

SEGMENT FIFTEEN – Noise and Vibration

After studying this segment you should have a greater understanding of the risks and hazards that are associated with noise and vibration in the Seafood Industry

AIMS OF THE SEGMENT

The main aim of this segment is to help you to understand the potential long and short-term effects of exposure to noise and vibration and be able to:

- State that noise is an unwanted sound that may cause annoyance, stress, distraction and hearing damage or loss:
- Describe methods of noise reduction and control:
- State that hearing protection is a last resort but, where necessary, its use at all times is essential:
- Understand the need for specialist risk assessments in certain workplaces.

The seafood industry seems at times a loud and noisy place, what with winches on fishing boats and auctioneers in fish markets. Fish and chip shops and fishmongers are much quieter workplaces but even here we may experience unwanted noise and vibration, sometimes to the extent that it puts our health at risk.

Noise is something that most of us are exposed to at work and long term exposure to noise can cause hearing problems and stress. At a lower level, noise can cause reduced productivity and can lead to other kinds of problems as communication between individuals suffers.

The 2005 Noise Regs (Control of Noise at Work Regulations 2005) are the Regulations that govern how employers and employees are to act to ensure that noise related risks are minimised and controlled.

WHAT IS NOISE ANYWAY?

As far as the Law is generally concerned, noise is any unwanted sound. So if you are attending a rock concert the sound of the music is not noise, but if your house is just outside the stadium then the music may well be noise and you may well want to complain to the Environmental Health Department about the nuisance.

As far as health and safety legislation is concerned we need to be a little more specific. Here, the definition is:

An unwanted sound (at work) that may cause

Annoyance + stress + distraction + hearing damage or loss (Tinnitus)

In the context of the workplace it would be difficult to demonstrate that any loud noise is wanted, and so it's best to concentrate on the annoyance, stress, distraction and hearing damage aspects of noise.

Annoyance and Stress

Annoyance and stress can be caused by quite small amounts of noise. Something as simple as a noisy fan in a fishmongers shop, the hum from a supermarket speaker system or the rattle from worn equipment can annoy individuals to the point where they feel distressed. It is always better to think seriously about the complaints from staff about annoying sounds in the workplace because they can often be dealt with at little or no cost and occasionally they are an indication of a fault or malfunction.

However, the principle '...as far as is reasonable and practicable' applies so employers are not obliged to implement costly changes to remove low level annoying noises.

Distraction

As noise gets a little louder it can start to distract people. This can lead to reduced productivity and more seriously it can interfere with communication to the point where it can cause accidents and incidents.

It is not just a case of not being able to hear a fire alarm over the noise in the workplace, what about when you cannot clearly hear instructions or warnings or when those you are instructing or warning mis-hear what you say?

When noise reaches the point at which it is likely to cause a distraction then its time to start thinking seriously about controlling it.

Hearing Damage or Loss

Noise induced hearing loss, whether temporary or permanent is a serious matter and one that the employer must address. Tinnitus is the most common form of hearing damage and can range from an occasional buzzing to a constant ringing in your ears.

THE SCIENCE OF NOISE

The measurement and assessment of noise is a complex subject for which an understanding of the science of noise and the ways in which our hearing works and is damaged is essential. I cannot give the subject justice in the space I have available here, and I don't think you would like me to anyway. I will however give you a few key facts about noise to help you understand the problem.

Noise is a form of energy and if there's too much of it you will be hurt.

We measure the energy using a noise meter and we use the word Decibels (dB) to describe how much energy there is.

For example:

Breathing is rated at around	10dB and is barely audible
A Library is rated at around	40dB
A Restaurant (not the kitchen!)	60dB
A typical Factory	80dB
A Rock Concert at up to	114dB
A Thunderclap is rated around	120dB

But what does this all mean? Well, each increase of 3dB actually means a doubling in the amount of energy in the noise and a doubling in the amount of risk to your hearing. If we give 10 dB a risk rating of 1 then the other activities can be compared this way.

A **Library** is 1,000 times louder than your breathing
 A **Restaurant** is 130 thousand times louder, and
 A typical **Factory** is 8 million times loader than the sound of your breathing. I will not compare a thunderclap as the figures look meaningless on paper.

When the sounds are compared this way you can see than a factory is a very loud place indeed. Even if it doesn't sound that much louder, your ears are subjected to 8 million times as much energy as the sound of your breathing/.

The main point of the exercise above is to demonstrate that our hearing works like the dB figures, the factory sounds louder than a restaurant, but not that much louder. However, when it comes to the potential that noise has to damage our hearing then energy is more important, and a change of just a few decibels in volume can mask a truly massive increase in the potential for damage.

There is another factor to take into account when looking at noise and that is duration.

The way we understand noise and hearing damage is that if you double the amount of time you are exposed to a noise you double the risk. This means that even fairly low level noise can over time cause problems and we need to think about the average noise levels in the workplace as well as the loudest noises that may occasionally be heard.

