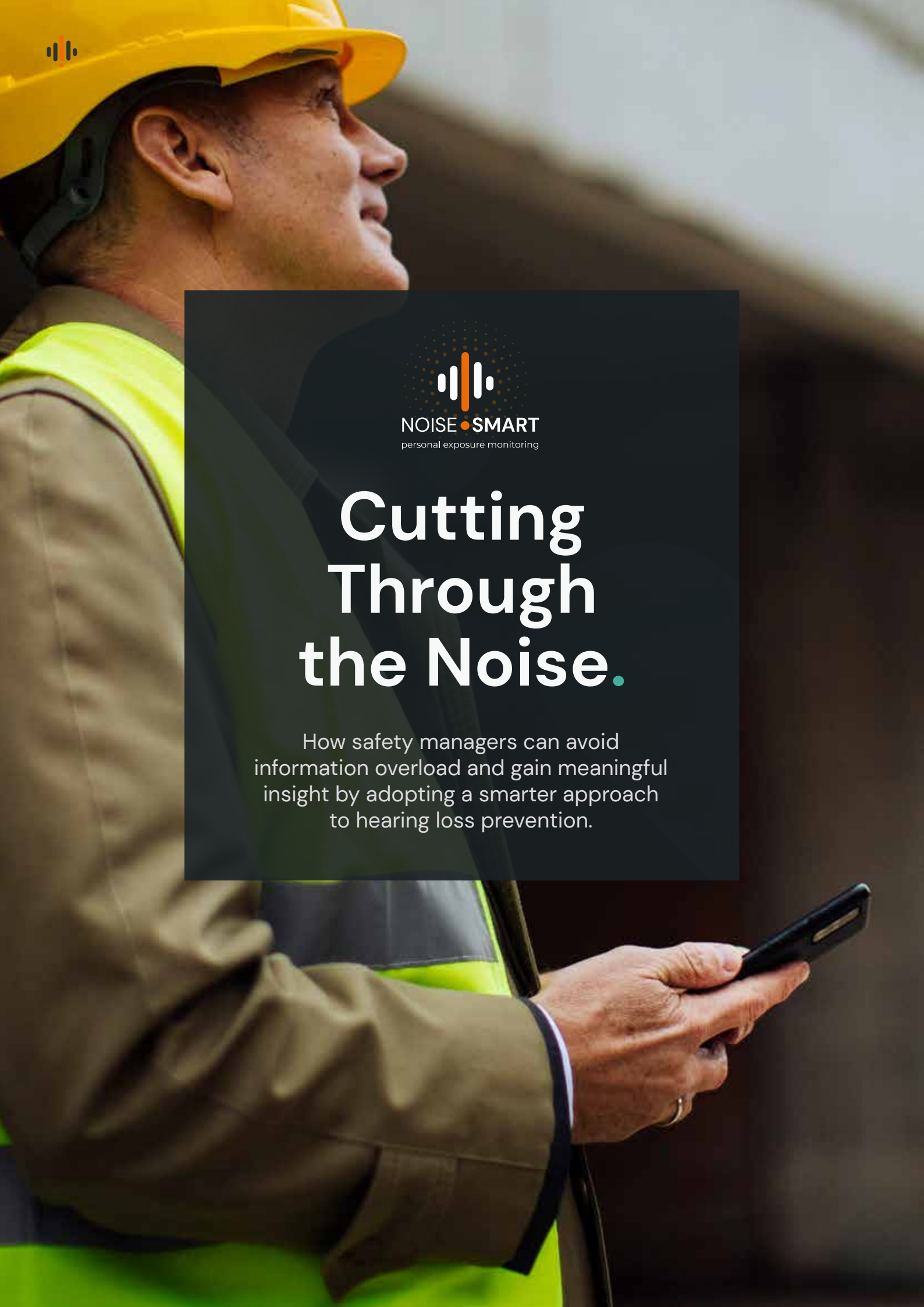

NOISE • SMART
personal exposure monitoring

Cutting Through the Noise.

How safety managers can avoid information overload and gain meaningful insight by adopting a smarter approach to hearing loss prevention.

Introduction – Safety managers drowning in data.

Health and safety managers perform critical roles inside industrial and construction workplaces, where multiple interfaces between people and equipment can often result in hazardous situations that risk injury or loss of life.

On any typical day, health and safety professionals in these environments will be responsible for an extensive range of tasks, performing numerous inspections and assessments, and managing, monitoring and improving workplace behaviour. Other significant daily responsibilities include compiling safety reports, investigating and reporting on safety incidents, devising corrective actions and updating processes and procedures. The role also demands close attention to health and safety legislation to ensure that employers fully comply with wide-ranging regulations. Each of these commitments restricts the opportunities for safety managers to get away from their desks and work directly with employees, on-site, in a hands-on manner.

