3. SAFE WORK PRACTICES

**This information does not take precedence over The Saskatchewan Employment Act and related regulations, or any other governing legislation. All worker should be familiar with the legislation applying to them in their workplace.*

Introduction

A safe work practice is a set of general guidelines (do's and don'ts) on performing a task or using equipment safely with a minimum of risk to people and property. Safe work practices are developed to eliminate or effectively control the hazards associated with certain types of work, and are intended to provide workers with guidance and direction in performing their work safely. Safe work practices are communicated initially to workers during orientation and on-the-job training, and are reviewed at regular safety meetings.

When preparing or revising safe work practices, it is important to ensure that they meet or exceed all applicable legislation and industry standards. Any worker who has an idea for a new safe work practice, or how to improve on an existing one, is encouraged to speak to management and/or bring the ideas to a safety meeting.

(Safe work practices under separate cover.)

Safe Work Practices

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Safe Work Practice

Company Vehicles

All employees who operate NexGen vehicles must hold a valid driver's license applicable to the type of vehicle being operated as a condition of employment.

Do

1. Check vehicle fluid levels, running gear and electrical components prior to use.
2. Operate at or below posted speed limits and at a speed that is appropriate for road conditions.
3. Back into your parking space at ALL times.
4. Walk around the vehicle prior to reversing.
5. Ensure that all loads are covered and properly secured.
6. Ensure that the vehicle is kept clean.
7. Treat the public in a courteous manner at all times.
8. Always wear your seat-belt when the unit is in motion.

Do Not

1. Use company vehicles for personal business at any time.
2. Operate a defective vehicle. Report any problems to a mechanic and have it repaired prior to use.
3. Offer rides to anyone other than [Company Name] employees.
4. Allow passengers to ride in the back of a pick-up or any unit that is not equipped with approved seats and restraining devices.

5. Leave the vehicle running and unattended.

Serious violations of the Highway Traffic Act, such as careless driving, may result in termination. Operators are responsible for any fines that are levied by a peace officer.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Safe Work Practice

Fall Protection

Working from Scaffolds

1. Scaffold platforms must be fully planked.

2. Guardrails consisting of a top rail, mid-rail and toeboard are required whenever the working platform is 2.4 metres (8 feet) or more above floor level.

3. Wheels and casters must be locked when personnel are working on the scaffold.

4. If the scaffold is more than 2.4 metres (8 feet) high, it must not be moved with personnel on it unless:
   a. they wear full body harness with lanyard and shock absorber tied off to an independent fixed support, and
   b. the floor is firm and level.

Working from Ladders

1. A worker must wear a full body harness with lanyard and shock absorber tied off to either an independent fixed support or a lifeline whenever the worker is:
   a. 3 metres (10 feet) or more above the floor, or
   b. above operating machinery, or
   c. above hazardous substances or objects.

Working from Swing Stages

1. A worker must wear a full body harness with lanyard and shock absorber tied off to:
   a. an independent lifeline, if the swing stage has only two independent suspension lines, or
   b. the swing stage, if it has four independent suspension lines (two at each end).

Working Beside Unprotected Openings and Edges

1. A worker must wear a full body harness with lanyard and shock absorber tied off to an independent fixed support whenever the worker is more than 3 metres (10 feet) above the next level or whenever the worker is above operating machinery, hazardous substances or objects regardless of the possible fall height.

Full Body Harnesses, Lanyards, and Shock Absorbers

1. All full body harnesses, lanyards, and shock absorbers must be CSA-certified. Look for the CSA label.

2. Full body harnesses must be snug-fitting and worn with all hardware and straps intact and properly fastened.

3. Lanyards must be 16 millimetre (5/8") diameter nylon or equivalent.

4. Lanyards must be equipped with a shock absorber.

Lifelines

1. All lifelines must be:

    - 16 millimetre (5/8") diameter polypropylene or equivalent;
    - used by only one worker at a time;
    - free from any danger of chafing;
    - free of cuts, abrasions and other defects;
    - long enough to reach the ground or knotted at the end to prevent the lanyard from running off the lifeline; and
    - secured to a solid object

Rope Grabbing Devices

1. To attach the lanyard of a full body harness to a lifeline, use a mechanical rope grab that has been CSA-certified. Look for the CSA label.

Safe Work Practice

Fall Protection – Equipment

Fall Arrest Protection – Definition

Consists of a lanyard or lifeline/lanyard set-up where the wearer is allowed some movement at an exposed edge to perform his/her work and if he should trip or loose his/her balance he could possible fall over the edge.

