SPASA VICTORIA
SWIMMING POOL & SPA ASSOCIATION

Safe Work Procedures Guidelines

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General

The *Occupational Health and Safety Act 2004 requires* the provision of a safe working environment and the protection of workers in the workplace against the risk of their occupational health and safety. Duties are imposed on employers to provide as far is reasonably practicable workplaces and work practices that are safe and without risks to health and safety of employees.

Employers have a general duty to ensure the health and safety of their employees while at work and must take all reasonable steps to achieve this by:

- Providing and maintaining a safe working environment.
- Providing and maintaining suitable facilities for the health and safety of employees.
- Ensuring the risks associated with the set-up and use of plant and equipment are identified and controlled as far as reasonably practicable.
- Implementing appropriate inspection and maintenance of plant and equipment as prescribed by the Occupational Health and Safety Regulation 2007
- Providing suitable information and training.
- Providing procedures to deal with emergencies that may arise while employees are at work.

While at work, an employee must undertake the following:

- Take reasonable care for his or her own health and safety
- Take reasonable care for the health and safety of persons who may be affected by the employee's acts or omissions at a workplace
- Co-operate with his or her employer with respect to any action taken by the employer to comply with a requirements imposed by *Occupational Health and Safety Act 2004* or Occupational Health and Safety Regulation 2007
- While at work, an employee must not intentionally or recklessly interfere with or misuse anything provided at the workplace in the interests of health, safety or wellbeing.

Risk Management

1. The first step in the risk management process is to identify any hazards in the workplace.
2. The second step is to assess the level of risk associated with each hazard and assess the severity of any injury or illness that could occur, then consider the likelihood someone should suffer an illness or injury by doing the following:

    - Identifying which workers are at risk of exposure to a hazard
    - Determining what sources and processes are causing that risk

- Identifying if and what kind of control measures should be implemented
- Checking the effectiveness of existing controls.

3. The third step is to control any hazards. Control measures can be ranked from the highest level of protection and reliability to the lowest. This ranking is known as the ***hierarchy of control***.

    - ***Elimination*** -remove the hazard completely from the workplace. This is the most effective control measure and must always be considered before anything else.
    - ***Substitution*** – if the hazard cannot be eliminated, substitute or replace the hazard with a less hazardous work practice.
    - ***Isolation*** – as much as possible, isolate the hazard or hazardous work practice from people.
    - ***Engineering controls*** – these are physical control measures e.g. machine guarding to minimise the risk.
    - ***Administrative controls*** – these should only be considered when other higher order control measures are not practicable. These are work methods or procedures that are designed to minimise the exposure to a hazard e.g. implementing a training program, using permit systems.
    - ***Personal Protective Equipment (PPE)*** – this should be the last option. PPE relies on the proper fit and use of the PPE and does nothing to change the hazard itself. It therefore requires thorough training and effective supervision to ensure compliance and effectiveness.

In many cases a combination of control measures might need to be used to control a risk. When selecting and implementing a combination of control measures it is important to consider whether any new risks might be introduced as a result and, if so, whether the combination of the control measures should be reviewed.

4. The fourth step is to reviewing control measures that are put in place to make sure that they remain effective. Reviewing the control measures also involves considering whether a higher order control measure is necessary.

The following are hazards that SPASA VICTORIA member workers are likely to be exposed to during the construction of a swimming pool. These guidance notes (Safe Work Procedures) serve by detailing these hazards and making suggestions to be adopted to eliminate these hazards or to effectively mitigate them.

- Working around water
- Excavations
- Operating plant and machinery
- Working with electricity and powered electrical equipment
- Working at height (above 2 meters)

- Chemical handling (dangerous goods & hazardous substances)
- Compressed air
- Hazardous Manual Tasks (manual handling)
- Welding and hot work (brazing & cutting)
- Asbestos
- Noise
- Slip trips and falls
- High temperature or cold conditions
- UV radiation

Working around water

Working around water presents the risk of drowning and therefore the highest order control to adopt would be to prevent entering the water in the first instance. Workers should stay clear of any pool containing water. Workers should avoid getting near the boundary of a swimming pool containing water.

Workers should have basic swim skills and as a minimum they be should able to swim a minimum of 25 meters fully clothed (pants, shirt and shoes) in the event they inadvertently fall into the water.

Once excavation work for the pool is finished, there is a potential for ground water or rainwater to fill the hole. Any amount of water can be a drowning hazard.

In Victoria, swimming pools and spas with a water depth of more than 300 mm must have safety barriers around them. This is to restrict access of young children to the pool area. Property owners and occupants are responsible for making sure pool barriers are maintained, repaired and kept in working order.

