

# Protect Your Ears During Equipment Start-Up



Equipment start-up periods present a significant yet often underestimated risk of noise exposure. When heavy machinery is recommissioned after downtime, multiple trades converge, and equipment runs simultaneously, noise levels can spike quickly. For occupational health and safety (OHS) managers, preventing noise-induced hearing loss (NIHL) requires a structured approach that combines hazard identification, engineering controls, administrative strategies, and appropriate personal protective equipment (PPE).

## Why Equipment Start-Up Increases Noise Risk

Equipment start-up periods, whether at the beginning of a new project or after seasonal shutdown, often involve:

- Simultaneous testing of multiple machines.
- Revving engines and system diagnostics.
- Idling equipment for extended periods.
- Increased worker presence in confined or partially enclosed spaces.

In Canada, construction noise regularly exceeds 85 dBA, the exposure threshold identified in many provincial regulations (e.g., WorkSafeBC, Ontario Regulation 381/15, Alberta OHS Code). During start-up, peak levels from generators,

compressors, concrete saws, pile drivers, and heavy equipment can easily exceed 100 dBA.

Without proper controls, even short-term high-level exposures can contribute to permanent hearing damage.

## **Where and When Noise Hazards Occur**

Noise risks during equipment start-up typically arise:

- At the beginning of a shift when machinery is warmed up.
- During commissioning of new or serviced equipment.
- In enclosed environments such as parkades, tunnels, mechanical rooms, or partially constructed buildings.
- On multi-employer worksites where several contractors operate equipment simultaneously.

Enclosed or reflective surfaces can amplify noise levels, increasing overall exposure. OHS managers should be particularly vigilant when start-up activities occur indoors or in areas with limited ventilation.

## **How to Spot Excessive Noise Hazards**

Noise hazards are not always obvious. Warning signs include:

- Workers needing to shout to communicate at arm's length.
- Ringing in the ears (tinnitus) after a shift.
- Equipment modifications that increase engine output.
- Poorly maintained machinery producing rattling or high-pitched sounds.

However, subjective observations are not enough. Canadian OHS regulations often require formal noise assessments when overexposure is suspected. Using calibrated sound level meters

or dosimeters provides objective data to determine if exposures exceed provincial limits.

OHS managers should review historical noise monitoring results and conduct reassessments whenever new equipment is introduced or processes change.

## The Hierarchy of Controls for Noise Prevention

Effective noise management follows the hierarchy of controls.

### 1. Elimination and Substitution

While eliminating heavy equipment noise entirely is rarely feasible in construction, substitution may be possible. For example:

- Using hydraulic rather than pneumatic tools.
- Selecting lower-noise models of generators or compressors.
- Prefabricating components off-site to reduce on-site cutting or drilling.

Procurement policies that prioritize quieter equipment can significantly reduce long-term exposure.

### 2. Engineering Controls

Engineering controls are particularly important during start-up phases. Strategies include:

- Installing mufflers or silencers on exhaust systems.
- Using acoustic barriers or sound blankets.
- Enclosing generators or compressors.
- Isolating noisy equipment away from high-traffic areas.

Ensuring equipment is properly maintained is critical. Worn bearings, loose components, or damaged mufflers can

dramatically increase noise output.

### 3. Administrative Controls

Administrative controls help limit exposure duration and worker proximity to noise sources. Examples include:

- Scheduling high-noise start-up tasks when fewer workers are present.
- Rotating workers to limit individual exposure time.
- Establishing designated exclusion zones around high-noise equipment.
- Posting signage indicating hearing protection zones.
- Toolbox talks should address the specific noise hazards associated with equipment start-up and reinforce expectations around PPE use.

## Personal Protective Equipment for Noise Exposure

When noise levels cannot be adequately reduced through engineering or administrative measures, hearing protection becomes mandatory.

### Types of Hearing Protection

Common PPE used on Canadian construction sites includes:

- Foam earplugs (disposable or reusable)
- Earmuffs
- Canal caps
- Dual protection (earplugs and earmuffs) for very high noise levels.

Selection should be based on the Noise Reduction Rating (NRR), the specific decibel levels measured, and compatibility with other PPE such as hard hats and face shields.

## **Ensuring Proper Fit and Use**

Improperly inserted earplugs significantly reduce protection. OHS managers should:

- Provide training on correct insertion and fit.
- Conduct fit testing where required.
- Replace damaged or worn earmuff cushions.
- Ensure PPE is readily accessible at entry points to high-noise zones.

Workers must understand that hearing protection only works when worn consistently. Intermittent removal during peak noise periods undermines its effectiveness.

## **Hearing Conservation Programs**

Many provinces require employers to implement a formal hearing conservation program when workers are exposed above regulated thresholds. These programs typically include:

- Baseline and periodic audiometric testing.
- Worker education and training.
- Ongoing noise monitoring.
- Recordkeeping and documentation.

OHS managers should review provincial requirements and ensure compliance, particularly during periods of operational change like equipment start-up.

## **Addressing Multi-Employer Worksites**

Construction projects often involve multiple contractors operating simultaneously. Coordination is essential to prevent overlapping high-noise tasks that elevate cumulative exposure.

Pre-job meetings should include discussions about:

- Equipment start-up schedules.
- Shared work zones.
- Responsibilities for noise monitoring.
- Communication protocols when verbal communication is impaired.

Clear coordination reduces both hearing risks and secondary hazards, such as struck-by incidents caused by miscommunication.

## **Building a Prevention-Focused Culture**

Noise-induced hearing loss is permanent and entirely preventable. During equipment start-up periods (when activity intensifies and hazards multiply), OHS managers play a critical role in reinforcing safe practices.

By conducting updated noise assessments, prioritizing quieter equipment, implementing engineering and administrative controls, and ensuring proper PPE selection and training, Canadian construction employers can meet regulatory obligations and protect workers' long-term hearing health.

As projects come to life and machinery powers up, a proactive approach to noise exposure prevention ensures that productivity does not come at the cost of permanent hearing damage.