

# HEARING LOSS IN UTILITIES

A Serious and Pervasive Occupational Health Issue  
The noise level in the industry can exceed 155 dB



**555K** utility workers in the US<sup>9</sup>

**34%** of noise-exposed workers report not wearing hearing protection<sup>10</sup>.

## NOISE LEVELS THAT DAMAGE YOUR HEARING

- Repeated 8-hour exposures to noise levels at or above 85 dBA
- Repeated exposures of just 1 h/day to noise levels at or above 95 dBA

The sound power level from power plants equipment can range from about 120 decibels (dB)<sup>2</sup> to well over 155 dB depending on the machine's size and type.<sup>3</sup>

### Major sources of noise:

- Steam turbine generator (STG)
- Air-cooled condenser (ACC)
- Combustion inlet filter house
- Heat recovery steam generator (HRSG)
- High-pressure steam piping

### Noise levels exceeding limit values

OSHA regulates the employees' time-weighted exposure to sound levels.

#### But

- **Near-field and facility sound levels** can be well in **excess of 85 dB** without penalty.
- **Electrical utility safety devices** product intermittent, high noise levels when operating during emergency conditions.
- **Steam safety valves** operate for up to 30 min and emit sound levels of **140 to 150 dBA** at 1 m.
- Air-blast circuit breakers emit high impulsive noise levels (**140 to 160 dB** at 1 m) for less than 1 s.<sup>4</sup>

### The Center for Disease Control (CDC)

22 million workers are exposed to potentially damaging noise at work each year.

- In the United States, hearing loss is the **third-most common chronic physical condition** among adults after hypertension and arthritis.
- About **24%** of the hearing difficulty among U.S. workers is caused by occupational exposures.
- About **12%** of the U.S. working population has hearing difficulty.
- About **8%** of the U.S. working population has tinnitus ('ringing in the ears').
- **4%** of the U.S. working population has both hearing difficulty and tinnitus.

## HOW DOES LOUD NOISE CAUSE HEARING LOSS?

Exposure to loud noise ->> kills the nerve endings in our inner ear.

More exposure ->> more dead nerve endings.

The result ->> permanent hearing loss that cannot be corrected through surgery or with medicine.

### The World Health Organization (WHO): Excessive exposure to noise can lead to many health problems.

- Hearing loss
- Auditory stress
- Elevated blood pressure
- Abnormal heart rhythms
- Muscle contractions
- Increased production of stress hormones
- Irritability
- Stress
- Insomnia
- Anxiety

### Hearing loss is often associated with:

- Poor quality of life
- Social isolation
- Mental decline and heart problems
- Depression and anxiety
- Ringing in the ears (tinnitus)
- Less safety at home and on the job
- Lower income

### Untreated Disabling Hearing Loss Costs Billions

**\$133B**  
pre year

Costs to the economy because of lower quality of life and less productivity<sup>5</sup>.

**\$242M**

Spent on compensation claims<sup>6</sup>.

**14.6M**  
people in the USA

Costs to the economy because of lower quality of life and less productivity<sup>5</sup>.

**1.5M**

Fines paid by businesses for violating laws on workplace noise exposure

**\$30,000**

Decrease of workers' annual income because of untreated hearing loss<sup>7</sup>.

## OSHA

OSHA's regulation for hearing protection (CFR 1926.101):

- Wherever noise levels or duration of exposures exceed 85 dBA in an 8-hour time-weighted average, ear-protective devices shall be provided and used.
- Ear-protective devices inserted in the ear shall be fitted or determined individually by competent persons

## 100% Preventable

Occupational hearing loss is entirely preventable

## HEARING PROTECTION SOLUTIONS WORKERS WANT TO WEAR

### Three Tips to Choose the Right Hearing Protection Solutions

**1**

#### Choose the right noise reduction level

- Check how loud a noise is by using sound measuring tools.
- Choose the hearing protectors according to their Noise Reduction Rating (NRR).
- Make sure the hearing protector is fit correctly. Thus, it can provide 10 dB of protection.
  - For earplugs, use a fit-testing tool like VeriPRO to know if they are fit correctly and provide an adequate level of protection.
  - For earmuffs, the new VeriShield Smart Hearing solution offers real-time visibility of individual workers' protection levels and noise exposure.

