Noise Reduction Rating

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What is a noise reduction rating (NRR)?

Noise reduction rating or noise reduction level is a measure of the effectiveness (in dB) of how much PPE we use can reduce the danger of noise around us.

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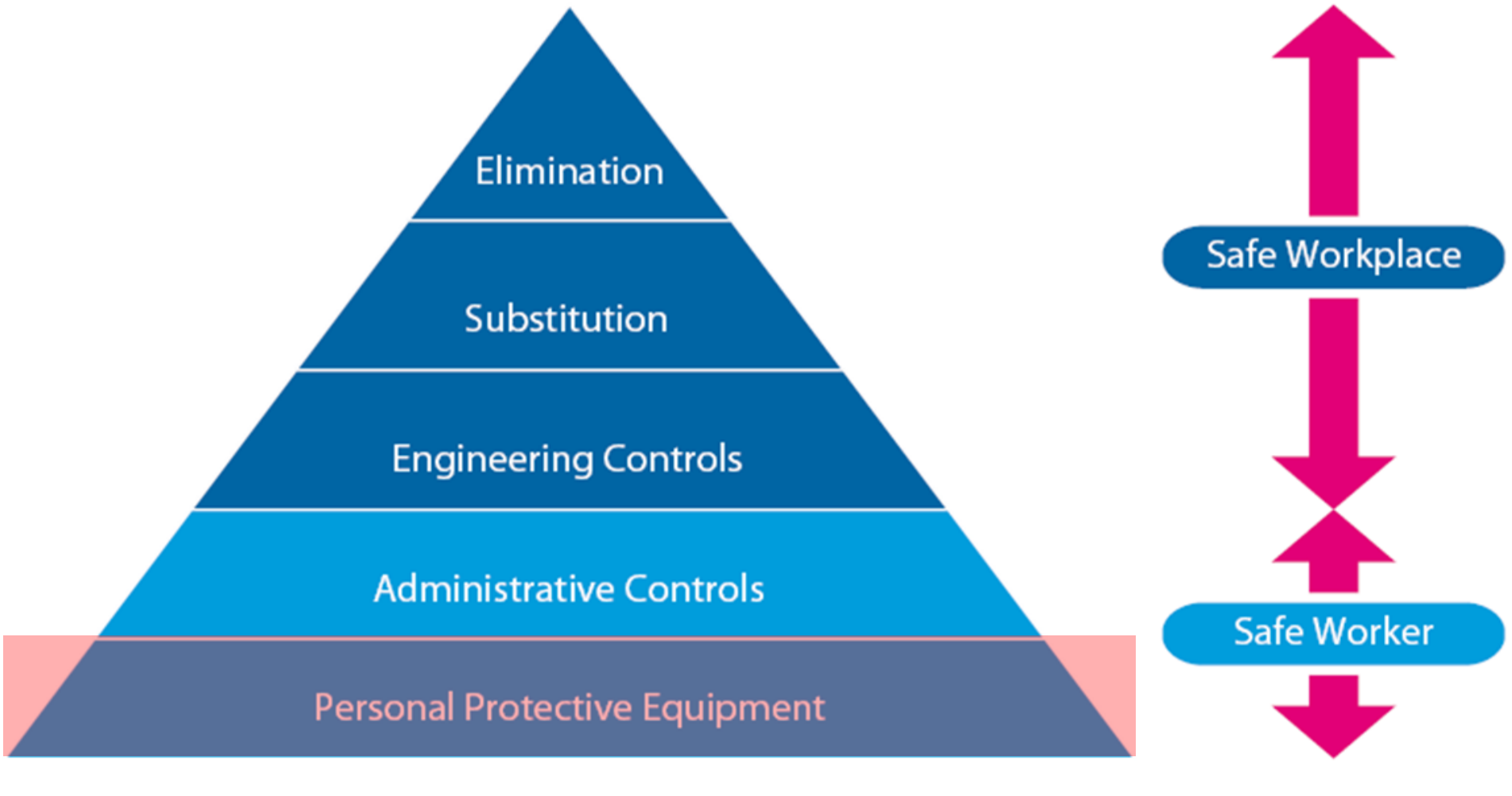
Hazard Control hierarchy