This fall protection system must be adjusted so as to limit the wearer's fall to within 1.5 metres from where he stands or sits and *only full body safety harnesses* should be allowed for his/her protection.

Equipment Standards and Set-Up

1. All safety belts, full body harnesses and lanyards must be C.S.A. certified and carry a C.S.A. label.

2. Safety harnesses and belts are to be snug-fitting and worn with all hardware and straps intact and properly fastened.

3. Lanyards are to be 5/8" diameter nylon or equivalent.

4. The D-rings on the safety belts should be centered on the person's back.

5. The lanyard or lifeline and lanyard combination must be secured to a rigid support capable of resisting the peak arrest forces of 1800 lbs minimum for fall arrest protection purposes and its length should be adjusted so that the wearer will be prevented from falling no greater that 1.5 meters from where he stands.

6. When the lifeline consists of wire rope, or the connecting lanyard consists of nylon webbing, a shock-absorbing lanyard shall be used.

Lifelines and their Set-Up

All lifelines shall be:

1. 16 millimeters (5/8") diameter polypropylene or equivalent.
2. used only by one worker at a time.
3. free of any cuts, abrasions, other defects and protected against chaffing.
4. long enough to reach the ground or be knotted at the end.
5. connected at right angles to the worker's position.
6. provided with a rope grab (cam lever) device for lanyard attachment.

WARNING!

No worker shall be exposed to heights greater than three metres when near an unguarded edge to a floor, roof, platform, opening or on a ladder without first providing travel restraint, fall arrest or guardrail protection.

Any person found doing so shall be subjected to disciplinary action.

Fall protection is also required if a worker may fall into operating machinery, into water or other liquids, into or onto hazardous substances or objects regardless of the minimum three metre ruling.

Safe Work Practice

Electrical Safety

Accidental contact with electrical components can have deadly consequences. Always refer to the manufacturer's recommended operating practices prior to using new electrical appliances, tools and equipment. Use the following guidelines to reduce the risk of personal injury.

1. All electrical tools and appliances will be double insulated or have a three prong plug-in.

2. Only qualified and authorized electricians are allowed to service and repair electrical appliances, tools and equipment.

3. Prior to operating electrical powered tools and equipment, ensure that you are working on a dry surface.

4. Tools with damaged cords, grounds and housing units are to be tagged "Out of Service" and sent for repair.

5. Missing or damaged ground plugs of any appliance, tool or piece of equipment are to be repaired prior to use.

6. Damaged extension cords shall be tagged "Out of Service", repaired or replaced as warranted.

7. Always stand to the side of a service box when resetting a breaker.

8. All electrical tools must be CSA approved.

9. Disconnect power tools from power source before making adjustments. Defective equipment needs to be tagged "Out of Service" and removed.

10. Tools with electrical arcing brushes should be removed when you feel any tingling during use.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Safe Work Practice

Ladders

The following are the major causes of ladder accidents:

1. Ladders are not held, tied-off or otherwise secured.
2. Slippery surfaces and unfavourable weather conditions cause workers to lose footing on rungs or steps.
3. Workers fail to grip ladders adequately when climbing up or down.
4. Workers take unsafe positions on ladders (such as leaning out too far).
5. Placement on poor footing or at improper angles cause ladders to slide.
6. Ladders are defective.
7. Ladders are toppled by high winds.
8. Ladders are carelessly handled or improperly positioned near electrical lines.

Preventing ladder accidents on the job site

1. Check ladder for defects before use.
2. Clear scrap and material away from the base and top of the ladder, since getting on or off the ladder is relatively hazardous.
3. Secure the base against accidental movement. Secure the top also.
4. Set the ladder on a firm, level surface. On soft, non-compacted, or rough soil, use a mudsill.
5. Single-width job-built ladders are only meant for one worker at a time. A double-width ladder can be used by two workers, providing they are on opposite sides.

6. Make sure that rails on ladders extend at least 3 feet above the landing. This allows for secure grip while stepping on or off.

7. Set straight or extension ladders one foot out for every 3 or 4 feet up, depending on length of ladder.

8. Before setting up ladders, always check for overhead power lines.

9. Do not position ladders against flexible or moveable surfaces.

10. Always face the ladder when climbing up or down and while working from it.

11. Maintain 3-point contact when climbing up or down. That means two hands and one foot or two feet and one hand on the ladder at all times.