Traditionally, many activities performed by health and safety managers would have been paper-based - with the completion of forms, checklists, reports and other documentation representing a regular facet of professional life. Now, as industrial and construction environments have become more digitised through the Internet of Things, a growing number of electronic data sources has created a plethora of mobile-based apps and electronic forms that also need to be analysed and acted upon.

> "There is a need for a more intelligent approach to automated health & safety systems that enables meaningful insight and helps safety managers to cut through the noise."

The situation is likely to become even more complex and burdensome: the market for the Industrial Internet of Things is expected to grow to $176 billion by 2022, according to a report by Market Research Engine, with many of these additional connections contributing towards an exponential rise in the amount of health and safety-related information that is being created. Sensors with IoT embedded devices often present alarms and notifications without sufficient context, adding to the data pile and further paralysing the safety manager, meaning that alerts aren't dealt with appropriately. Under such circumstances, it is perhaps no wonder that health and safety managers – already at risk of drowning in data – suddenly feel like they are completely submerged.

The danger, then, is that health and safety managers spend much of their time wading through vast tranches of information to find the bits that are useful or relevant. There is a need for a more intelligent approach to the automation of health and safety systems that provides quick access to more meaningful insight – helping safety managers to cut through the noise and pinpoint where they can best focus their efforts in order to reduce injury and save lives.

Providing an answer to workplace noise-induced hearing loss.

Fortunately, there is a solution to this challenge – and it comes with the adoption of more intelligent digital technologies that result in more effective data collection, analysis and interpretation. Ubiquitous connectivity makes it possible to collate and transmit data reliably and from many locations. But the key to more intelligent digitalisation is how that data is actually used. In a health and safety setting such solutions need to be deployed to empower the at-risk workers – driving their positive behaviour change. And for the safety manager, such systems must be configured to present critical data in a more structured and useful manner that does not add to information overload.

"Digital technology should deliver data in a way that gives safety managers maximum insight in the minimum amount of time."

The latest workplace hearing loss prevention solutions provide an example of how such digital technology can be successfully applied. Next-generation digital technologies such as Smart Alert present a simple, connected, wearable technology that empowers end-users while providing supervisors with actionable insight so that they can intervene when necessary to combat noise-induced hearing loss (NIHL). Critically, the information provided by the solution is granular and accessible, allowing the safety manager to make the most of the insight provided in the least amount of time.

The starting point for the Smart Alert system is an ergonomic earplug developed originally for musicians and then refined for industrial and construction markets. The lossless earpieces protect against workplace noise while supplying the end-user with natural sound: maintaining directivity, situational awareness, and communication with co-workers. The earplugs can be worn on their own or under ear defenders, providing comfortable protection over lengthy periods of time.

The intelligent earpieces are connected to a lightweight, collar-mounted unit which contains the digital brain of the Smart Alert earplug. This enables Active Noise Monitoring to be integrated into the hearing protection, delivering in-device alerts that immediately advise workers when they need to act due to unsafe noise levels. This may entail physically moving further away from the noise source, inserting the earpieces and adding additional hearing protection until the noise risk abates.

"Notifications can be configured to reduce the number of unwanted emails or SMS, so that safety managers can focus their limited resources on the highest priorities."

Smart Alert earplug continuously collects the noise level and provides other usage data, such as when and how well the earplugs have been fitted. At the end of the working day, the device is docked and noise data is securely transferred to the Smart Alert cloud platform, where it is analysed, and actionable insight is created.

Personal guidance is provided for users experiencing high daily noise exposure levels, with automated notifications in the form of emails or text messages. Unlike other digital solutions that rely on end-users deciphering the data for meaningful outcomes, the Noise Smart solution provides straightforward suggestions that can be adopted to improve personal safety and lower the risk of noise-induced hearing loss. It is about empowering and encouraging end-users to change their safety behaviour.

Maximising the benefits of data simplification.

For the safety manager, the Smart Alert system provides a light-touch solution for hearing loss prevention that only requires intervention when best practice is not being followed. Notifications can be configured to reduce the number of unwanted emails or text messages so that safety managers can focus their finite resources on the highest priorities. The Smart Alert stores all usage data on the cloud but will only alert the safety manager where intervention may be required.

Easy access to reliable data on web browser dashboards helps safety managers identify workers who require additional support, build necessary reports in a timelier manner, and achieve KPIs. This access to contextual data cuts through the noise and helps to prevent information overload. It allows the safety manager to pinpoint the individuals that are most at risk of noise-related hearing loss, enabling them to work with them collaboratively – not coercively - to drive improved behaviours.

