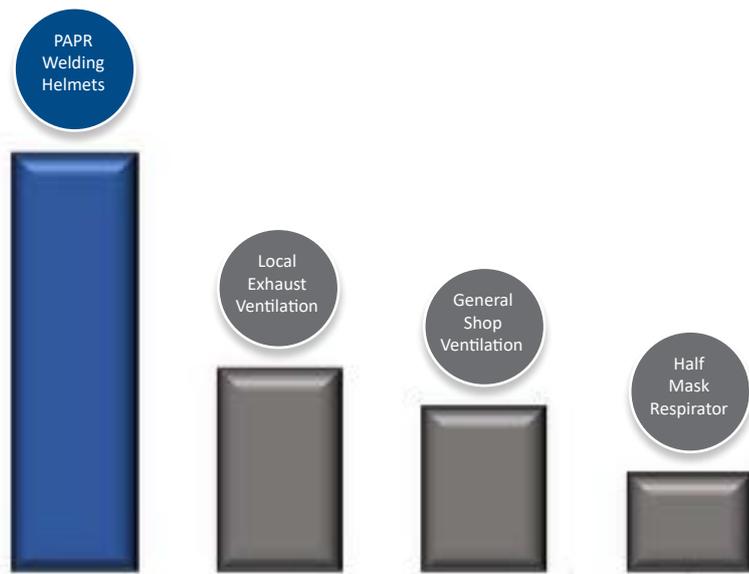
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Or for further reading on powered air purifying respirators [click here](#).

What protection measures do welders believe are enough?



Please note that welders had the option to choose multiple selections (eg. Welding Helmets with Powered Air and General Shop Ventilation).

74% of welders included **PAPR WELDING HELMETS** in the protection measures they believed were enough to protect themselves from welding fume. This was based on their individual application and environment.

Information

With flip-up PAPR welding helmets, welders can have completely clear and uninhibited views of their workpiece and surroundings, while maintaining their desired level of respiratory protection at all times with no breathing resistance. The powered air respirator goes wherever you go, allowing you to move around your workplace with perfect vision, improved comfort, and uninterrupted respiratory protection.

A recent case study from a manufacturing company with over 1,500 employees, including 600 certified welders, found that 'foreign body eye injuries decreased over 70% year-on-year'¹ in areas that implemented the PAPRs with integrated flip-up auto-darkening welding helmets. Worker compensation claims decreased markedly while employee morale increased substantially.

Case study can be supplied on request.

Helpful links

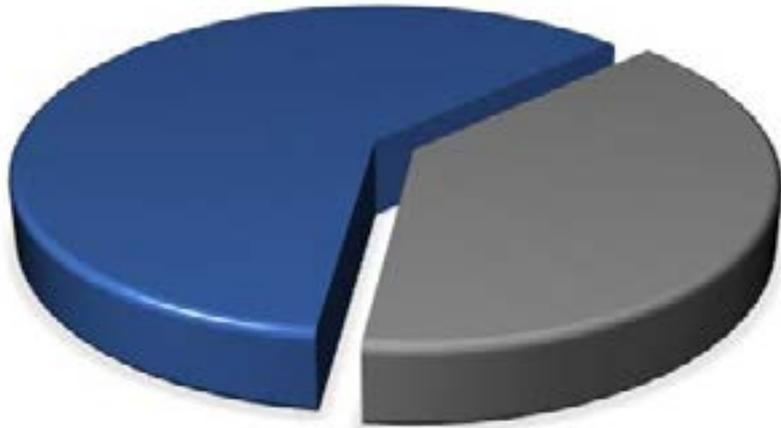
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Or for further reading on powered air purifying respirators [click here](#).

What is stopping your workplace from introducing better safety measures?



61% responded '**THE COST**' to this question.

Information

What is the cost of not protecting welders?

- Welders present, on average, a 43% increased risk of lung cancer when compared with those who have never welded or been exposed to welding fume¹.
- An unprotected welder operating within the Australian and New Zealand exposure standards for general welding fume (5 mg/m³) could inhale up to 11 grams of a known carcinogen per year.
- Every year, around 5,000 work-related cancer cases are linked to workplace carcinogens in Australia².