12. Keep your centre of gravity between the side rails. Your belt buckle should never be outside the side rails.

13. When climbing up or down, do not carry tools or material in your hands. Use a hoist rope instead.

14. Keep boots clean of mud, grease or any slippery materials which could cause loss of footing.

15. When working 3 metres (10 feet) or more above the ground or floor, wear a safety belt or safety harness with the lanyard tied off to the structure.

16. Never straddle the space between a ladder and another object.

17. Never erect ladders on boxes, carts, tables, or other unstable surfaces.

18. Use fall-arrest equipment such as ladder-climbing devices or lifelines when working from long ladders or when climbing vertical fixed ladders.

19. Never use ladders horizontally as scaffold planks, runways, or any other service for which they have not been designed.

20. Stand no higher than the third or fourth rung from the top. Maintain knee contact for balance.

21. Do not splice short ladders together to make a long ladder – the side rails will not be strong enough for the extra loads.

22. Do not use ladders for bracing – they are not designed for this type of loading.

23. Do not set up ladders in doorways, passageways, driveways, or any other location where they can be struck or knocked over.

24. Never rest a ladder on its rungs. Ladders must rest on their side rails.

25. To erect long, awkward, or heavy ladders, get help to avoid injury from overexertion.

26. Before erecting, using, or working from ladders, always check for electrical hazards. Never use aluminum ladders near live electrical equipment or wires.

Inspection and Maintenance

Defective ladders should be taken out of service and either tagged for repair or scrapped. Personnel that are competent in this type of work should repair ladders.

1. Inspect ladders for structural rigidity.

2. Inspect non-skid feet for wear, imbedded material and proper pivot action on swivel feet.

3. Replace frayed or worn ropes on extension ladders with type and size equal to manufacturer's original rope.

4. Check aluminum ladder for dents and bends in side rails, steps and rungs. Do not use metal pipe to replace a rung.

5. Check wooden ladders for cracks, splits and rot.

6. Check all ladders for grease, oil, caulking, imbedded stone and metal or other materials that could make them unsafe.

Safe Work Practice

Lifting Practices (Hoisting)

Evaluating the Load

Determine the weight of the object or load prior to a lift to ensure the lifting equipment operates within its capabilities.

Balance Loads

Estimate the center of gravity or point of balance. The lifting device should be positioned immediately above the determined center of gravity.

Landing the Load

Prepare a place to land the load. Lower the load gently and make sure it is stable before slackening the sling or chain.

1. Select only appropriate slings for the task and NEVER exceed the working load limits.
2. Make sure the hoist or crane is directly over the load.
3. Use slings of proper reach. Never shorten a line by twisting or knotting.
4. With chain slings, never use bolts or nuts.
5. Never permit anyone to ride the lifting hook or the load.
6. Make sure all personnel stand clear from the load being lifted.
7. Never work under a suspended load, unless the load is properly supported.
8. Never leave a load suspended when the hoist or crane is unattended.
9. Inspect all slings thoroughly at specified intervals and maintain them in good condition.
10. Inspect each chain or sling for cuts, nicks, bent links, bent hooks, etc., before each use. If in doubt, don't use it.

11. Ensure that safety latches on hooks are in good working condition.

12. Ensure that the signaller is properly identified and understands techniques of proper signaling.

13. Make sure a tagline is used to control the load.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Elevating Work Platforms

1. In accordance with the current *Regulations for Construction Projects*, a worker who operates an elevating work platform shall, before using it for the first time, be given oral and written instruction on the operation of the elevating device. An elevating work platform shall only be operated by a worker who has been instructed in:

    - operating the machine;
    - the daily inspections and maintenance required by the manufacturer;
    - the types of working surface on which the machine is designed to be used;
    - the maximum rated working load;
    - special conditions or limitations of the machine;
    - the significance of alarms; and
    - the location of emergency controls

2. An elevating work platform which is not working properly or which has sustained damage to critical components must not be used until repaired by a qualified mechanic.

3. In the raised position, an elevating work platform shall only be used on surfaces specified by the manufacturer.

4. An elevating work platform must not be driven in a raised position close to holes, depressions, trenches or similar hazards.

5. An elevating work platform must not bear more than its rated working load and, where possible, the loads shall be distributed over the platform.

6. When elevating work platforms are used to lift materials, care must be taken to ensure that the materials are firmly secured to the platform.

