



# Toolbox Talk

September 2023



## Welding Safety

Welding is a common practice in many industries, but it can be dangerous if not done correctly, especially if the correct Respiratory Protective Equipment (RPE) or personal protective equipment (PPE) is not worn or there is not adequate ventilation while welding.

Welding and thermal cutting produce metal and fluxing fumes made up of toxic gases and very fine particles.

Since 2019, the International Agency for Research on Cancer has classified all welding fume, including from mild steel, as a substance that may cause cancer to Humans.

So, awareness, minimizing exposures with suitable protection and safe work practices are required to protect welders health.



# Welding and health

Welding poses a range of hazards to your health whether you or someone near you is welding. These can be obvious straight away or they may show up in the long term such as lung and breathing disorders.

## Health effects from welding

Health effects depend on the amount and type of fume created and how long you are exposed for. Occasional tack welding outside is unlikely to cause a problem, but extensive welding in poorly ventilated areas can seriously damage your health.

## Short-term health effects include:

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**Respiratory irritation** of the throat and lungs (especially from ozone created during tungsten inert gas (TIG) welding of stainless steel and aluminium)

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**Temporary reduced lung function**, e.g. where breathing is easier when not working.

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**Metal fume fever**, which has similar symptoms to flu and can be caused by high fume levels from welding galvanised metal or, in some cases, mild steel.

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## Long-term health effects include:

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**Asthma**, particularly when welding stainless steel which contains nickel and chromium

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**Cancer**, particularly when welding metals containing nickel and chromium (such as stainless steel) and specialist metals that contain cadmium or beryllium

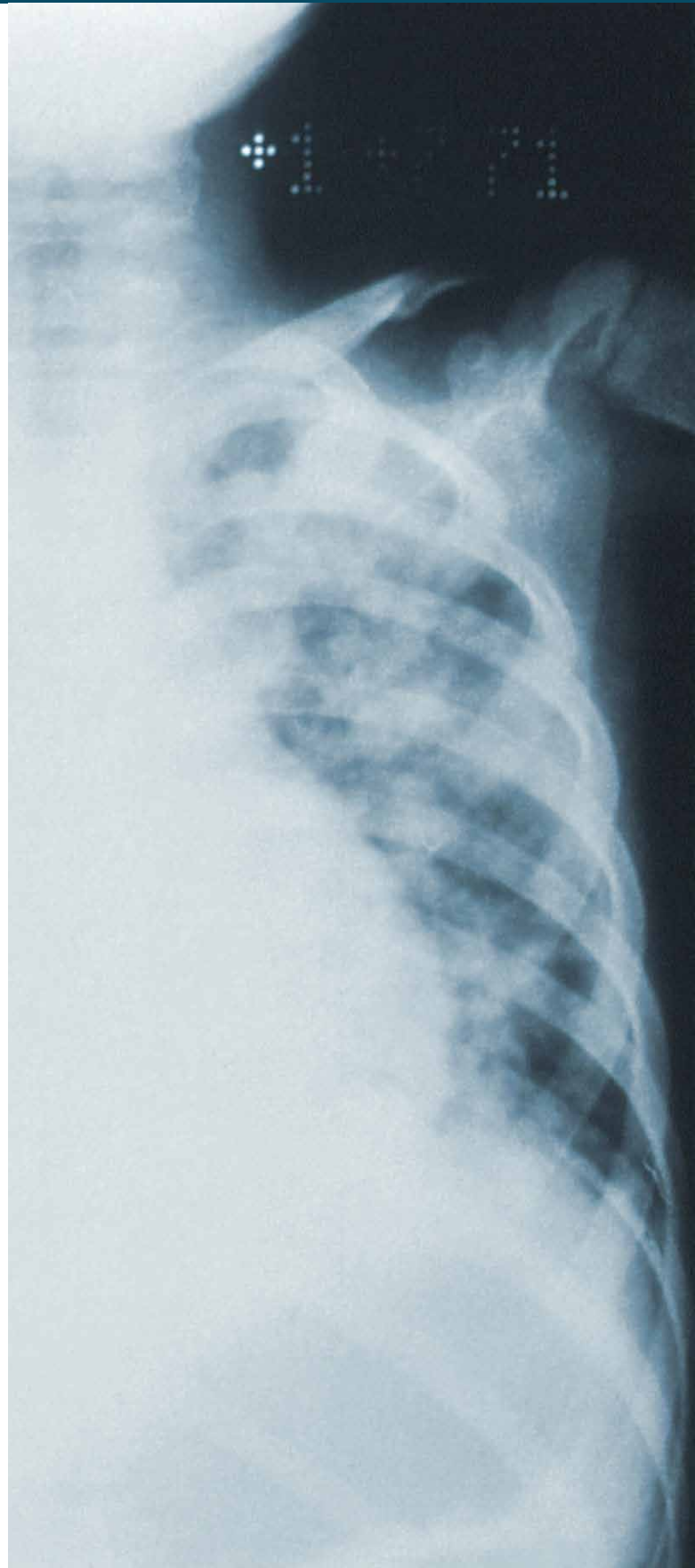
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**Nervous system damage** from manganese, which is found in many welding rods, including those used with mild steel

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**Pneumonia**, welders are particularly prone to a lung infection that can lead to severe, and sometimes fatal, pneumonia.

