

Hearing Hazards

Behaviour's influence on workplace noise protection

Despite myriad advances in technology – whether our business operates from a call centre, a factory environment or an external processing site such as a quarry, or waste recycling depot – workplace noise continues to persist. Almost all industrial organisations today have a line on their hazard inventory or an inclusion in their risk assessment that mentions workplace noise. It is an occupational hazard that many safety professionals face on a daily basis.

The European Agency for Safety and Health at Work ('EU-OSHA') defines noise as:

"an unwanted sound; its intensity ('loudness') is measured in decibels (dB). The decibel scale is logarithmic,

so a three-decibel increase in the sound level represents a doubling of the noise intensity. For example, a normal conversation may be about 65 dB and someone shouting typically can be around 80dB. The difference is only 15 dB, but the shouting is 30 times as intensive."

The challenge of workplace noise

Noise doesn't need to be excessively loud to cause health and safety challenges in the workplace.

Exposure can pose a range of health and safety risks, ranging from noise-induced hearing loss (NIHL) to physiological effects including feelings of stress and anxiety. Recent studies now reveal strong evidence



Managing the risk

Tackling noise hazards tends to follow a standard approach borne out of health and safety regulations, which can be summarised as follows:

1. Conduct an assessment of noise levels in the workplace and compare results against stated Daily Noise Exposure Levels or Peak Limits.
2. Consider how to reduce the noise levels – perhaps by replacing old, noisy machines with newer quieter models.
3. Consider also the layout of equipment and the workplace and what could be done to manage the risk.
4. Explore and implement engineering controls that could help to reduce structure-borne noise such as noise damping, replacing noise-reflective surfaces with acoustic panels, and to reduce airborne noise by shrouding noisy equipment.
5. Now it's time to think about the workers: who might specifically be harmed? Could the incorporation of job rotation help? E.g. allowing employees to move from working in noisy areas to spend time on tasks in quieter zones.
6. After exhausting all other options, we turn to the provision of suitable hearing protection such as earplugs, muffs and defenders to reduce the impact on the individual worker.

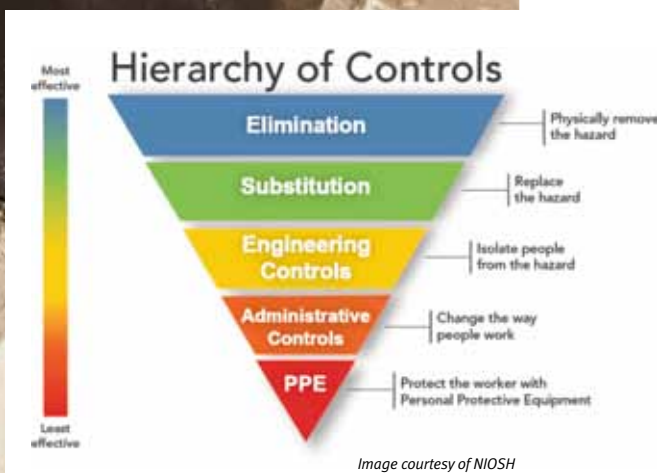
that exposure to noise has a harming effect on the cardiovascular system, as catecholamines - hormones made by the adrenal glands - are released into the bloodstream when a person is under physical or emotional stress.

High workplace noise levels can make it tricky for co-workers to hear and communicate with each other, potentially increasing the probability of accidents. Work-related stress (in which noise may be a factor, as described above) can significantly compound this issue.

Noise interacts with other workplace hazards to amplify risks to workers; for example, by masking audible signals or alarms warning of machine malfunction or dangers such as the reversing siren of a forklift truck.

While the hierarchy illustrated above is indeed clear, is it always followed systematically in our strategic response to workplace noise hazards? Often when it comes to noise at work it's far easier to begin at the end: we briskly make the calculation of subtracting the single number rating (SNR) valueⁱⁱ of our hearing protection from the average decibel levels in the workplace. If the result is below statutory limits, we deem it good news and conclude that the risk is now close to being under control.

The latest, greatest (or perhaps sometimes, even the cheapest) hearing protection is diligently handed out to workers, dispensers mounted on walls for visitors to self-serve from, and appropriate ▶



signage placed strategically throughout the workplace to remind everyone of the importance of compliance.

Impact and response

According to a Harvard Medical School report up to 15% of Americans (26 million people) suffer work-related hearing loss, and around 50 million more are exposed to dangerous levels of noise every dayⁱⁱⁱ. In Europe around 50 million people, that's roughly 25% of all European workers, face significant noise risks each day^{iv}. Yet with such robust regulatory obligations in place and a clear risk-based hierarchy of control to guide action, why is it that these vast numbers continue to persist?

In many organisations, sooner or later we find workers 'forgetting' to use earplugs, wearing their hearing protection around their neck, or,

as I observed in a recent visit to a factory shop floor, a creative worker who drilled small holes in the outer shell of his earmuffs – through which to feed his MP3 player headphones so he could enjoy his favourite music while he worked.


If we take these examples as representative of situations that frequently occur in industry, it would seem that perhaps safety is not always just about having a solid framework directing the order in which to mitigate risk. Yes the hierarchy of control provides a roadmap for action, but ultimately our challenge boils down to whether we can influence human behaviour.