1) 2019 Honorary MK, Lunn RM, Luce D, et al. *Occup Environ Med*

2) *Compensation for work related cancers, Cancer Council, 2018*

Helpful links

To set-up a respiratory PPE cost analysis, contact AWS

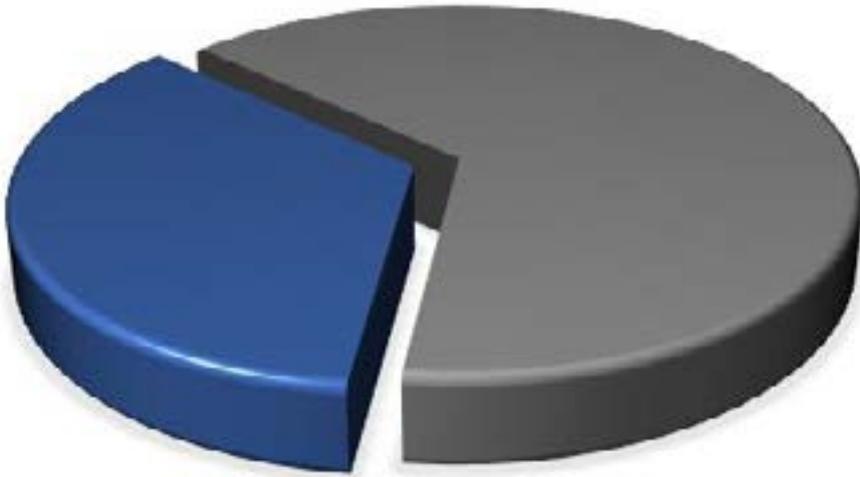
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Auto Darkening Welding Helmets with a Powered Air Purifying Respirator (PAPR) can increase productivity and reduce cost.

- Depending on your application and environment, powered air respiratory protection can be a more economical option when compared to half mask respirators.
- The protection (eye/face/head/respiratory/hearing) and comfort afforded by these systems can lead to a reduction in lost work days due to injury or illness.
- With auto-darkening technology the welder can weld faster and their movement around the workpiece can become more efficient.
- Where the final appearance of the weld is critical, reduction in scrap alone (e.g. from bad starts) can quickly pay for auto-darkening respiratory welding helmets.

Who would be financially responsible for purchasing PAPR Welding Helmets?



35% responded **'The Business'** to this question.

Information

Under both the Australian Model WHS regulations and the New Zealand Health and Safety at Work Regulations, the employer is financially responsible for providing PPE to workers and must not charge employees for using the equipment.

The only exception to this is if the personal protective equipment has been provided by another person conducting a business or undertaking, like a labour hire company.

Helpful links

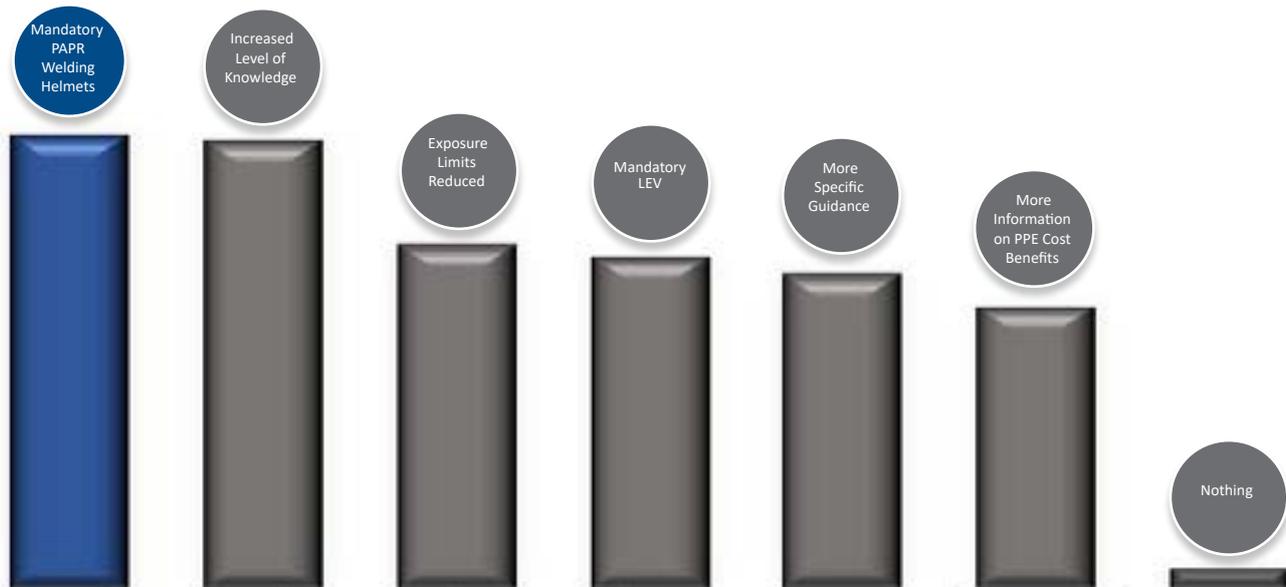
[Australian Model WHS regulations](#)

[New Zealand Health and Safety at Work Regulations](#)

For more information on your responsibilities in Australia, download [Safe Work Australia's Model Code of Practice: Welding Processes](#).