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# Most common welding hazards and tips



## Fumes

These are very fine solid particles temporarily suspended in the air.

## Gases

- Gases are used in welding and cutting processes
- Gases are produced from welding and cutting processes and are also produced from the thermal breakdown of coatings
- These may include ozone, in the case of metal inert gas (MIG) and tungsten inert gas (TIG) welding, inert gases can present a problem when working in confined spaces.

## Keeping safe while welding

- Optimise shielding gas to reduce the fumes
- Avoid working in poorly ventilated areas
- If working in confined spaces, ensure there is adequate ventilation
- Use electrodes that create less fumes
- Remove coatings such as rust treatments, paints, and solvent residue before welding
- Use Local exhaust ventilation (LEV) to suck the fume away at its source
- Less hazardous welding can be done outside or in a well-ventilated area but you still need to wear RPE.

# Local exhaust ventilation (LEV)

LEV is an effective control that sucks the fume away at its source, protecting the worker and stopping fumes spreading.

## Types of LEV include:

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ON-TORCH EXTRACTION

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EXTRACTION BENCHES

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EXTRACTION BOOTHS

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# Fit testing and using respiratory protection

Some types of RPE require a tight seal around your face to be effective. The way to do this, is to be fit tested.

## Why complete Fit testing?

- To ensure respirators are fitting to your face correctly
- Ensure the respirator can provide the expected protection from the fumes
- Provide guidance and coaching on correct fitting techniques and user seal checks which are to be done each time the respirator is worn
- You must be clean shaven to get a proper seal for close-fitting RPE, otherwise you will need to wear a powered air purifying respirator

## Positive and Negative pressure fit check

If you're using a respirator that needs a tight fit, these are the two 'fit checks' that you should do every time the respirator is worn. You should:

- Always check its condition before welding or entering a hazardous area
- Check the respirator is achieving a tight seal around the face
- Ensure there is no leakage
- You will be shown how to do this by your Account Manager
- Click [here](#) to watch a video How to properly use a half face or half mask respirator



## Looking after your respirator

- Inspect your respirator regularly for signs of damage
- Clean your RPE after each use. Rinse RPE well to prevent skin irritation
- Do not wash the cartridge and be careful not to damage the valves
- Check the inhalation/exhalation valves are working
- Replace particulate filters if there is an increase in resistance when breathing, if they are damaged or if they're past their service date
- Replace vapour or gas filters when scheduled
- Change cartridges immediately when you detect a smell or taste
- Store your respirator in a sealed container

## ATNZs requirement for Respiratory Protective Equipment (RPE)

- ATNZ's current position is that at a minimum, a half face respirator should be worn where local exhaust ventilation (LEV) is not totally effective in preventing any risk of inhaling welding fumes
- LEV arrangements may not be to the standard required ATNZs guidance is that a respirator should be worn unless atmospheric testing has confirmed the air quality to be safe
- Standard respirators must be fit tested on issue and again at least annually
- For those who undertake a lot of welding and want a Powered Air Purifying Respirator (PAPR), ATNZ will support the learner who wishes to purchase one on their tool account. This will be by agreement. The ATNZ preferred option is the strata helmet of which we have ten in stock now. Chat with your ATNZ Account Manager
- For any apprentice who undertakes welding and who can not achieve a seal on the half face respirator (and who is not prepared to be clean shaven throughout their apprenticeship), a PAPR will be required.