7. Do not place makeshift platforms, such as boxes, or proper access equipment, such as ladders and scaffolds, on an elevating work platform to gain access to areas above.

8. Overhanging loads must not be lifted on an elevating work platform.

9. An elevating work platform or any other part of an EWP device must not be moved closer than 3 metres (10 feet) to overhead power lines, unless the device is equipped for live electrical line work and the workers on the platform are qualified for such work.

10. An elevating work platform must not be used for pulling, pushing or dragging materials.

11. The platform of an elevating work platform must not be extended by using cantilevered planks or similar platform materials. Only manufacturers' platform extension devices shall be used.

12. Planks or similar platform materials must not be used to bridge a gap between an elevating work platform and other work areas.

13. Workers must always maintain 3-point contact (one hand and two feet or two hands and one foot) when getting on or off the platform of an elevating work platform.

14. For all types of off-slab devices, the terrain on which the device is placed or over which it will travel must be firm enough to support the device and its rated working load.

15. An elevating work platform must not be used under high wind conditions. This is especially important for smaller scissor lifts and boom-type devices.

16. When the elevating work platform is not being used, turn off the power system to prevent exhaust fumes from accumulating in an enclosed work area.

17. Elevating work platforms used on ramps or on sloping or uneven surfaces must be designed for such use and properly secured against horizontal and vertical movement.

Safe Work Practice

Forklifts

Properly operated forklifts make material handling effortless. However, when the forklift or operator limitations are exceeded they can be very dangerous.

Adhering to the following general operating rules can greatly reduce the risk of personal injury and property damage:

1. Operate only if you have been trained.
2. Know the manufacturer's manual. Never exceed manufacturer's load rating.
3. Inspect all components prior to use.
4. Keep forks and speed low at all times.
5. When parked, always place forks flat on the ground.
6. Drive in reverse when moving bulky items to avoid blind spots.
7. Ensure forks are fully seated and square when lifting pallets.
8. Do not move damaged or improperly loaded pallets.
9. Do not carry passengers.
10. Never leave a machine unattended with an elevated load.
11. The use of a seat belt is recommended.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Safe Work Practice

Housekeeping

1. Good housekeeping must be practiced at all times. Tripping hazards and slippery conditions must be eliminated. Aisles and access ways must be kept clear of any obstruction, and be well-lit and properly ventilated.

2. Scraps must be removed to disposal bin or designated disposal area.

3. Nails or sharp objects protruding from lumber or boards must be removed.

4. Daily job site cleanup is required and individual cleanup duties must be assigned to all workers.

5. All materials must be segregated as to size, kind and length and placed in neat, safe and orderly piles. This will ensure clear passageways in storerooms, warehouses and on job/project sites creating a safe workplace for all employees.

6. Materials must be properly stored, stacked or piled away from power lines and to prevent tipping/spilling.

7. Bagged or sacked material should be stacked or piled no more than ten high and should be cross piled on skids so that in all cases, no one can be injured because the material falls, rolls, overturns or breaks.

8. Barrels may be stacked upright with platforms/planks between layers and should not be stacked any higher than the mechanical equipment can safely reach.

9. Skids of brick blocks or other such material should be stockpiled in such a manner as to prevent tipping or collapsing.

10. Employees are not allowed to climb up, on or about around any such stacked equipment, machinery, supplies, parts, products, etc.

11. Stockpiles should be blocked and interlocked ensuring that they are not too high or obstruct any fire access, extinguishing or fire safety equipment (e.g. fire doors).

12. Proper tools, such as cutters or snips, must be used to break metal bands

and extreme caution should be taken when removing such objects.

13. Protruding nails in boards, planks, etc., must have the nails removed or bent over, and the boards placed in an orderly fashion. When handling such material, the workers should wear heavy gloves and safety footwear as prescribed.

14. Signs must be posted to warn workers of hazardous areas.

Safe Work Practice

Housekeeping

A clean workplace is a safer workplace. All employees, contractors and subcontractors are required to:

1. Keep the work area clean, free of oil, grease, mud, unnecessary tools/equipment, scrap metal and other materials.
2. Clean-up spills promptly with proper absorbing materials and agents.
3. Place all garbage and waste materials in appropriate containers.
4. Store all oily rags in appropriate fire-approved steel containers.
5. Keep exterior walkways and stairways free of snow, ice and obstacles.
6. Keep interior hallways, stairwells and other traffic areas clear.
7. Watch for hazards such as nails, pieces of scrap metal, grease and oil.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Safe Work Practice

Fire and Fire Extinguishers

Good housekeeping is essential in the prevention of fires. Fires can start anywhere and at any time. This is why it is important to know the type of fire extinguisher to use and how to use it.