The pool area on a property must be a separate, defined area with access not directly available from any other building including a dwelling (house) or outbuilding. Barriers are generally required for the following:

- In-ground pools and spas
- Above-ground pools and spa pools including inflatable pools holding more than 300mm (30cm) of water
- Indoor pools and spas
- Bathing and wading pools containing more than 300mm (30cm) of water
- Spas and swimming spas (including portable spas)

Excavations

There are many hazards associated with excavation work including the following:

- Underground essential services (gas, water, sewerage, telecommunications, electricity, chemicals / fuel / refrigerant in pipes or lines)
- Fall or dislodgement of earth or rock
- Falls from one level to another
- Falling objects
- Inappropriate placement of excavated materials, plant or other loads
- Instability of any adjoining structure or building caused by the excavation
- Any previous disturbance of the ground including from previous excavation(s)
- The instability of the excavation due to persons or plant working adjacent to the excavation
- The presence of or possible inrush of water or other liquid
- Hazardous manual tasks
- Hazardous chemicals
- Hazardous atmosphere in an excavation
- Contaminated soil and ground water
- Vibration
- Hazardous noise

Placement of excavation material

During excavation, excavated material should be placed outside a 45 degree slope line passing through the bottom of the excavation and in no case closer than 600mm from the edge of the excavation. This distance should enable safe access along the

sides of a trench. If a trench runs across sloping ground, excavated material should normally be placed on the uphill side of the excavation. This should prevent loss of stability of excavation machinery which can occur if excavated material is placed on the downhill side.

Working around mobile plant

One of the most important matters to be considered around excavation sites is the dangers associated with working in the vicinity of mobile plant and vehicles. Traffic and pedestrian movement should be planned and controlled so that pedestrians and plant can operate safely at the site at the same time. Where possible, the two should be kept separate and work in separate areas.
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Operators of mobile plant often have restricted visibility (blind spots) of workers close or nearby to the plant with the potential of a collision. Workers should not approach mobile plant until the operator has agreed to their request to approach (positive eye contact made and clear hand gestures). Similarly mobile plant operators should not be allowed to move mobile plant closer than a set distance until the workers are aware of the proposed movement.

Mobile plant operators and ground workers should wear high-visibility clothing.

Underground Essential Services

Damage to underground assets such as electric cables, gas, and water and sewage pipes caused by excavation work can result in serious or potentially fatal incidents including burns, electric shock and gas releases or explosions as well as disruption of the electricity, gas or water supply.

Injuries can be caused by the explosive effects of arcing current. Hazardous fires or explosions may result when a live cable or gas pipe is cut or crushed by an excavator bucket or penetrated by a tool or equipment. Incidents may also arise at later time when damage to these assets is left unreported and unrepaired.

Before undertaking any work near underground services the person undertaking the work must find what underground services (electrical cables, gas, water and sewage pipes) could create a risk if contact is made with the underground service or damage sustained to the service. This information must be considered when planning work. A written record of this information should be kept.

A risk assessment should be undertaken that considers what could happen if someone is exposed to a hazard and the likelihood of it happening. The risk assessment should consider:

- Reviewing all drawings for the work to determine what underground utility services exist at the worksite.
- Call ***Dial Before You Dig***, which is a free enquiry service for information on underground assets anywhere in Australia. This organisation should advise you of any underground pipes and cables owned by one or more of its members located in the vicinity of your worksite. *Dial Before You Dig* can be contacted by telephone on 1100 or by submitting an online enquiry at www.1100.com.au
- Mark the position of all known utility services at the worksite, using the information obtained in the planning phase.
- Arrange underground utility detection by the service provider or hire detection equipment and use this to locate utilities.
- Verify the actual position of utility services at the worksite and highlight on working documentation any variations from locations originally specified in the documentation received.
- A Job Safety Analysis (JSA) should developed for the scope of work and all persons performing the work should be inducted into the JSA.

Electrical Cables

- Conductive material or fixings that may accidently make contact with energised parts.
- Work activities that could involve risk of damage to electrical cables (e.g. drilling or sawing).
- Work done near a building or structure where the existence of electrical cables and equipment is not known.
- Excavation or driving implements into the ground (for example star pickets) where underground services may be located.

Gas pipes

- Damage to gas pipes and connections can cause leaks that may lead to fire or explosion. This may result in an immediate leak or a prolonged leak.
- The damage may occur when the work is carried out; a poor reinstatement may leave a pipe inadequately supported.
- The risk from leaking liquefied petroleum gas (LPG) is greater than from a natural gas leak as it is heavier than air and does not disperse so readily. It can also travel great distances below ground level before accumulating at low level, such as in basements and cellars.

Water pipes and sewers

Although damage to water pipes is less likely to result in an injury to an operator the following needs to be considered:

- A jet of water from a main can be of sufficient pressure and intensity to cause an injury to a person.
- Leaks of water from underground pipes can affect adjacent services and reduce support for other structures. Damage to mains pipes can result in flooding, leading to the subsequent risk of drowning or the rapid collapse of support to the sides of an excavation.
- Some sewage is pumped at pressure but most it is commonly gravity-fed and the main risks from damage to a sewer is to the health of workers from exposure to raw sewage (biological), the chance of ground collapse and possibility of environmental contamination and pollution.

Other pipelines

The danger arising from damage to other pipelines depends on the nature of the conveyed fluid. Fluids and their associated risks include:

- Flammable liquids and gases – risk of fire and explosion
- Fluids at elevated pressure – risk of injury from sudden release of contents;
- Toxic liquids and gases – risk of poisoning
- Inert gases such as nitrogen and argon – risk of asphyxiation.

Often a fluid should present a combination of risks; for example, a liquid may be both toxic and flammable.

Telecommunication cables

Damage to telecommunication and TV cables may require expensive repairs and can cause considerable disruption to those relying on the system. However, the risk of personal injury to workers is normally very low.

