3M Personal Safety Division
Hearing Conservation Solutions

Detection  Protection  Validation

Hearing Conservation in the Oil & Gas Industry

The power to protect your world.℠
Hearing Protection
Solutions Made Innovatively Easy
Workers in oil and gas fields know what it’s like to work in a dirty, loud environment. Drilling rigs, pumps, generators, fluid movement, and heavy equipment create a lot of noise, dust and mud. Workers need hearing protection that can withstand these elements and allow them to communicate with co-workers and monitor their area for sounds that could alert them to danger.

Improving hearing conservation within the oil and gas industry requires accurate detection of noise hazards, proper selection of hearing protection solutions and comprehensive hearing conservation programs designed for the rigors of real-world conditions.

**The Extreme Environmental Conditions:**
Oil and gas workers in various operations encounter a wide range of climates and working conditions. It can be extremely hot or very cold, depending on the location and time of year. Hands and gloves are seldom clean, and workers’ hearing protection must be designed to handle the challenges of these environments.

**The Need for Noise Detection:**
Detecting job site noise levels is the first step in determining the appropriate level of hearing protection. Operators need the ability to accurately measure each employee’s noise dose to understand the level of protection required for workers.

**The Importance of Listening:**
While most workers need hearing protection, they may also need to listen for warning sounds like approaching vehicles and equipment problems. Hearing protectors must have the correct attenuation for the environment to avoid overprotection.

**The Value of Communication:**
Many workers and maintenance teams need to clearly communicate with co-workers and supervisors throughout the operation. In these situations, communication devices can be key to both safety and productivity.

**The Human Factor:**
Each individual is physically unique, so there is no one-size-fits-all solution – workers in the same environments may need different protection solutions. The key to achieving success is offering enough different solutions to fit each person comfortably.

**Fit Test Validation:**
Integrating hearing protector fit testing into your hearing conservation program using the 3M™ E-A-Rfit™ Validation System makes it easy to fit, train and motivate workers, and to assess and manage the long-term performance of your hearing conservation program.

Prolonged or repeated exposure to loud sounds may cause hearing loss and tinnitus ("ringing" in your ears), and may contribute to sleep disturbance, hypertension, anxiety, and stress. Retaining and protecting your workforce is essential to the success of your operation, making it more important than ever to implement comprehensive hearing conservation solutions.
Many of the processes involved with oil and gas exploration and production produce noise hazards, from heavy equipment and generators, to drill rigs and blasting. Exploration workers face a wide range of hearing protection challenges in both on-shore and off-shore explorations.

Key Upstream Challenges

- **Noise Measurement**: Exploration workers can be exposed to a wide range of potential noise hazards. Understanding the noise exposure will allow you to more effectively manage your hearing conservation program.
  
  *3M™ The Edge 5 Personal Noise Dosimeter is a lightweight, easy-to-use, intrinsically safe solution for monitoring personal noise exposure.*

- **Oily and Dirty Hands**: Hands and gloves are seldom clean, and are usually covered with ever-present oil and dirt.
  
  *3M™ Push-Ins™ Earplugs are a perfect choice because there is no roll down required for a clean and comfortable fit.*

- **Communication**: Clear communication between co-workers is essential to both productivity and safety.
  
  *3M™ Peltor™ Tactical™ XP™ Intrinsically Safe Two-Way Radio Headset enables clear communication.*
Compressors, pumping stations, vehicle noise, and fluid movement all produce noise during the transportation and storage process. Workers installing pipelines and rehabilitating critical infrastructure encounter challenges to their safety and productivity.

**Key Midstream Challenges**

- **Noise Measurement:** Workers who operate and work around these operations face a wide range of noise hazards. Measure variable noise levels with the 3M™ Intrinsically Safe Sound Examiner SE-400 IS Series Sound Level Meter.

- **Personal Protection Equipment (PPE) Integration:** Workers at hydraulic fracturing operations need hearing protection solutions that do not interfere with respirators and hard hats. 3M offers a variety of in-ear hearing protection solutions that are compatible with respirator facepieces, including 3M™ Push-to-Fit and Reusable Earplugs and the 3M™ Peltor™ ORA TAC In-Ear Tactical Communications Headset.