The Smart Alert system also enables the safety manager to prove adherence to best practices in workplace settings, countering any potential hearing-related injury claims. The solution allows historical data on hearing loss prevention to be stored over time. This data pool provides a vital audit trail of compliance with best practices should it be required. This is becoming increasingly important for safety managers and employers because hearing loss in the general population is likely to increase. According to the World Health Organisation, by 2050 as many as 2.5 billion people are projected to have some degree of hearing loss, with over 1 billion young adults at risk of permanent hearing loss due to unsafe listening practices. It is often difficult to pinpoint whether hearing loss has occurred in recreational or industrial settings, yet employers carry the cost of investigation and burden of proof. Smart Alert provides a continuous record of exposure in the workplace and provides employees with timely information that encourages them to take a proactive role in hearing loss prevention, reinforcing best practice.

"Smart Alert allows historical data on hearing loss prevention to be stored over time, providing an important audit trail of compliance with best practice should it be required."

"The safety manager has access to all relevant hearing loss prevention data in one place and can work more efficiently with the need for less oversight in their day-to-day role."

Conclusion – the intelligent approach to hearing loss prevention.

Ultimately, the Smart Alert solution can transform the lives of modern safety managers – freeing up time and helping them deliver more effective hearing loss prevention programmes which require less effort. The automated system makes the most of proven digital technologies to deliver a simple yet effective means of managing hearing loss prevention activities, enabling the safety manager to identify individuals who most need their support quickly.

Critically, the Smart Alert system is much more than passive or even Smart PPE. It provides information in an accessible manner, with the safety manager only alerted when action needs to be taken. This targeted approach eliminates the risk of information overload and lets the safety manager operate more efficiently and effectively in other parts of their role. Its ability to alert wearers to risk in real time encourages lasting behavioural change to improve the outcomes of workplace hearing loss prevention initiatives. In short, Noise Smart offers the only truly automated and integrated approach to hearing loss prevention available on the market - setting new standards in industrial and construction applications.

Why Smart Alert outperforms traditional PPE.

Manufacturing and construction organisations regularly deploy noise measurements to gain an understanding of noise sources and help define strategies for implementing effective controls. After all, eliminating or reducing the noise at source is the ultimate control measure for hearing loss prevention.

In support of these activities comes the use of Personal Protective Equipment such as ear defenders, representing the last line of defence. But the difficulty with traditional PPE is gaining an accurate understanding of an individual's noise exposure, the wear rate of equipment and whether it is being worn properly.

For hearing loss prevention, the effectiveness of equipment such as ear defenders relies on the worker's ability to know when they are exposing themselves to dangerous levels of noise and then to take timely action to mitigate against the risk.

One of the challenges to effective hearing conservation is that the actual attenuation provided by hearing protectors in real-world settings varies significantly between individuals and may not correlate well with the noise reduction performance suggested by the manufacturer.
In addition, there is evidence that in many noise exposure situations, hearing protection devices are under-used – with workers finding them uncomfortable to wear and restrictive when attempting to communicate with colleagues.
In industrial and construction settings, this isolation and lack of communication can present a safety risk in itself, particularly where mobile, heavy machinery such as forklifts, lorries, passing trains, drilling rigs and dumper trucks is present.

For end users, when to use hearing protection in the field is problematic. Traditional earmuffs and defenders are passive pieces of equipment and cannot help the wearer to decide when protection is required or help them understand what level of protection is being achieved over time.

The root problem is that noise exposure is highly variable and can be difficult to predict. Transient peaks - such as walking past a noisy machine or a large vehicle passing by - may not even register as a risk. And even where the risk is recognised, exposure limits may have been exceeded before the employee has time to respond and don the appropriate hearing protection.

For the health and safety manager, an enormous amount of administrative effort can be expended to enforce hearing loss prevention initiatives across a site. Paper-based compliance systems are of little value as they provide no evidence that a worker has worn ear defenders in the right way at the right time. The safety manager does not have the resources to work at an individual employee level to encourage behaviour change, with highly mobile employees on factory floors or building sites often working out of sight in dynamic noise environments. It is also often impossible to reinforce training to rectify any examples of poor practice when they are discovered.

What is needed, then, is a more automated approach to combating occupational noise-induced hearing loss (NIHL) that provides the safety manager with meaningful and actionable data that is presented clearly and concisely – improving existing compliance methods but avoiding information overload. Such technology also needs to work for the end-user on the factory floor or construction site. It needs to be comfortable and intuitive to ensure that it is worn correctly over time to provide the highest levels of hearing protection. Ideally, it also needs to reinforce good practice and involve the end user proactively and personally in taking action to prevent NIHL in the workplace.

Smart Alert provides an answer in every case.
It represents the only truly automated and integrated approach to hearing loss prevention - setting new standards in industrial and construction applications.

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