For a summary on PPE responsibilities in NZ, use this link to [Worksafe NZ](#)

What is required to better protect welders in the future?



Please note that welders had the option to choose multiple selections.

The **Top 3** responses:

1. **59%** - believe powered air welding helmets should be mandatory
2. **58%** - believe the knowledge regarding dangers and protective measures needs to increase
3. **44%** - believe legislation on exposure limits needs to change

Only **2%** of respondents felt that '**NOTHING**' needs to change.

Information

Safe Work Australia is currently reviewing the exposure standards for **welding fume (not otherwise classified)** and is planning to make the draft evaluation reports and recommendations available for comment in the coming months.

Following public comment, the recommendations will be considered by Safe Work Australia members.

If agreed, these recommendations will then progress to Commonwealth, state and territory ministers responsible for work health and safety as the relevant decision-makers on any changes to the model work health and safety laws or workplace exposure standards.

Helpful links

Use this link to be notified when Safe Work Australia publishes their draft recommendations for expert comment in the coming months -

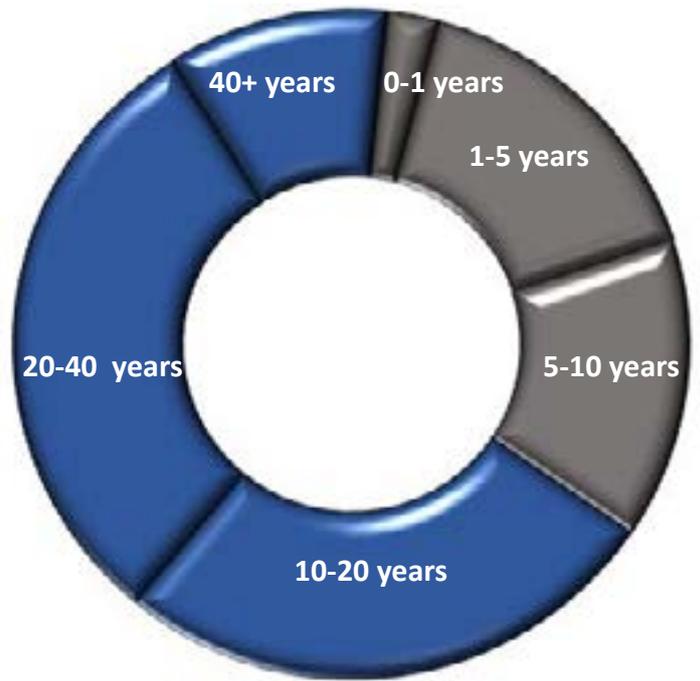
<https://www.safeworkaustralia.gov.au/subscribe-updates>

Information on the survey and sample size.

The **2020 Welding Fume and Respiratory Protection Survey** was conducted over a two-month period during **April and May 2020**.

Over **2,400** welders took part in the survey making the surveyed group approximately **3%** of the total number of welders in Australia and New Zealand (**approx. 75,000**).

The majority of welders surveyed had been welding for **20 to 40 years**. See the graph to the right for a break down of how many years the welders surveyed had been welding for.



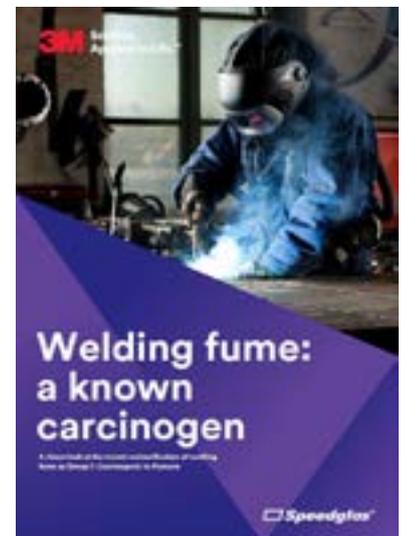
More Information

As an advocate for welders' safety in Australia and New Zealand, AWS has published numerous Welding Safety White Papers.

AWS was established in 1994 and has played a key part in the welding industry ever since. As a company which specialises in welding safety equipment, it's our goal to raise awareness on the important issues that welders face.

If you are involved in the welding industry and would like to learn more about safety issues within the welding trade, our library of White Papers may be of interest.

[Visit the AWS White Paper Library](#)



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