**2**

#### Choose hearing protectors adapted to the work situations

- Select earmuffs that are adjustable and feature high quality foam to get a better fit when wearing additional PPE.
- Earmuffs can be uncomfortable in hot environments, while earmuff cushions may not seal tightly in very cold environments.
- If the noise is not continuous, corded disposables, reusable earplugs, banded plugs and earmuffs are a great option.

**3**

#### Think about your workers' comfort

- Choose hearing protection solutions designed to fit and seal the workers' ears perfectly.
- Fit test your earplugs to have a couple of options for your employees.
- Hearing protection only works if workers wear it consistently and correctly.
- Choose hearing protection solutions that are comfortable and convenient.

## HEARING PROTECTION SOLUTIONS FOR THE UTILITY INDUSTRY



### Dielectric Range Passive Earmuffs

The dielectric range passive earmuffs are made from non-deforming plastic with dielectric construction and withstand oily, heavy-work environments and frequent cleaning.

VS130D shown



### Noise Monitoring Headsets

Noise monitoring headsets reduce background noises to safe levels and provide real-time visibility of individual workers' protection. Efficiently collect noise exposure, helping identify risks and take action.

VeriShield Smart Hearing 1035156-VS shown



### Disposable Earplugs

Polyurethane foam earplugs offer superior noise-blocking performance. Easy to insert, they resist backing out of the ear canal while delivering superior long-wearing comfort.

Laser Lite shown



### Antimicrobial-Protected Dispensers for Earplugs

Maintaining clean workspaces is important for every business. Lightweight and durable – with built in antimicrobial properties to protect the dispenser against stains, discoloration and odors caused by mold, mildew and bacteria. This product does not protect users or others against disease-causing organisms. Enjoy cleaner surfaces from a dispenser with enhanced cleanliness.

HL400-AM Dispenser shown



### Reusable Earplugs

Reusable earplugs are easy to insert and provide consistent noise attenuation for all-day wear. They are available in various sizes, easy-to-clean and have an extended life of up to four weeks.

AirSoft shown



### Push-in Foam Earplugs

Push-in foam earplugs can be easily and gently pushed into the ear without the need to roll-down. They help reduce hygiene concerns and time-consuming insertion, providing comfort for a full workweek.

TrustFit Pod shown

### Honeywell Personal Protective Equipment

9680 Old Bailes Rd  
Fort Mill, SC 29707  
800-582-4263  
www.sps.honeywell.com

<sup>1</sup>Decibels "A" weighted – a weighted scale for judging loudness that corresponds to the hearing threshold of the human ear.

<sup>2</sup>Decibels – sound levels are unweighted. The unit is commonly used when referring to measuring sound; humans do not hear all frequencies equally.

<sup>3</sup><https://www.povengineeringint.com/decentralized-energy/equipment-technology/sound-advice-industrial-noise-control-for-power-plants/>

<sup>4</sup><https://asa.scitation.org/doi/abs/10.1121/1.2017199>

<sup>5</sup><https://www.hearingreview.com/practice-building/marketing/surveys-statistics/untreated-disabling-hearing-loss-costs-billions-us-rest->

<sup>6</sup><https://www.cdc.gov/niosh/topics/noise/about.html>

<sup>7</sup><https://hearinghealthfoundation.org/workplace-hearing-loss/#:~:text=employment%20and%20Economic%20Costs&text=Untreated%20hearing%20loss%20can%20decrease%24176%20billion%20due%20to%20underemployment>

<sup>8</sup><https://www.cdc.gov/niosh/topics/noise/preventhearingloss/default.html>

<sup>9</sup><https://datausa.io/profile/notes/utilities>

<sup>10</sup><https://www.cdc.gov/niosh/topics/ohl/overall.html>