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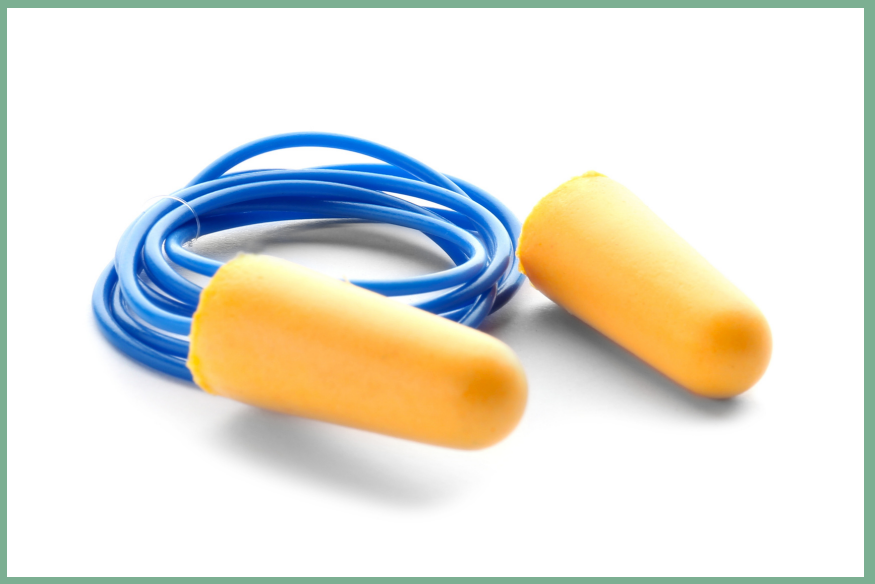
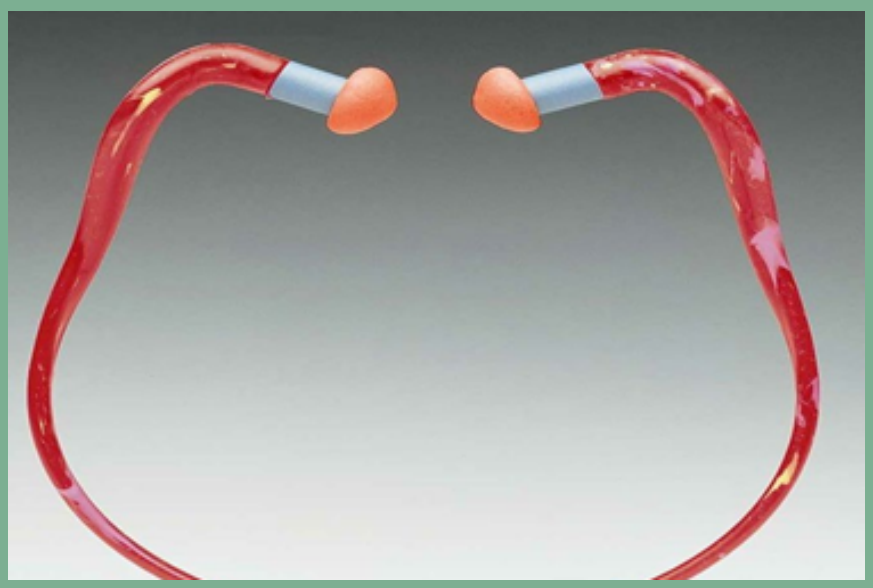
All kinds of hearing protection

Ear muffs



Foam insert earplug



Semi-aural earplug

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For example when the measured noise is 100dB(A), you cannot interpretate that the hearing protector gives protection like: 100dB(A) - 35dB = 65dB(A) ❌

Always, pay attention to the "Safety Factor"

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Safety Factor [OSHA]

The noise reduction factor only gives an indication of the gathered reduction in your ears. It is not direct compatible because:

- Facial movement due to the work movements or talking with the hearing protecion
- Possibility of minor damage to the protecion
- Causes that the hearing protecion does not fit exactly (for example wearing goggles, helmet, changes in the inner ear due to age)
- NRR is not A-weighted, measurements are A-weighted, abstration of 7 dB is needed

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Sample calculation

[single hearing protection - ear muffs]

- Measured noise 8 hours working day
  = 100 dB(A)
- NRR ear muffs
  = 35 dB
- Estimation exposure employee 8 hours:
  = 100 - ((35 - 7) x 0,5) = 86 dB(A)

Conclusion:
Still above the exposure limit of 85 dB(A) for 8 hours shift

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Sample calculation

[double hearing protection ear muffs & earplug]

- The reduced value is given an additional + 5 dB

- Estimation exposure employee 8 hours
  = 100 - (((35 - 7) x 0,5) +5) = 81 dB(A)

Conclusion:

In compliance, still above the 1st action limit, but under the 2nd action limit of for 8 hours shift, prevention plan is needed, but can work

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