- **Dirty Hands:** Hands and gloves are seldom clean, and temperature extremes often dictate the type of protection equipment that workers prefer. Providing workers with both earmuffs and a variety of earplugs allows workers to select the right protection for variable conditions.

Oil and gas refineries are highly automated complexes with high levels of noise throughout the facility. Compressors, pumps and high volumes of fluids running throughout the facility create a significant amount of noise.

**Key Downstream Challenges**

- **Noise Measurement:** Maintenance teams at refineries can encounter a wide range of noise exposure levels as they work. 3M™ NoisePro™ Personal Noise Dosimeter can help measure exposure levels without interfering with maintenance and repair work.

- **Noise Level:** Workers can encounter very high noise exposures from pumps and moving fluid. 3M™ Peltor™ Earmuff X5 is the first 3M earmuff on the market to offer an SLC™ of 35dB.

- **Communication:** Workers in these large complexes need the ability to clearly communicate with co-workers and supervisors in distant parts of the facility. 3M™ Peltor™ Communications Products deliver the quality and performance needed for clear communication and hearing protection.
Detecting noise sources and monitoring noise exposures in oil and gas operations are the first steps in identifying where hearing protection may be needed, and which workers need to be in a hearing conservation program.

Protecting hearing and enhancing communication requires comfortable solutions with options that make it easy to select the right protection for every worker.

3M™ Push-to-Fit Earplugs
Easy fitting without rolling the foam tips makes them ideal for workers’ gloved and dirty hands.

3M™ Disposable Earplugs
Provide the best combination of protection and comfort for long work shifts.

3M™ Reusable Earplugs
Durable enough to withstand the rigors of the oil and gas environment, yet soft and comfortable. Washable earplugs can be reused many times, reducing waste.

3M™ Banded Earplugs
Easy on and off makes them perfect for workers who need only intermittent hearing protection.

*For all 3M detection enquiries, please contact Air-Met Scientific (AU), 1800 000 744 or Global Science (NZ), 0800 734 100
3M™ Peltor™ H7 Earmuffs
Designed for comfortable wear in challenging oil and gas conditions. Multiple protection levels help provide the right protection for the job. *Behind-the-head earmuffs work with most full brim hard hats.*

3M™ Peltor™ Earmuffs X Series
Innovative foam earcup inserts help improve attenuation while new ear cushion foam technology helps provide a more effective acoustic seal against a variety of oil and gas production noise hazards.

3M™ Peltor™ Tactical XP Headset
Hearing protection compatible with two-way radio communication. Factory Mutual (FM) certified intrinsically safe. *Behind-the-head earmuffs work with most full brim hard hats.*

3M™ Peltor™ ORA TAC In-Ear Tactical Communications Headset
Combines hearing protection, ambient listening and two-way radio communication. Fits with most respirators, eyewear, face masks, helmets and hard hats.

Training on the proper use of protection and measurement of attenuation levels can help you validate that your workers are protected.

3M™ E-A-Rfit™ Validation System
The E-A-Rfit validation system objectively measures the noise reduction obtained by individual workers and makes it easy to document how well each hearing protector performs. It can help determine the right level of protection for the job while training employees to properly fit their 3M™ earplugs.

Hearing Conservation Support
At 3M, we understand the challenges of the workplace, the complexities of fitting hearing protection and the importance of creating adaptable solutions for maximizing hearing protection. The 3M team of application specialists and technical support personnel provides an unmatched level of support you can rely on to advance your hearing conservation program.
Sound Level Conversion rating (SLC80): AS/NZS 1270:2002 determines SLC80 as the measure for hearing protectors noise reducing capabilities. The SLC80 is an estimate of the attenuation achieved by 80% of the wearers, assuming they are well trained in the proper use of hearing protection. However, noise reduction performance of the hearing protectors can be significantly affected by variation in the fit and the motivation of the users to wear hearing protectors 100% of the time that they are exposed to excessive noise levels.

For more information about 3M Safety products or solutions please contact us:

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**WARNING**

These hearing protectors help reduce exposure to hazardous noise and other loud sounds. Misuse or failure to wear hearing protectors at times that you are exposed to noise may result in hearing loss or injury. If there is any drainage from your ear or you have an ear infection, consult with your physician before wearing earplugs. Failure to do so may result in hearing loss or injury.

Choking Hazard—Keep earplugs away from infants and small children.