Influencing behaviour

Much of what has been written on the topic of workplace safety behaviour focuses on deep aspects of

psychology. The majority of this work is excellent, and as an Organisational Behaviourist, I spend many hours reading these works, exploring new concepts, models and abstractions. Despite how much we know about the complexities of human behaviour, however, many of the products and tools for Behaviour Based Safety (BBS) don't make a lot of logical sense to the average person. Often, therefore, BBS is distilled down to simplistic tools that are presented as effective ways of influencing behaviour. So off we go around the workplace with our observation cards, checking off the box every time we see someone not wearing their earmuffs.

Human behaviours are complex, dynamic and subject to influence from a broad variety of factors. Rarely is a formal procedure, a tick-box card or a sign on the wall sufficient to drive a sustainable change in behaviour. ▶



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The art of sustainable change

If our aim is to influence behaviours we must first understand and accept that it is very hard to force people to do things – especially if they are things they don't want to do. Think of how stubborn young children can be when asked to eat a particular vegetable. No matter how many times you tell them it's good for them the reluctance to put a piece of a certain veggie in their mouth just grows stronger.

So what do we do? Load a fork with the green stuff and pretend it's a loop-the-loop aeroplane coming in to land? Or do we try to disguise that broccoli – hidden behind something tastier or mashed up into the potato. Perhaps we set a rule that the child cannot leave the table until they clear their plate, ban computer games or don't allow pudding? Sometimes we may find these approaches effective, but not always. Why is this? Quite simply, the child does not want to eat the broccoli.

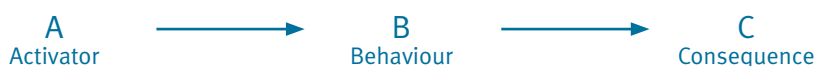
The Activator-Behaviour-Consequence, or ABC, model of influence is highly popular in the safety sphere. It's a simple yet highly relevant approach to explaining the important lead-in and follow-up elements of behaviour. The model

suggests that we always need an activator, sometimes referred to as an antecedent, to drive behaviour in people. The activator is the thing that shapes our attitude towards something and motivates us to undertake a particular behaviour.

The behaviour is the specific action taken by the individual in response to the activator, and the consequence is the result emanating from the specific action taken.

Control and consequence

Look back at the ABC model again. Which of these elements do you feel we truly have control over and can actively manage? In the children's mealtime examples we can see parents trying to manage the activators (loop-the-loop aeroplanes) and the consequences (withholding dessert or playtime). In the workplace, when it comes to workplace noise risk, the activators can include safety signage on the walls and verbal reminders from supervisors, while the consequences are outlined earlier in this article. The bits in the middle – the behaviours – remain the choice of the individual involved. So in order to drive a particular behaviour we need to provide an effective activator to generate the required action, and then reinforce the action with a specific consequence. ▶



My sister really gets the ABC model. Mealtimes in her house are typically preceded by playtime. Her two boys are off having fun: making dens in the garden, playing pirates or drawing pictures. As they arrive at the table for dinner, their mother asks them about their play activities and as they describe what they've been up to, their little minds are activated to recapture the excitement they were just absorbed by. Asking what the kids plan to do after they finish eating, she builds a potential consequence – or reward – perhaps of more playtime, into the conversation.

Activators are everywhere in our daily lives: the sign on the highway warning you that you are entering a zone covered by speed cameras; the final call for your flight; even the 'wet paint' sign on the park bench. Each sparks certain behaviours, all of which have consequences.

All three elements of the ABC model are equally important. Activators without consequence may drive specific behaviours, but they may not be the ones we expect or perhaps even desire. Think for a moment, do you ever drive along a stretch of local road that features a sign warning you of speed cameras, yet you know from frequently driving this road that there are never any cameras on this route? How effective is this activator at influencing your speed? Now consider a behaviour without a specific activator. Let's use the same situation, but this time imagine there is no warning of the camera and days after travelling the route you receive a penalty fine through the mail, how do you feel? Yes, the frustration may lead to a specific behaviour to regulate your speed, but how effective is this approach?

We can all benefit from reminders to act in certain ways. Whether it's the speed camera warning sign or the message at the movies to turn off your mobile phone, activators can quickly and efficiently influence our behaviour in a positive way.

You can't have a safe workplace without having safe behaviours. To positively influence behaviours at work, instead of posting 'mandatory' signs and walking around meticulously checking boxes on little cards, why not try exploring how to collaborate with the workforce to find helpful activators that will encourage the right behaviours and then provide a desirable consequence that will reinforce the behaviour in the future?

At the end of the day, whether children or adults, people decide how to behave. We need to find ways for workers to embrace safety in their every action, not just force it upon them. To influence behaviour, we must provide resonant activators that encourage individuals to think for themselves and relevant consequences that help them to react accordingly – ideally in the way we desire them to behave: safely. ■

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 - i [Osha.europa.eu/en/topics/noise/index_html](http://osha.europa.eu/en/topics/noise/index_html)
 - ii The SNR (Single Number Rating) indicates an insulation value averaged over the relevant frequencies. An SNR value of 35dB, for example, absorbs 100 dB and reduces it to 65 dB.
 - iii www.betterhearing.org/hearingpedia/hearing-loss-prevention/noise-induced-hearing-loss
 - iv [Osha.europa.eu/en/publications/reports/6805535](http://osha.europa.eu/en/publications/reports/6805535)