Contaminated soil and ground water

Workers may uncover abandoned or buried materials and substances that can be a risk to health or wellbeing, including the following:

- Asbestos and other fibrous material
- Fuels and lubricants (e.g. leaking underground tanks or buried drums)
- Contaminated ground water
- Inorganic compounds (e.g. cyanide)
- Materials from landfill
- Medical and radioactive waste
- Metals (e.g. lead)
- Unexploded munitions.

Naturally occurring substances can also be a risk to health, such as coastal acid sulphate soils. These soils are generally found in low lying areas on coastal plains and along the edges of water bodies where sulphate-rich water mixes with iron and organic matter. Contact can result in skin irritations or burns and corrosion to plant. Procedures should be in place to stop the work, identify the contaminant, determine if there is a risk and implement measures to control exposure (e.g. bulk removal of contaminated soil).

Overhead Powerlines

Before operating any mobile plant, a worksite risk assessment inspection should be undertaken to identify any overhead electric lines hazards. A risk assessment involves considering what could happen if someone is exposed to a hazard and the likelihood of it happening. The risk assessment should consider:

- Location and voltage of the overhead electric lines
- Nature, size and shape of the load to be moved
- Safe work practices and procedures in use
- Type of mobile plant, machinery and equipment to be used
- Stability of crane or mobile plant and suspended loads
- Site conditions, including unexpected movement of the terrain, ground or surface upon which the plant is resting on
- Wind strength and direction and weather conditions
- Qualifications, competency, skill and experience of people undertaking the work
- Minimum clearance distance from the closest part of the plant to the electric line
- Possibility of sway and sag of the overhead electric lines normally caused by wind
- Possibility of plant becoming energised through voltage induced by adjacent electric lines particularly high voltage lines.

Operating Plant and Machinery

The following have the potential to cause injury or illness to workers in the workplace by using plant and equipment:

- Entanglement due to hair, loose clothing, gloves, neckties, jewellery, cleaning brushes or rags, or materials getting tangled with moving parts of plant or materials in motion.
- Crushing by falling or moving objects or plant tipping or rolling over onto a person.
- Crushing due to people being thrown off and under plant.
- Crushing due to parts of a person's body being trapped between plant and any material or structure.
- Cutting or piercing injury due to a person striking a sharp object or being struck by sharp or flying objects.
- Shearing of parts of a person's body between two machine parts or between a machine part and a structure or object.
- Friction burns due to a person coming in contact with high speed rotating parts of plant
- Injury due to a person coming in contact with high pressure fluid.
- Injury due to electricity shock or burn.
- Injury due to explosion.
- Injury due to slips, trips or falls.
- Injury due to poor ergonomic design of plant.
- Burns due to a person coming in to contact with high temperature object.

- Ill-health due to exposure to a by-product of plant such as fumes created from a combustion engine, for instance diesel exhaust fumes.
- Ill-health due to exposure to dust, vibration or noise created by plant.
- Ill-health due to exposure to extreme temperature conditions.

SPASA VICTORIA member workers should manage risks associated with plant and equipment by undertaking the following:

- Identifying any reasonably foreseeable hazards.
- Eliminating the risk as far as is reasonably practicable of any identified hazards.
- If it is not reasonably practicable to eliminate the risk, minimise the risk as far as is reasonably practicable by implementing control measures in accordance with the hierarchy of control
- Maintaining the control measure so that they remain effective, and
- Reviewing, and if necessary revising the risk control measures so as to maintain a working environment that is without risks to health and safety.
- To ensure all plant used complies with the requirements of the Occupational Health and Safety Regulations
- Plant should only be used for the purpose for which it was designed
- Safety features and warning devices on plant designed to protect operators and other workers should be used accordingly
- All information, training and instruction provided in relation to plant should be followed
- Guarding should be permanently fixed to plant and should only be removed for maintenance purposes or repairs and immediately re-installed on completion of works
- No person other than the operator may ride on the plant unless that person is provided with the same level of protection equivalent to that provided to the operator
- All plant should be regularly maintained, inspected and tested by a relevant competent person according to the manufacturer's requirements
- Plant should have a warning device that should warn persons who may be at risk from the movement of that particular plant
- All plant that lifts or suspends loads should be specifically designed to lift or suspend that load.

Working with Electricity and Powered Electrical Equipment

Working with electricity is hazardous and may lead to an electric shock, electrocution and other injuries that may be caused directly or indirectly by electricity.

The main hazards associated with these risks are:

- Contact with exposed live parts causing electric shock and burns (for example exposed leads or other electrical equipment coming into contact with metal surfaces such as metal flooring or roofs)
- Faults which could cause fires
- Fire or explosion where electricity could be the source of ignition in a potentially flammable or explosive atmosphere

The measures that should be undertaken by SPASA VICTORIA member workers to control electrical risks include the following:

- Ensuring only appropriately licensed or registered electricians carry out electrical work.
- Providing safe and suitable electrical equipment.
- Inspecting leads for damage before use and removing any that are damaged from the workplace.
- Providing enough socket outlets—overloading socket outlets by using adaptors can cause fires.
- Ensuring power circuits are protected by the appropriate rated fuse or circuit breaker to prevent overloading.
- Using battery powered tools instead of mains operated where possible.

