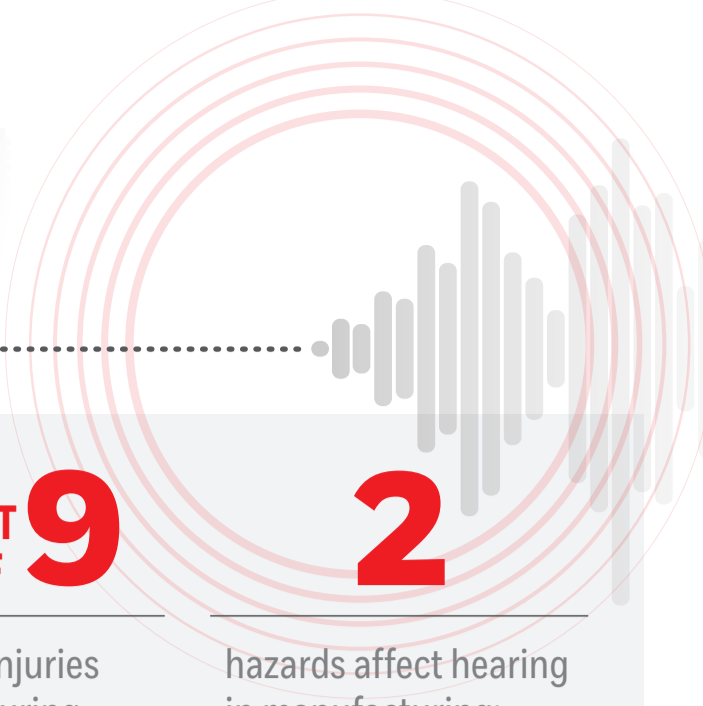


HEARING LOSS IN MANUFACTURING

HOW TO PROTECT WORKERS FROM THE INDUSTRY'S #1 INJURY



#1

hearing loss is manufacturing's top recorded occupational illness¹

1 OUT OF 9

recordable injuries in manufacturing is hearing impairment²

2

hazards affect hearing in manufacturing:

- noise
- ototoxic chemicals

NOISE-INDUCED HEARING LOSS (NIHL)

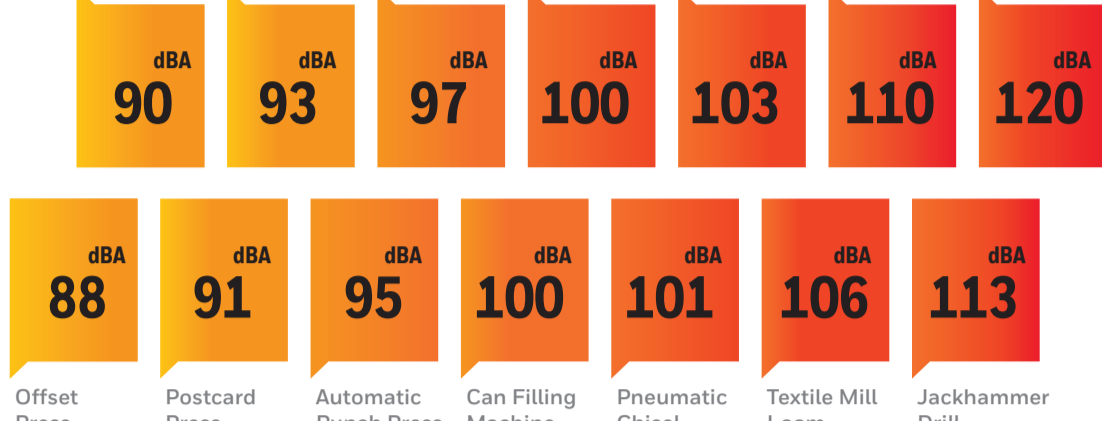
NIHL IS CAUSED BY:

- Prolonged or repeated exposure to loud noise
- Single traumatic noise exposure

85 decibels

Noise can be harmful above 85 decibels for prolonged periods of time

NOISE HAZARDS IN MANUFACTURING APPLICATIONS:



NIHL

Because NIHL is painless and progressive, most cases go unnoticed until permanent damage has occurred

4P's



- PAINLESS
- PERMANENT
- PROGRESSIVE
- PREVENTABLE

MYTH: Noise is part of my job; I've grown used to it
BUSTED: No you haven't; you're experiencing hearing loss
LONG SHIFTS = increased risk of hearing loss

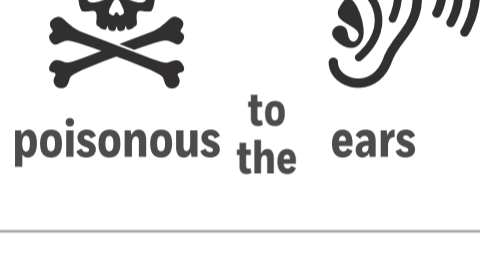
OSHA recognizes the dangers of occupational noise exposure

- OSHA's Permissible Exposure Limit (PEL) states a worker cannot be exposed to more than a 90 dB (A-weighted) average noise level for an 8-hour work shift
- The longer the shift, the lower the noise level must be to achieve the PEL
- For every 5 dB increase in noise level, the allowable exposure time is cut in half



OTOTOXIC CHEMICALS

Ototoxic:



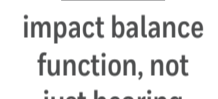
Many common industrial chemicals are ototoxic

The combined effects of **ototoxins + noise** can be synergistic, meaning hearing loss from noise and chemical exposures is greater than the sum of each.