Always keep fire extinguishers visible with easy access. Fire extinguishers have to be properly maintained. Where temperature is a factor, ensure that care is taken in selecting the right extinguisher.

Workers must receive training before using fire extinguishing equipment.

Types of Fires

1. Class A: Wood, paper, rags, rubbish and other ordinary combustible materials.
    - Recommended Extinguishers: Water from a hose, pump type water can, pressurized extinguisher, or soda acid.
    - Fighting the Fire: Soak the fire completely – even the smoking embers.
2. Class B: Flammable liquids, oil and grease.
    - Recommended Extinguishers: ABC units, dry chemical, foam and carbon dioxide.
    - Fighting the Fire: Start at the base of the fire and use a swinging motion from side to side, always keeping the fire in front of you.
3. Class C: Electrical equipment.
    - Recommended extinguishers: Carbon dioxide and dry chemical (ABC units).
    - Fighting the Fire: Use short bursts on the fire. When the electrical current is shut off on a Class C fire, it can become a Class A fire if materials around the electrical fire are ignited.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Safe Job Procedure

Tagging and Lockout

1. Review drawings of the system to be de-energized and de-activated to determine the switches, power sources, controls, interlocks, or other such devices necessary to isolate the system. Confirm with the client/owner where required.

2. All apparatus capable of being electrically energized or dynamically activated must be de-energized or de-activated by locking out, physically disconnecting or otherwise rendering the apparatus inoperable.

3. Test the system with a CSA-certified potential test indicator to ensure that all components are de-energized and de-activated, including interlocking or dependent systems which could feed into the system being isolated, either mechanically or electrically. Potential test indicators should not be used beyond the voltage limits for which they are rated.

4. Observe the following safeguards for locking out and tagging:

   a) After the circuit has been de-energized, locked out by the person in charge, workers must be protected by personally placing their own safety lock on the disconnect switch. The worker must retain the key for this lock while lock is in place.

   b) Where several workers or trades are working on the circuit, provision for additional locks must be made through the use of a lockout bar. This arrangement can accommodate any number of locks by placing another lockout bar in the last hole of the previous bar.

   c) In accordance with Section 190(6)3. of the current *Regulations for Construction Projects* (O.Reg. 213/91), each worker must attach to their lock a durable tag filled out with the following information:

      - Reason why the equipment was disconnected;
      - Name of person responsible for the disconnection and his/her employer; and
      - Date on which the equipment was disconnected.

   d) The de-energized electrical system must be discharged by short circuit and phase to ground. A temporary ground cable must be attached to the system and remain in place until work is completed.

5. A record must be kept of the devices opened, locked out or otherwise rendered inoperable so that all of these devices can be reactivated once work is complete.

6. Place signs on the system indicating that it is not to be energized or operated and that guards, locks, temporary ground cables, chains, tags, and other safeguards are not to be tampered with or removed until work is complete.

7. Workers testing electrical equipment must:

   - Remove all watches, rings, neck chains or other current-conducting jewelry;
   - Wear electric shock resistant footwear; and
   - Wear safety glasses with side shields.

Note: In-plant procedures specified by the owner or client take precedence over the procedures outlined here, providing there is no contravention of existing codes or statutes.

Safe Work Practice

Welding, Cutting and Burning

Work involving welding, cutting and burning can create fires and breathing hazards for workers on any job. The following should be considered prior to the start of work.

1. Always ensure that adequate ventilation is supplied since hazardous fumes can be created during welding, cutting or burning.

2. Where other workers may also be exposed to the hazards created by welding, cutting and burning, they must be alerted to these hazards and protected by the use of "screens".

3. Never start work without proper authorization.

4. Always have fire fighting equipment on hand before starting.

5. Check the work area for combustible material and possible flammable vapours.

6. A welder should never work alone. A fire or sparks watch should be maintained.

7. Protect cables and hoses from slag or sparks.

8. Never weld or cut lines, drums, tanks, etc. that have been in service without making sure that all have been purged or other necessary precautions are in place.

9. Never enter, weld or cut in a confined space without proper air quality testing and a qualified safety lookout in place.