- Preventing electrical leads from being damaged:
  - By not running leads across the ground and over sharp edges.
  - By using lead stands or insulated cable hangers to keep leads off the ground
  - By using cable protection ramps or covers to protect cables and cords, where applicable
- Using Residual Current Devices (RCDs) to protect workers using portable equipment
- Ensuring RCDs work effectively by regular testing.
- Using heavy duty rated flexible cords used on construction sites.
- Having and maintaining an in-service inspection and test regime for all portable electrical leads, tools and earth leakage devices.
- Undertaking preventative maintenance on electrical equipment as appropriate, with records of all repairs and faults related to all electrical equipment recorded in a testing and tagging register. Inspecting, testing and tagging every 3 months RCDs and portable equipment.
- Workers should conduct an RCD push button test after connection to a socket and before connection to equipment at least once a day.
- Workers should report any damaged electrical equipment and remove from service until it is repaired or replaced.
- New electrical equipment should be recorded in the Electrical Register and subjected to the in-service testing regime within the first 3 months of service.

Working at Height (above 2 meters)

All SPASA VICTORIA member workers working at height (above 2 meters) should manage the risks associated with falls from heights by adopting the Hierarchy of Controls and ensure where practicable, any work involving the risk of a fall is undertaken on the ground or on a solid construction (such as an elevated work platform).

The Hierarchy of Controls requires applying the highest order control and eliminate the hazard altogether where it is reasonably practicable.

Where this is not practicable, a fall prevention device such as secure fencing, edge protection, working platforms or scaffolding erected by suitably trained and competent person should be used.

Where this is not practicable to provide a work positioning system such as a travel restraint system or industrial rope access system shall be used that enables a person to be positioned and safely supported.

Where this is not practicable, a fall arrest system such as a safety harness system or catch platforms shall be used. Workers should be trained in emergency procedures for fall arrest systems.

Ladders should only be used for access or egress purposes and for light work complying with the ladder requirements detailed below.

Elevated Work Platforms (EWPs)

Elevating work platforms (EWPs) are available in a variety of types and sizes for most work situations. They are generally of the boom type, scissor lifts and vertical mast. The use of EWPs should be according to AS 2550.10 *Cranes-Safe Use-Elevating work platform.*

Operators working on a boom type and mast type EWP must wear a safety harness (refer to AS 2550.10 for detail). The harness must arrest the fall before the user strikes the ground.

For scissor lifts, wearing of safety harnesses is generally not required, but should be subject to a risk assessment.

For boom type EWPs where the boom length is 11 m or greater, the operator must hold a High Risk License (refer to Appendix 1: License to Perform High Risk Work).

Safe use of portable ladders

- Ladders should only be used for access and egress purposes.

- Only light work should be undertaken while on a ladder maintaining three (3) point of contact and tools safely operated with one hand.
- Ladders should be inspected prior to use to ensure they are in good condition. Removing out of service damaged ladders and suitably tagging.
- The ladder should be the correct height for the task undertaken to avoid over reaching or over stretching.
- The ladder should be set up on firm, stable and level ground, and not too close or too far from the support structure. The ladder should be set up so that the vertical to horizontal ratio is 4:1 and secured to avoid movement while a worker is using it.
- The ladder should be appropriate for the task to be undertaken by considering the duration of the task, the physical surroundings of where the task is to be undertaken and prevailing weather conditions.
- All the locking devices on the ladder should be secured.
- Anti-Slip shoes should be worn.
- Only one person should be on the ladder any one time.
- Ladders should be of an industrial grade with a load rating of a minimum 120 kg (preferably 150 kg).
- Metal or metal reinforced ladders shall not be used when working on live electrical installations.
- Arc welding or oxy cutting shall not be undertaken while on a ladder.
- Workers should not work over other workers to avert the possibility of an object falling to the person below.

Chemical Handling (Dangerous Goods and Hazardous Substances)

Identifying Chemical Hazards and Assessing Chemical Risks

The first step in managing risks associated with chemicals involves identifying all the chemicals that are used, handled, stored or generated in the workplace. The determination of how hazardous chemicals are, can done by using the Material Safety Data Sheets (MSDS) or Safety Data Sheet (SDS) accompanying the chemical. In some cases however, a chemical may not have a label or an MSDS/SDS, for example where fumes are generated in the workplace from an activity such as welding or brazing.

Chemicals may be Hazardous Substances or Dangerous Goods, some may be both of these categories. Hazardous substances may lead to a worker having an adverse effect on their health when coming in contact with the hazardous chemical. These substances includes poisons, substances that can cause burns or skin and eye irritation, and substances that may cause cancer. Many hazardous substances are also classified as dangerous goods.
Dangerous goods are substances or mixtures that due to their physical, chemical or acute toxicity properties, present an immediate hazard to people, property or the environment. This includes substances such as explosives, flammable liquids and gases, corrosives, chemically reactive or acutely (highly) toxic substances.

All chemicals brought onto a site should meet the following criteria:

- Be accompanied by a current (< 5 years) Australian format SDS from the manufacturer, importer or supplier of the chemical.
- Be stored in correctly labelled containers that are suitable for holding the chemical.
- Be listed in an up-to-date chemical register that is readily accessible to the workers using, handling or storing such hazardous chemicals and to anyone else who is likely to be affected by the hazardous chemical.

Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals must not be brought onto any site.

Controlling Chemical Risks

Hierarchy of Controls

Elimination

The most effective method of *risk* reduction is the elimination of *hazards* and *risks* at the source. This includes eliminating either the *dangerous goods* or the activity which gives rise to the *risk*. For instance using water based paints rather than solvent based.

Substitution

Substitution is the replacement of *dangerous goods* which present a high degree of *hazard* with *dangerous goods* or other substances of a lesser *hazard*, and hazardous activities by less *hazard*ous ones. For instance using dieseline for degreasing rather than kerosene or petrol.

Isolation

Isolation is the separation of one *hazard*, such as *dangerous goods*, from another *hazard* such as other *dangerous goods* being stored or *handled*, or from a *hazard*ous activity. Or it may be the separation of the *hazard* from people or from other facilities in need of protection from the *hazard*.

Engineering

Engineering controls include structures, *plant*, equipment and processes which are designed to reduce the *hazards* associated with the storage and *handling* of *dangerous goods*. For instance by providing adequate ventilation or including local exhaust ventilation to eliminate a flammable or harmful atmospheres.

Administrative Controls

Administrative controls are systems of work that would eliminate or reduce *risk*. They consist of properly designed and implemented safe work practices or safe work procedures or safe work instructions often used to support engineering controls.

Personal Protective Equipment

Personal protective clothing and equipment consists of devices and clothing that provides workers with some protection from *hazards*. It should always be the last line of defence when all else fails and *should* not be used as the sole control measure except in the instance where no other measures are practicable. Examples of this may include full-length overalls, chemically resistant gloves, dust masks, respirators or breathing apparatus, safety footwear or chemical-resistant boots, goggles or face shields, hard hats and hearing protection.

Compressed Gas

There are numerous potential physical and health hazards associated with compressed gases, including explosion, poisoning, impact by containers, fire, asphyxiation and exposure related illnesses. It is therefore important that workers handling compressed gases are adequately trained in the inherent hazards of the cylinders and their contents, as well as proper handling, storage, and use.

Safe practices when working with compressed gases

Following these basic general safe practices should help protect you from the hazards of compressed gases:

- Read the MSDS or SDS and labels.
- Store compressed gas cylinders in cool, dry, well-ventilated areas, away from incompatible materials and ignition sources. Ensure that the storage temperature does not exceed 52°C.
- Store, handle and use compressed gas cylinders securely fastened in place in the upright position. Never roll, drag, or drop cylinders or permit them to strike each other.
- Move cylinders in handcarts or other devices designed for moving cylinders.
- Leave the cylinder valve protection cap in place until the cylinder is secured and ready for use.
- Discharge compressed gases safely using devices, such as pressure regulators, approved for the particular gas.
- Never force connections or use homemade adaptors.
- Ensure that equipment is compatible with cylinder pressure and contents.
- Carefully check all cylinder-to-equipment connections before use and periodically during use, to be sure they are tight, clean, in good condition and not leaking.
- Carefully open all valves, slowly, pointed away from you and others, using the proper tools.
- Close all valves when cylinders are not in use.
- Never tamper with safety devices in cylinders, valves or equipment.
- Do not allow flames to contact cylinders and do not strike an electric arc on cylinders.
- Always use cylinders in cool well-ventilated areas.
- Handle "empty" cylinders safely by leaving a slight positive pressure in them, close cylinder valves, disassemble equipment properly, replace cylinder valve protection caps, mark cylinders "empty" or "MT," and store them separately from full cylinders.
- Wear the correct PPE for each of the jobs you undertake.

Confined Spaces

A confined space is determined by the hazards associated with a set of circumstances (restricted entry or exit, hazardous atmospheres or risk of engulfment) and not just by the fact that work is performed in a physically restrictive location.

Confined spaces present a risk due to the fact that they are normally not designed to be areas where people undertake work.

Confined spaces often have poor ventilation which allows hazardous atmospheres to quickly develop, especially if the space is small.

The hazards are not always obvious and may change in a relatively short period of time.

The risks of working in confined spaces include the following:

- Loss of consciousness, impairment, injury or death due to the immediate effects of airborne contaminants.
- Asphyxiation resulting from oxygen deficiency or immersion in material, such as water. Immersion in water is possible with certain ***balance tanks*** or otherwise known surge tanks.
- Fire or explosion from the ignition of flammable contaminants in the confined space such as explosive vapours.
- Small entrances and exits that would be difficult to rescue injured workers or to get equipment in or out of the confined space.

In the first instance consider whether the work can be done without entering the confined space (balance tank).

If entering a confined space cannot be avoided, then a safe system for working inside the space needs to be in place.

The identification of hazards associated with entering a confined space will help determine what controls are required to minimise any risk associated with work in the confined space.