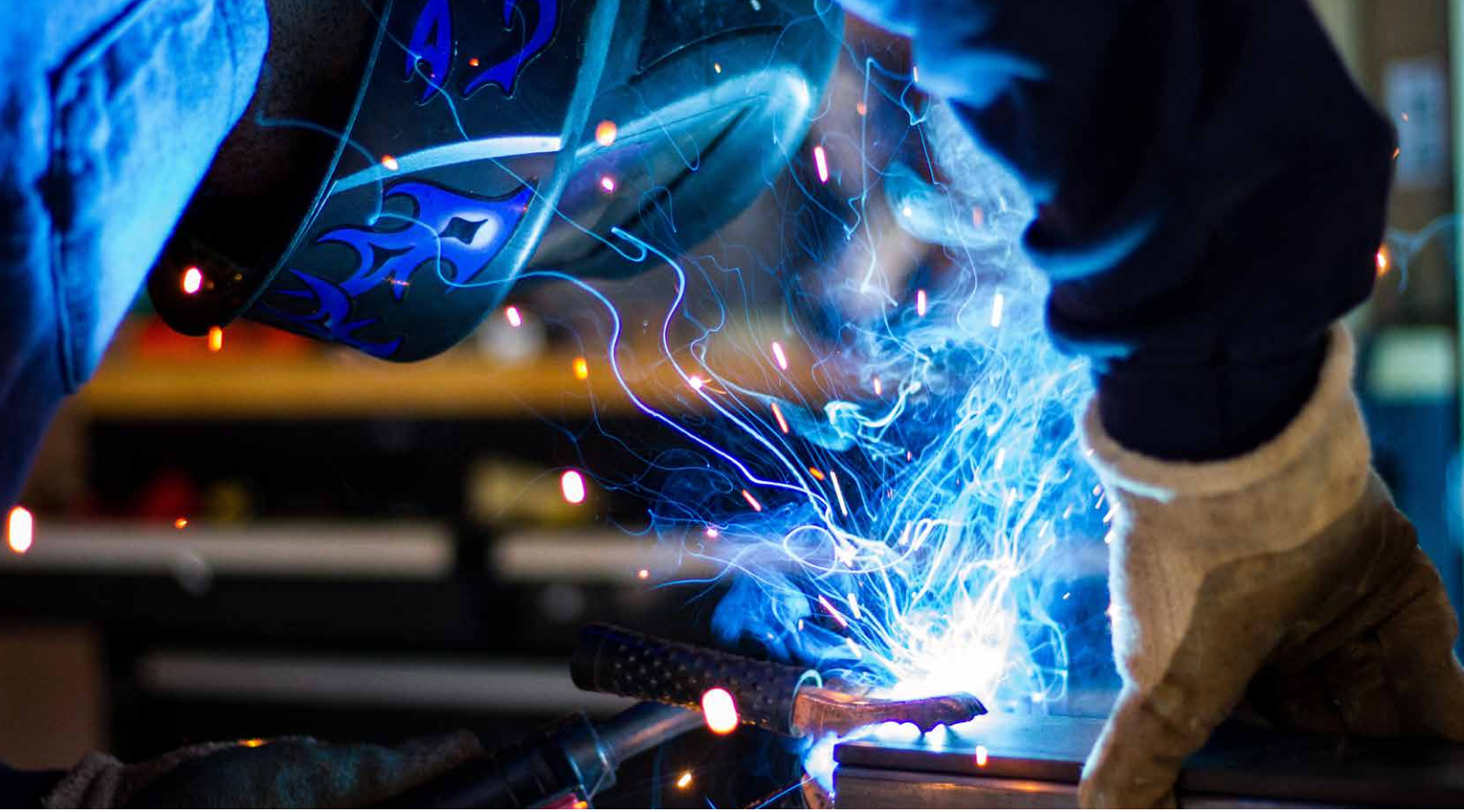
## Links for further information

[WorkSafe 2021 Good Practice Guide](#)

[Welding and Local Exhaust Ventilation](#)

[Respiratory Protective Equipment](#)





# Remember **STAAR** = Good Work Practices **Stop Think Assess Act Review**

## Health and safety reps

Your Health and Safety (H&S) Reps are here to represent and assist you (apprentices) in all health and safety matters. If you would like to talk to an H&S Rep or have any H&S issues, feel free to contact any one of them. They will be more than happy to help.

### Waikato

Elizabeth Humberstone 027 806 8879

### ATNZ Staff

Kylie Mason 027 431 5877

Jo Brierley 027 438 8195

Alan Lockett 027 239 6197

## Health and safety summary July/August

Remember to keep reporting accidents and incidents so we can all learn from them.

It's great to see near misses being reported and we encourage you to keep reporting these so we can prevent an actual injury happening.

- S** Stop
- T** Think
- A** Assess
- A** Act
- R** Review

Lost time injuries	2
First aid injuries	5
No injury	0
Medical treatment injuries	1
Near miss	1
Non work injuries	5
Restricted work injuries	0
Pain/discomfort	0
<b>Total Incident</b>	<b>14</b>