10. When working overhead, use fire resistant materials (blankets, tarps) to control or contain slag and sparks.

11. Cutting and welding must not be performed where sparks and cutting slag will fall on cylinders. Move all cylinders away to one side.

12. Open all cylinder valves slowly. The wrench used for opening the cylinder valves should remain on the valve spindle.

Safe Work Practice

Rigging

Rigging looks like an easy operation that requires no particular skill or experience. However, many workers have lost fingers, hands or suffered more serious injuries because they thought, "anybody can do that".

Here are some dos and don'ts to remember:

1. Workers will ensure that the maximum load rating of rigging components as recommended by the manufacturer are not exceeded.
2. All rigging, hooks and components will be checked for excessive wear and damage prior to use.
3. One member of the crew will act as the designated signalperson and will wear the appropriate distinctive vest, armlets, etc.
4. The signalperson will review the signals to be used with the crane operator.
5. The signalperson is the only one to signal for a lift and must be careful not to order a move until he has received the "all ready" signal from each member of the crew.
6. Be sure you are in the clear before you give an "all ready" to the signalperson.
7. Be sure your hand is clear of pinch points.
8. Watch out for the roll or swing of the load. Anticipate the direction of the swing or roll and work away from it.
9. Never place yourself between material, equipment or any stationary object and the load swing.
10. Stay away from stacked material that may be knocked over by a swinging load.
11. Never stand under the load, and keep from under the boom as much as possible.

12. Look over the location where the load is to be set. Remove unnecessary blocks or other objects that might fly up if struck by the load.

13. When lowering or setting the load, be sure your feet and all other parts of your body are out from under the load.

14. Set the load down easily and slowly so that if it rolls on the blocking, it will be a slow shift that you can get away from.

15. Use tag lines to control the loads.

16. Damaged rigging must be clearly tagged "Out of Service", removed from the work area and either repaired or replaced.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Safe Work Practice

Mobile Equipment

Field workers must always be aware of mobile equipment operating in the area. Use the following guidelines to reduce the risk of personal injury.

Do

1. Wear a florescent traffic vest at all times.
2. Ensure that the operator sees you.

Do Not

1. Walk beside, in front, or behind mobile equipment that is operating.
2. Position yourself between the swing radius of articulating machinery and other stationary objects.
3. Assume an operator can always see you.
4. Use the bucket as work platform or as a means of personnel transport.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Safe Work Practices – Hearing Protection

Hearing Loss

- Hearing loss – any reduction in the normal ability to hear is referred to as a loss of hearing. A hearing loss can be either temporary or permanent.
- With a temporary hearing loss, normal hearing will usually return after a rest period away from all sources of intense or loud noise. The recovery period may be minutes, hours, a day or perhaps even longer. Temporary hearing loss occurs when hair cells in the inner ear have been bent by vibrations and need time to bounce back.
- Permanent hearing loss is the result of hair cell or nerve destruction within the inner ear. Once these important parts of the hearing process are destroyed, they can never be restored or regenerated. The resulting permanent hearing loss, also referred to as permanent threshold shift (PTS), can range from slight impairment to nearly total deafness.

Hearing Loss Factors

Type of noise	Continuous, intermittent, impact, high or low frequency.
Intensity of noise	Level of loudness.
Duration of exposure	Length of time worker subjected to noise – for example, during day, on specific shifts.
Employment duration	Years worker subjected to noise.
Type of noise environment	Character of surroundings – for example, enclosed, open, reflective surfaces.
Source distance(s)	Distance of worker from noise source.
Worker's position	Position of worker relative to noise source.
Worker's age	For instance, a 20-year-old apprentice versus a 50-year-old journeyperson.
Individual susceptibility	Sensitivity difference, physical impairments.
Worker's present health	Whether a worker has any detectable losses or ear diseases.

Home and leisure activities	Exposures to noise other than occupational, such as hunting, skeet shooting, earphone music, snowmobiling, etc.

Training

All workers who wear Hearing Protection Devices (HPDs) must be trained to fit, use, and maintain the protectors properly. Workers must be instructed in the proper fitting of HPDs as recommended by the manufacturer. Training should include a demonstration. Workers should then practice using the HPDs under close supervision. Checks are needed to ensure the best possible protection.