Safe entry into a confined space will dependent upon the effective control of a set of circumstances present at the time immediately prior to entry of the confined space including the following:

- Atmospheric conditions (safe oxygen level and atmospheric conditions).
- Identification of the substances last contained in the confined space that may displace (due to biological processes) the oxygen in the confined space or release toxic substances.
- The possibility of engulfment from a liquid such as water.
- The soundness of the structure.
- The activities to be undertaken in the confined space, particularly if they may change the conditions (such as from welding or brazing or the use of solvents).
- The number of workers that are to occupy the confined space.
- Determine whether additional control measures need to be implemented, such as prohibiting hot work, smoking and naked flames, and using spark generating equipment or combustible engine in adjacent areas that may contaminate the breathing air.
- The possibility of fire and explosion (is the flammable gas or vapour likely to exceed lower explosive level (LEL).
- Mechanical
- Electrical hazards.
- Skin contact with hazardous substances and thereby absorption.
- Noise hazard.
- Manual handling hazard.
- UV radiation hazard.
- Environmental hazard.
- Hazards outside the confined space.
- Physiological or psychological hazards.

The following controls measures should be rigorously adhered to:

- Water valves are disengaged and removed altogether not allowing for a second person to switch on the valve that will re-introduce water in the balance tank.

- Suitable signage should be posted to avert unauthorised entry into the space by unauthorised person or for the cover to be replaced while a person is already in the confined space.
- There are arrangements for emergency rescue and first aid in place that can be followed in the event of an emergency.
- Only suitably trained and competent workers should enter a confined space and all the duties in relation to the confined space entry are fully known prior to entering the confined space.
- In the unlikely event that an activity (such as welding or brazing) has taken place that could affect atmospheric conditions, the atmospheric conditions must be measured immediately prior to entry to confirm it is safe to enter and an ongoing basis.

Hazardous Manual Tasks (manual handling)

Unsafe manual handling known as ***hazardous manual handling*** may cause a variety of injuries and conditions known as musculoskeletal disorders (MSD) including :

- Muscle sprains and strains
- Injuries to muscles, ligaments, intervertebral discs and the back
- Injuries to soft tissues such as nerves, ligaments and tendons in the wrists, arms, shoulders, neck or legs
- Abdominal hernias
- Chronic pain

Hazardous Manual handling involves any of the following:

- Repetitive or sustained application of force
- Repetitive or sustained awkward posture
- Repetitive or sustained movement
- Application of high force
- Exposure to sustained vibration
- Manual handling of loads that are unstable, unbalanced or difficult to hold

The first step in managing risks from carrying out manual tasks is to identify those tasks that have the potential to cause MSDs. Hazards that arise from manual tasks may be identified by assessing -:

- Work tasks and how they are performed by observing the following:
    - Postures assumed
    - Movements made
    - Forces applied
    - Duration and frequency of activity or task
- Tools, equipment used and objects handled
- Physical work environment
- Environmental factors

The risk can be controlled or reduced by undertaking the following:

- Changing the workplace/environment where possible or reasonably practicable
- Changing systems of work
- Using mechanical aids
- Providing workers information, training and instruction on correct manual handling techniques

Welding and hot work (brazing & cutting)

Heat or sparks may be generated by work involving welding, brazing and cutting activities and special precautions should be made particularly for any work undertaken in any hazardous area.

The following precautions should be closely adhered to prevent any fire, explosion, injury or any other dangerous situation developing during the performance of the hot work:

- Identify and control any fire hazards ensuring no flammable or combustible material is at least 15 metres from the hot work.
- Assess if there are any other hazards that may be of a concern.
- Account for the possibility of changing circumstance that may make the area unsafe for the hot work to continue.
- Ensure the area is well ventilate.
- Ensure firefighting equipment is immediately within the area and is operational.
- Barricade the area where the hot work should be performed to prevent unathorised person entering.
- Ensure there is a safe entry and exit from the hot work area.
- Test for the presence of any flammable gas and flammable vapour in piece of equipment, pipe, or vessel near or involved in the hot work. If detected ensure the explosion limit (LEL) concentration of any flammable gas or flammable vapour is below 5%.
- If all the above precautions are in place the Hot Work may commence.

Asbestos

Asbestos is a hazardous substance and known to present a serious risk to human health, however mere presence of asbestos does not necessarily present a risk to human health. It is exposure to respirable asbestos airborne fibres above the exposure standard that is hazardous with the risk increasing depending on the level of exposure and the duration of exposure. Provided the asbestos material is stable and undisturbed or damaged it should not present a hazard to human health.

SPASA VICTORIA member workers should liaise closely with the site or building owner to ensure appropriate controls have been implemented according to the hierarchy of controls, so that workers and contractors are not exposed to an unacceptable risk to asbestos. OHS law requires that the hierarchy of controls should be adopted in the following order:

- If reasonably practicable asbestos material should be removed altogether from the workplace.
- If it not reasonably practicable to remove asbestos material, the asbestos material must be properly enclosed.
- If asbestos material is enclosed and still presents a risk to health, then the asbestos material must be sealed.
- If sealing is not reasonably practicable then suitable PPE should be used.

The site or building owner has the following responsibilities in managing the risk to asbestos material:

- Identify all asbestos present and the actual location should be marked up.
- Determine whether the asbestos material is friable or non-friable.
- Determine the condition of the asbestos material and whether it is likely to be damaged or whether it should deteriorate further.
- Label asbestos containing material.
- To provide a current Asbestos Register (less than 5 years old) prepared by suitably competent person.
- To inform and provide a copy of the Asbestos Register to anyone that should work in the workplace containing the asbestos and is likely to be exposed to the risk of airborne asbestos material.
- To review the control measures if there are any changes to systems of work that are likely to disturb or damage asbestos material or for an incident involving asbestos material to occur.