# Incidents

<b>First aid injury</b>	Puncture to hand
<b>Nature of injury</b>	Powered hand tools/equipment
<b>Incident</b>	Apprentice was using a battery powered nailer to nail packing crates together. The timber legs of the crate didn't meet at the corner and the apprentice cut a triangle piece of wood to join them together. As they were holding the triangle against the legs of the packing crate, they shot the nail through the timber to make the join. The nail was longer than the combined thickness of the timber and went into the apprentice's finger. They removed their finger from the protruding nail and as it was bleeding sought first aid help to put a plaster on
<b>Immediate actions taken</b>	First aid applied
<b>Corrective actions</b>	Reminded apprentice to follow STAAR and think about where their fingers are in relation to the nails. Use a clamp in the future to hold the timber together while nailing
<b>Medical treatment injury</b>	Metal in eye
<b>Nature of injury</b>	Foreign body
<b>Incident</b>	Apprentice was grinding a support panel. They were wearing safety glasses at the time. While grinding a small piece of metal bounced off their glasses and went into right eye
<b>Immediate actions taken</b>	Washed the eye out with eye wash. Went to doctor for further assessment
<b>Corrective actions</b>	Will look at another brand that gives closer fit to face. Recommended that apprentice also uses a full face shield for this type of work in the future
<b>Lost time injury</b>	Fracture and cut to finger
<b>Nature of injury</b>	Manual handling
<b>Incident</b>	Apprentice was attempting to secure a plate grab onto a small piece of 10mm steel, while doing that a big piece of 20mm plate steel slid down the plate rack hitting their hand and forcing it onto the 10mm piece of steel causing their hand to be jammed between both plates and plate grab.
<b>Immediate actions taken</b>	Help was given to lift plate off, first aid applied for a crush injury before going to hospital for further assessment and treatment
<b>Corrective actions</b>	Use lifting equipment or equipment to secure steel ask for help when moving steel. Follow STAAR process. Communication to all staff to be aware and take time completing tasks. Consider changing to a better position while doing task.
<b>Near miss</b>	Fall from height
<b>Nature of injury</b>	
<b>Incident</b>	Apprentice was working at floor level. Another tradesman moved a ladder, coming into contact with a section of overhead ducting. An unsecured elbow of the duct fell off, landing approx. 1.5m from the apprentice. The apprentice wasn't installing the ducting but was working in the same area installing compressed air and gas pipes
<b>Immediate actions taken</b>	Works were halted. Site Foreman contacted and near miss reports generated with the host company, main contractor and overseeing contractor company
<b>Corrective actions</b>	The job was stopped and investigation was carried by the main contractor on site. During the investigation another piece of ducting was also found to be unsecured and was removed. Apprentice to follow STAAR and be more aware of the other trades working on site and their potential hazards. Apprentice to ensure they always wear a hard hat correctly as per site regulations.

# Incidents

<b>Lost time injury</b>	Back sprain
<b>Nature of injury</b>	Manual handling
<b>Incident</b>	Apprentice was lifting a tripe scudder back into position and hurt back. Apprentice then played rugby worsening their back strain
<b>Immediate actions taken</b>	No immediate action taken
<b>Corrective actions</b>	Incorrect posture and load too heavy causing minor strain. Follow STAAR process. Communication to all staff to be aware and take time completing tasks. Consider changing to a better position while doing task. Consider using a manual handling aid or asking for more help lifting

<b>First aid injury</b>	Cut to hand
<b>Nature of injury</b>	Manual handling
<b>Incident</b>	Apprentice was moving a trolley that had a motor sitting on it. Motor tipped over and crushed finger causing a deep laceration
<b>Immediate actions taken</b>	First aid applied
<b>Corrective actions</b>	Follow STAAR process. Communication to all staff to be aware and take time completing tasks. Consider changing to a better position while doing task. Consider using a manual handling aid or asking for more help lifting

<b>First aid injury</b>	Puncture to hand
<b>Nature of injury</b>	Hit by moving object
<b>Incident</b>	Apprentice was breaking down a wooden crate when a piece of wood fell onto their hand. There was a protruding nail in the piece of wood which punctured through their rubber dipped glove and stabbed hand
<b>Immediate actions taken</b>	First aid, and went to doctor for a tetanus booster
<b>Corrective actions</b>	Follow STAAR process. Communication to all staff to be aware and take time completing tasks

<b>First aid injury</b>	Pain in arm
<b>Nature of injury</b>	Manual handling
<b>Incident</b>	Apprentice had been lifting stock the day before and only felt a slight strain in their right forearm the following morning.
<b>Immediate actions taken</b>	First aid
<b>Corrective actions</b>	Follow STAAR process. Communication to all staff to be aware and take time completing tasks. Consider changing to a better position while doing task. Consider using a manual handling aid or asking for more help lifting

<b>First aid injury</b>	Cut to finger
<b>Nature of injury</b>	Manual handling
<b>Incident</b>	Apprentice picked up steel pipe causing a minor cut to hand
<b>Immediate actions taken</b>	First aid applied
<b>Corrective actions</b>	Discussed the importance of wearing gloves when handling steel