WHEN SHOULD I TAKE ACTION?

As an employer your responsibilities changed slightly in 2005 with the amendments to the Noise Regs.

Under the Regulations there are two action levels.

Action level 1 – In workplaces louder than this level employers must:

- Inform employees of the noise levels and train them as appropriate;
- Provide hearing protection (PPE) on request and maintain such protect.

Action level 2 – In workplaces louder than this level employers must:

- Reduce noise at source so far as is reasonable practical;
- Establish areas where ear protect is needed and clearly mark these;
- Provide ear protection in these areas
- Enforce the use of ear protection in these areas;
- Inform and train staff;
- Maintain ear protection.

The action levels were reduced in the 2005 amendments.

Action level 1 is now set at 80dB average exposure over a working day.

Action level 2 is set at 85dB average exposure over a working day.

There are other details to do with peak exposures and an upper limit of 87dB for the workplace.

For more details on this, the HSE leaflet INDG362 (Noise at Work) should be consulted.

WHAT ACTION SHOULD I TAKE?

If noise is an issue then you must attempt to reduce the level of noise and if that is not practical then you must protect your employees against the noise. As an employee you must cooperate with your employer and that means wearing the Noise PPE as directed.

There are many methods available to reduce the levels of noise in the workplace. Which combination of methods is most suitable is something that you will need expert advice on.

Reduction at Source

Simply put, stop the noise being produced in the first place.

How?

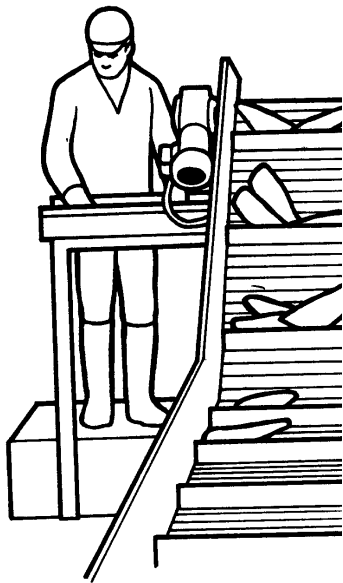
- Repair faults that cause noise – loose conveyor belts, rattling fans etc;
- Buy quieter equipment – put dBs into the specification for new equipment;
- Fit silencers;
- Engineer out the problems
 - Weld instead of rivet;
 - Press instead of hammer;
 - Quieter bearings fitted;
 - Replace metal gears with plastic ones;
- Dampen large vibrating panels;
- Turn down Radio 1 (2) – you should not use loud music to drown out a noisy environment, and when evaluating the noise level you must include the radio in your measurements;
- Switch off equipment when it's not in use.

Reducing the noise almost before it is produced is by far the best option.

Reduction in Transmission

For Noise to be a problem it has to get from the source, say the extractor fan on a frying range, to you or an employee. Reduction in transmission is all about stopping it somewhere on its way to your ears.

Examples include:



- Fitting noise dampening cabinets around noisy equipment;
- Using other forms of direct barriers;
- Fitting panels to walls and ceilings that absorb noise;
- Reducing the transmission of vibration through floors etc;
 - Rubber mounts for equipment;
 - Isolate equipment and noise makers in other ways;
- Increase the distance between the noise source and staff;

Look at this drawing. See how close the operative is to the motor driving the conveyor belt.

If that motor is noisy then ideally it will be encased within a noise dampening enclosure. It's only a small improvement, but if enough improvements are added

together then the overall effect can be significant.

Protect the Receiver

The last resort is to protect the individual in circumstances where the level of noise cannot be reduced to a comfortable level (generally accepted as below 70dB).

This may include putting individuals into an enclosure, such as a sound proof office on the shop floor.

More often than not though it means providing PPE in the form of ear defenders or ear plugs for individuals to wear.

Why is hearing protection the last resort?

Hearing protection is a form of PPE and the Law states that PPE is usually the last resort after the following:

Eliminate the hazard

Reduce the hazard

Isolate the hazard from people

Control by other means (such as limiting the time of exposure).

The only control lower on the list than PPE is Discipline which is short hand for training, instructions and signage.

If you have to use PPE then you must enforce it's use. Hearing loss is something that is cumulative over long periods of time and by the time you realise that there is a problem it is often too late to undo the damage.

To paraphrase a popular saying,

Hearing loss isn't just for Christmas, it's for life.

For more information on noise and vibration at work consult the HSE or a recognised expert on the subject.

As an employer you will have to carry out and maintain Noise Related Risk Assessments. This can be a complicated activity that you may wish to delegate to an external contractor or expert to carry out for you. There are working environments where this will be essential or at least strongly advisable.

There may also be circumstances where you need to monitor the occupational health of your employees over time. Fortunately, outside of food manufacturing, most of the (onshore) workplaces in the seafood industry are not noisy enough to require this.