High Temperature or Cold Conditions

SPASA VICTORIA member workers carrying out work in high temperature or cold conditions must be able to carry out work without a risk to their health and safety so far as is reasonably practicable.

It is important to distinguish between a condition that threatens health and safety, and a feeling of discomfort.

- Heat strain can result from working in high air temperatures, radiant heat or high levels of humidity.
- Hypothermia can result when a person gets an abnormally low body temperature as a result of exposure to cold environments. Both these conditions are potentially fatal.
- Both individual worker and environmental factors should be considered when assessing the risk to workers' health from working in a very hot or cold environment. Personal factors (include age, physical fitness, pre-existing medical conditions, using drugs or alcohol).
- The amount and type of clothing worn, and duration of exposure are also relevant factors to be considered.

In high ambient temperature, immediate assistance should be provided to a worker if they experience any of the following symptoms:

- Heat strain
- Dizziness
- Fatigue
- Headache

- Nausea
- Breathlessness,
- Clammy skin or
- Difficulty remaining alert

Immediate assistance should be provided to a worker if any of the following warning signs of hypothermia appear:

- Numbness in hands or fingers
- Uncontrolled shivering
- Loss of fine motor skills (particularly in hands – workers may have trouble with buttons, laces, zips)
- Slurred speech and difficulty thinking clearly
- Irrational behaviour

UV Radiation

Skin cancer is by far the most prevalent cancer in Australia and our incidence rates are the highest in the world.

Employers have an obligation to provide a healthy and safe work environment. This obligation includes providing adequate protection from the hazards that workers may

be subject to when working in an outdoor environment. UV is one of the main hazards.

Workers should be encouraged to maximise use of shade provided by trees, buildings and other structures. Where there is limited access to natural shade, fixed or portable shade structures should be provided where practicable. Since the provision of shade does not provide total protection from UV. It is therefore a requirement that outdoor workers should use personal protection strategies such as sunscreen and wear broad brimmed hats in addition to using shade.

UV from the sun also affects the eyes and therefore there is a need to wear eye protection in the form of sunglasses. Close fitting sunglasses complying with AS1067 should be used.

Sunscreen does not offer complete protection from the sun and should always be used in conjunction with other protection such as protective clothing. Broad spectrum and water-resistant sunscreen with a sun protection factor (SPF) of 30+ should be used by workers.

Lips also need to be protected by a lip balm containing SPF30+.

Noise Management

SPASA VICTORIA member organisations should draw up a list of likely noisy activities which may pose a risk to the health and safety of persons on a project. A noise assessment should then be undertaken to identify which workers are likely to be at risk of hearing loss, determine what noise sources or processes could be causing that risk, identify what kind of noise control measures could be implemented by considering the ***hierarchy of controls*** (elimination, substitution, engineering controls, isolation and administrative) to implement the highest order control(s) that can be reasonably practicably applied.

The use of PPE is the lowest level of control and should not be relied on. However, where hearing personal protective equipment is used the correct type should be selected depending on the noise level exposure as follows:

- Level 1 should be used for up to 90 dB (A)
- Level 2 for 90 – 95 dB(A)
- Level 3 for 95 – 100 dB (A)
- Level 4 for 100 – 105 dB (A) and
- Level 5 for 105-110 dB (A).

SPASA VICTORIA member organisations should manage noise exposure to ensure workers do not receive a noise energy level that may harm their hearing.

This safe noise level exposure time is halved as the noise energy level (measured in decibels on a weighted average dB (A) increases by 3 dB (A) according to the following:

- At 85 dB (A) a worker may be exposed to this energy level for up to 8 hours.
- At 88 dB (A) a worker may be exposed to this energy level for up to 4 hours.
- At 91 dB (A) a worker may be exposed to this energy level for up to for 2 hours.
- At 94 dB (A) a worker may be exposed to this energy level for up to 1 hour; and
- Above 140 dB (A) instant hearing loss should occur and no worker should ever be exposed to this for any length of time.
- For extended working days the acceptable exposure noise level is 82 dB (A) for 12 hours and 80 dB (A) for 16 hours.

Slips, Trips & Falls

Slips and trips result in thousands of injuries every year. The most common ones are musculoskeletal injuries, cuts, bruises, fractures and dislocations but more serious injuries can also occur.

Slips occur when a person's foot loses traction with the ground surface due to wearing inappropriate footwear or when walking on slippery floor surfaces such as those that are highly polished, wet or greasy.

Trips occur when a person unexpectedly catches their foot on an object or surface. In most cases people trip on low obstacles that are not easily noticed such as untidy tools or cables from electrical equipment.

Falls can result from a slip or trip but many also occur during falls from low heights such as steps, stairs and curbs, falling into a hole or a ditch or into a body of water.

Common slip hazards often occur from the following:

- Spills of liquid or solid material
- Wet areas
- A change from wet to dry surface
- Dusty and sandy surfaces
- The incline of a ramp
- Low light levels
- Use of unsuitable footwear.

Common trip hazards include:

- Potholes and cracks in ground surface
- Changes in floor level
- Cables from power extension units
- Loads that obstruct vision
- Obstacles in traffic areas

Housekeeping

An untidy workplace can cause injuries in particular, injuries resulting from slips and trips, therefore good housekeeping practices are essential for all workplaces.