Workers should understand the following:

- that there is risk of hearing loss increases if HPDs are not worn in noisy environments (eight-hour exposure of 85 dBA).
- that wearing HPDs is required in all situations where noise exposure may damage hearing.
- that to be effective an HPD must not be removed even for short periods.
- that various HPDs are available to accommodate differences in ear canal size, jaw size, head size and shape, comfort level, compatibility with other forms of PPE, etc.
- that proper fit is essential to achieve maximum protection.

Choosing the Correct Hearing Protection

CSA Standard Z94.2, Hearing Protectors, identifies classes of hearing protectors as A, B, and C. Class A protectors offer the highest ability to attenuate, followed by B and C.

Use Table 1 to identify proper hearing protectors based on noise.

Recommended Class of Hearing Protector

Table 1

MAXIMUM NOISE LEVEL (dBA)	RECOMMENDED CLASS OF HEARING PROTECTOR
Less than 85 dbA	No protection required
Up to 89 dBA	Class C
Up to 95 dBA	Class B
Up to 105 dBA	Class A
Up to 110 dBA	Class A plug + Class A or Class B muff
More than 110 dBA	Class A plug + Class A or Class B muff and limited exposure

Use Table 2 to compare typical construction noise levels with the work you are performing. Note: If more than one activity is being performed near the same location the noise levels will increase. Chose your protection based on the highest noise levels.

Typical Noise Level Measurements for Construction

Table 2

* EQUIPMENT	NOISE LEVEL (DBA) AT OPERATOR'S POSITION
Cranes	78 – 103
Backhoes	85 – 104
Loaders	77 – 106
Dozers	86 – 106
Scrapers	97 – 112
Trenchers	95 – 99
+ Pile drivers	119 – 125
Compactors	90 – 112
+ Explosive-actuated tools	120 – 140
Grinders	106 – 110
Chainsaws	100 – 115
Concrete saw	97 – 103
Sand blasting nozzle	111 – 117
Jackhammers	100 – 115
Compressors	85 – 104

* Generally, newer equipment is quieter than older equipment. (For noise levels of specific equipment, contact the Construction Safety Association of Ontario.)
+ Pile drivers and explosive-actuated tools generate intermittent or "impulse" sound.

Safe Work Practices – Dust

What are the hazards?

There are two kinds of hazardous dust common in construction. These include:

- fibrous dust from insulation materials (such as asbestos, mineral wool, and glass fibre) and
- non-fibrous silica dust from sandblasting, concrete cutting, or rock drilling

Where does construction dust come from?

Dusts are particles which are usually many times larger than fume particles. Dusts are generated by crushing, grinding, sanding, or cutting and by work such as demolition.

Preventative Measures

Ventilation:

- Natural dilution ventilation — Welding outside in a light breeze or inside with doors and windows open provides large volumes of fresh air which should disperse airborne contaminants sufficiently in most cases. However, it is important for the welder to stay to one side of the plume.
- Mechanical dilution ventilation – Fans such as roof exhaust fans and wall fans force outside air into and out of the building. General mechanical ventilation in most cases will deflect the plume out of the welder's breathing zone.
- Local exhaust ventilation – Consists of an exhaust fan, air cleaner, and ducted system dedicated to removing airborne contaminants at the source and exhausting them outdoors. Local exhaust ventilation is preferred over dilution ventilation because it is better able to prevent airborne contaminants from entering the welder's breathing zone.

Respiratory Protection:

- See the Respirator Selection Guide in CSAO's *Construction Health and Safety Manual* (M029) for activities that create dust.
- If you are in doubt about choosing the correct Respiratory protection or if you are not sure to the source of the dust stop work and advise your supervisor.

Safe Work Practice

Compressed Air

Air powered tools in construction range from stapling guns to jack hammers. If not treated with respect, these tools can become a detriment rather than a benefit.

1. Compressed air must not be used to blow debris or to clear dirt from any worker's clothes.

2. Ensure that the air pressure has been turned off and the line pressure relieved before disconnecting the hose or changing tools.

3. All hose connectors must be of the quick disconnect pressure release type with a "safety chain/cable".

4. Wear personal protective equipment such as eye protection and face shields. Restrict access to the area or ensure other workers in the area are aware of hazards.

5. Hoses must be checked on a regular basis for cuts, bulges, or other damage. Ensure that defective hoses are repaired or replaced.

6. A proper pressure regulator and relief device must be in the system to ensure that correct pressures are maintained.

7. The proper air supply hoses must be used for the tool/equipment being used.

8. The equipment must be properly maintained according to the manufacturer's requirements.

For further information, see the appropriate current Occupational Health & Safety Legislation.