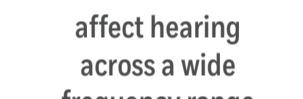
Ototoxins can:



enter the body through air passages and/or skin



impact balance function, not just hearing



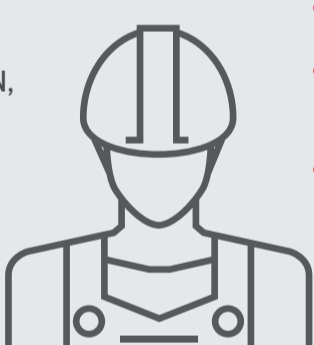
affect hearing across a wide frequency range

Known and possible ototoxins:

- | | |
|--------------------------|------------------|
| styrene | carbon disulfide |
| toluene | n-Hexane |
| trichloroethylene | xylene |
| ethyl benzene | carbon monoxide |
| lead/inorganic compounds | hydrogen cyanide |

THE HIGH COST OF HEARING LOSS TO WORKER

- IMPAIRS COMMUNICATION WITH FAMILY, PUBLIC, COWORKERS
- LEADS TO SOCIAL ISOLATION, WITHDRAWAL
- REDUCES QUALITY OF LIFE
- DIMINISHES ABILITY TO MONITOR WORK ENVIRONMENT
- REDUCES PRODUCTIVITY
- INCREASES ACCIDENT RISK
- INCURS LIFELONG EXPENSES FOR HEARING AIDS
- INCREASES RISK OF HIGH BLOOD PRESSURE, HIGH CHOLESTEROL, HEART DISEASE³



THE HIGH COST OF HEARING LOSS TO SOCIETY

242 million Spent annually on workers' compensation for hearing loss disability



1.5 million Employers pay/year in penalties for not protecting workers from noise⁴

What sounds would you miss the most?

Nature

Loved Ones' Voices

Sports

TV & Movies

News & Information

Pets

Safety Warnings

Music

Concerts

OSHA's role

OSHA 29 CFR 1910.95 requires employers to reduce excessive noise via feasible controls

When controls cannot reduce noise to permissible levels, OSHA requires employers to provide a variety of suitable hearing protectors

100%

NIHL CAN BE AVOIDED COMPLETELY WITH TODAY'S HEARING LOSS PREVENTION STRATEGIES AND TECHNOLOGY⁵

HERE'S HOW TO PROTECT WORKERS' HEARING:

- Conduct a thorough **noise hazard assessment**
- Inform workers** of the noise hazards present
- Instruct workers** on proper use and fit of earplugs and/or ear muffs
- Prioritize fit and comfort** to increase wear time and protection:
 - Conduct earplug fit-testing – to ensure workers learn how to properly fit earplugs for complete protection
 - Provide a variety of hearing protection devices so workers achieve proper fit and personal comfort
 - Select devices with quality materials and comfort features to encourage all-day wear
 - Look for adjustability features on ear muffs to deliver fit and comfort

Where combined **exposures to noise and ototoxins** exist:

- Use respirators and hearing protection in tandem
- Include employees in a hearing conservation program even when noise exposure alone is low
- Monitor employees more frequently with audiometric testing, including higher frequencies, to ensure adequate protection

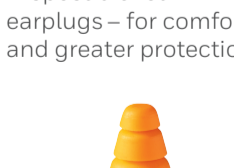
SOLUTIONS



Disposable foam earplugs – for comfort and greater protection



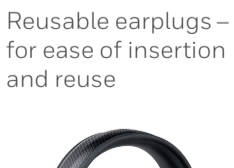
Push-in foam earplugs – for ease of insertion and comfort



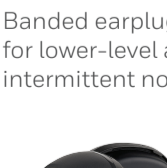
Reusable earplugs – for ease of insertion and reuse



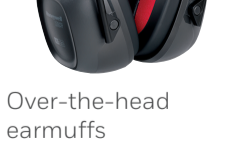
Banded earplugs – for lower-level and intermittent noise



Over-the-head earmuffs



Behind-the-neck earmuffs



Cap-mounted earmuffs

1. <https://www.cdc.gov/niosh/docs/2010-136/pdfs/2010-136.pdf>

2. <https://www.cdc.gov/niosh/docs/2010-136/pdfs/2010-136.pdf>

3. <https://blogs.cdc.gov/niosh-science-blog/2018/06/28/noise-effects/>

4. <https://blogs.cdc.gov/niosh-science-blog/2018/06/28/noise-effects/>

5. <https://blogs.cdc.gov/niosh-science-blog/2018/06/28/noise-effects/>