- Spills on floors should be cleaned up immediately
- Walkways / walking paths should be kept clear of obstructions
- Work materials should be neatly stored and any waste should be regularly removed.

It is easier to keep the workplace clean and tidy if it is well laid out with sufficient space for storage and for the movement of people. Space close to workstations should be allocated to allow for the storage of tools and materials that are used frequently.

Tidiness throughout the working day is important and can be achieved by having suitable containers for waste that conveniently located in the work area and are regularly emptied.

Personal Protective Equipment (PPE) Safe Practices

- SPASA VICTORIA member organisations should consult with workers as to the choice of PPE since comfort level is important and should mean that workers are more likely to wear PPE.
- SPASA VICTORIA member organisations should liaise with suppliers and manufacturers to determine the most appropriate type of PPE for each hazard identified.
- Each item of PPE used should meet the requirements of the applicable Australian Standard.
- For chemicals refer to the Safety Data Sheets (SDS) or Material Safety Data Sheet (MSDS) for the PPE requirement for each particular chemical.
- When using respirators workers should be clean-shaven to get an effective seal against the contaminated air.
- Workers using clothing or equipment should be instructed in relation to the correct fitting, use, selection, testing, maintenance and storage of that particular clothing or equipment.
- The clothing or equipment should be maintained in good working order and it is the responsibility of each individual worker.
- PPE should be replaced when it no longer provides the level of protection required to protect the wearer or user against the particular hazard.

- PPE should be replaced when the safe working life has expired. Safe working life is specified by the clothing or equipment manufacturer.
- Multiple risks should be considered when selecting PPE. For example, using a drop saw to cut wood presents risks to the eyes (flying chips, dust), lungs (dust), hands, body, legs and head (cuts) and ears (noise).
- PPE should be stored in a clean and fully-operational condition. Storage arrangements should prevent damage, and the PPE is easily accessible when needed.
- PPE should be checked regularly, as specified by the manufacturer or supplier, to determine that it is in a serviceable condition, both during storage and in use.
- A system to ensure appropriate maintenance of PPE should be implemented.

PPE usage requirement

The following PPE should be worn depending on the work undertaken:

- Full length cotton pants and shirt (recommended for all construction work)
- Eye protection
    - Safety glasses for general work
    - A face shield when using a grinder
    - Welding glasses when welding or brazing
- Respirator when handling hazardous chemicals where this requirement is specified on the SDS or MSDS.
- Hearing protection (ear muffs / ear plugs in high noise hazardous areas)
- Leather and rubber work gloves
- Safety steel capped boots and rubber boots
- Wide brim hats when working outdoors
- Sunscreen (SPF 30+)
- Suitable high visibility clothing when working near mobile plant
- Other suitable clothing as required.

Construction induction training

SPASA VICTORIA members should ensure that anyone starting work on a construction site has completed construction induction training, previously known as red card training, before they can start work. This includes any apprentices and all workers who have not done any construction work in the past two years even if they had previously completed basic induction training.

A temporary exemption is permitted for a person to work for 28 consecutive days without construction induction training provided that the employer has arranged and paid for them to do construction induction training. They must also be directly

supervised at all times and be given the information and instruction they need to work safely.

Prior to 1 July 2008 the training was known ‘Construction Industry Basic Induction Training (red card) and as of 1 July 2008 onwards the card is known as (white card) issued by WorkSafe or equivalent body accompanied with a “statement of attainment” issued by a registered training organization (RTO).

Visitors to a construction site do not need a Construction Induction card provided they are accompanied at all times and are not there to do construction work. In cases where visitors are required or expected to move around the construction site in an unescorted capacity, then they must undergo construction induction training.

Appendix 1: License to Perform High Risk Work

A licence to perform high risk work is required if you work with high risk equipment or plant.

The licence is valid in every Australian state and territory, enabling you to operate high risk equipment under consistent standards everywhere in Australia.

There are 29 licence classes covered by the national standard set out below:

1. Basic scaffolding (SB)
2. Intermediate scaffolding (SI)
3. Advanced scaffolding (SA)
4. Basic rigging (RB)
5. Portal boom crane (CP)
6. Boom-type elevating work platform (WP)
7. Intermediate rigging (RI)
8. Bridge and gantry crane (CB)
9. Personnel and materials hoist (HP)
10. Advanced rigging (RA)
11. Vehicle loading crane (CV)
12. Vehicle-mounted concrete placing boom (PB)
13. Dogging (DG)
14. Non-slewing mobile crane (CN)
15. Slewing mobile crane up to 20T (C2)
16. Forklift truck (LF)
17. Order-picking forklift truck (LO)
18. Slewing mobile crane up to 60T (C6)
19. Materials hoist (HM)
20. Self-erecting tower crane (CS)
21. Slewing mobile crane up to 100T (C1)
22. Tower crane (CT)
23. Basic boiler operation (BB)
24. Slewing mobile crane over 100T (CO)
25. Derrick crane (CD)
26. Intermediate boiler operation (BI)
27. Reciprocating steam engine operation (ES)
28. Turbine operation (TO)
29. Advanced boiler operation (BA)