Safe Work Practice

Extension Cords

Extension cords can cause serious accidents if the following practices are not followed.

1. All electrical extension cords must be designed for external use and CSA approved.
2. All extension cords will be inspected before use.
3. Extension cords are to be protected against damage.
4. All extension cords are to be placed in such away that they will not be a tripping or falling hazard.
5. All extension cords used in hazardous areas or in damp locations are to be protected by approved ground fault protection.
6. All frayed, cut or spliced extension cords are to be tagged and removed from service.

Safe Work Practice

Power Tools

1. Read the manual carefully to learn your power tool's applications, limitations and any potential hazards.
2. Ground your tool unless it is double insulated.
3. Do not use power tool in rain, damp or wet locations or in the presence of explosive atmospheres (gaseous fumes, dust or flammable materials).
4. Remove materials or debris that may be ignited by sparks.
5. Keep work area clean and well lit.
6. Do not wear loose clothing or jewelry.
7. Wear a protective hair covering to contain long hair, which may be caught in moving parts.
8. Wear rubber gloves and insulated non-skid footwear outdoors.
9. Keep hands and gloves away from moving parts.
10. Wear safety goggles or glasses with side shields that comply with current safety standards.
11. Hearing protection is a must during extended use of a power tool.
12. Wear a dust mask for dusty operations.
13. Wear other personal protective equipment as required.
14. Keep a fire extinguisher nearby.
15. All bystanders must be kept at a safe distance from the work area to protect themselves and the operator.
16. Provide barriers or shields as necessary to protect others in the work area from sparks and debris.

17. Secure work with a clamp, vise or other practical means of holding work secure. Use both hands to control tool.

18. Do not use a tool or attachment to do a job for which it is not recommended. Do not alter a tool.

19. Non-recommended accessories may be hazardous and shall not be used. Install and maintain accessories as per tool instructions.

20. Do not defeat a guard or other safety device when installing an accessory or attachment.

21. Inspect guards and other parts before use. Check for misalignment, binding of moving parts, improper mounting, broken parts and any other condition that my affect operation.

22. If abnormal noise or vibration occurs the tool must be turned off immediately and the problem corrected before further use of the tool.

23. Check that all adjusting keys and wrenches are removed from the tool before the power is turned on.

24. Prevent body contact with grounded surfaces, such as pipes, radiators, ranges and refrigerators.

25. When making blind or plunge cuts, always check the work area for hidden wires or pipes.

26. Hold your tool by insulated non-metal grasping surfaces.

27. Use a Ground Fault Circuit Interceptor (GFCI) to reduce shock hazards.

28. Do not force a tool to perform at a rate other than for what it was designed. Excessive force causes operator fatigue, increased wear and reduced control.

29. Keep hands away from all cutting edges and moving parts.

30. Never carry tool by its cord or unplug it by yanking cord from the outlet. Pull plug rather than cord to reduce the risk of damage.

31. Keep the cord away from heat, oil, sharp objects, cutting edges and moving parts.

32. Do not overreach. Maintain proper footing and balance at all times. Use extra care when using tool on ladders, roofs, scaffolds, etc.

Safe Work Practice

Grinding

Severe injury may occur if proper personal protective equipment is not used and maintained.

1. Check the tool rest for the correct distance from the abrasive wheel, maximum 1/8" or 3 mm.

2. Replace the grindstone when adjustment of the rest cannot provide 1/8" or 3 mm clearance.

3. If the wheel has been abused and ground to an angle or grooved, reface the wheel with the appropriate surfacing tool or replace the wheel.

4. Protect your eyes with goggles **and** a face shield at all times when grinding.

5. Each time a grinding wheel is replaced, check the maximum approved speed (stamped on the wheel bladder) against the shaft rotation speed of the machine to ensure the safe speed is not exceeded.

6. A grinding wheel must not be operated at speeds exceeding the manufacturer's recommendation.

7. The flanges supporting the grinding wheel should be a maximum of 1/3 the diameter of the wheel, and must fit the shaft rotating speed according to the manufacturer's recommendation.

8. Bench grinders are designed for peripheral grinding. Do not grind on the side of the wheel.

9. Do not stand directly in front of the grinding wheel when it is first started.

10. Wear CSA-approved hearing protection.

For further information, see the appropriate current Occupational Health & Safety Legislation.

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