

SEGMENT TWELVE - Hazardous Substances

After studying this segment you should have a greater understanding of why hazardous substances may be found in the workplace and the process of identification, minimisation and control necessary to reduce the risk to an acceptable level.

AIMS OF THE SEGMENT

The main aim of this segment is to help you to appreciate the nature and risks of hazardous substances and be able to:

- Give examples of hazardous substances and state how they can be identified;
- State that the use of hazardous substances should be minimised, and properly assessed;
- Describe methods for the control of hazardous substances to prevent exposure and protect personnel;
- Explain the need for authorisation and training of personnel.

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH)



There is a specific regulation for the control of substances hazardous to health, usually referred to as the COSHH regulations. But we will not go into that much detail in this segment. Your business may well need to appoint a competent person to deal with the requirements of the COSHH Regulations and that person should undertake specialist training.

Are You Using Hazardous Substances?

Employers have a specific legal responsibility to identify all hazardous substances used in the workplace, to assess the risks presented by them and to implement appropriate control measures.

This doesn't just apply to the ones you know are hazardous, the responsibility is to seek out all the substances used in the workplace and assess if they are harmless or potentially harmful. The rest of this segment, and the previous segment on Risk Assessment will show how this can be done for low risk environments.

At the end of the segment there is an example of a Risk Assessment form that can

be used for assessing substances.

SUBSTANCES THAT ARE HAZARDOUS

What are they?

“Any material or substance with the potential to cause illness or injury to the people who come into contact with it”

Substances that are hazardous to health include those substances labelled as dangerous such as:

- very toxic;
- toxic;
- harmful;
- irritant or corrosive.

They also include harmful micro-organisms, materials, mixture or compounds used at work, or arising from work activities, which can harm people’s health.

Hazardous substances in the seafood processing sector can include:

- aerosols from prawn protein in the atmosphere as part of the peeling process;
- preservatives, such as sodium metabisulphite;
- water retention chemicals, such as sodium polyphosphate;
- Allergens, dusts (from batter mix for example)
- Cleaning chemicals.

Within the seafood industry generally, cleaning materials, especially concentrated solutions, appear to provide the greatest risk.

The process of diluting various products to the correct concentration can be a problem activity, causing irritation to skin and damage to work and floor surfaces. This is particularly the case when general cleaning chemicals are used rather than food-specific ones.










Ideally, cleaning materials should be specifically designed products for the food industry, and diluted with a dose meter or through the careful use of measuring equipment.

Identifying Harmful Substances

This should not present any problems as all harmful substances used in the workplace must be clearly marked, and where necessary they will have detailed safety data printed on the container or provided separately.

Those harmful substances produced during the work activity (eg protein aerosols during processing) should have been identified by management and clear and effective controls put into effect.

Let’s look at the various classifications of harmful substances and their symbols.

IRRITANT:		Long term exposure will cause skin inflammation, dermatitis and/or asthma.
HARMFUL:		Substances that may cause harm to health if swallowed, inhaled or absorbed through the skin.
SENSITISING:		Substances that can initially show little effect, but on repeated exposure can produce greatly magnified irritant and allergic effects.
TOXIC:		A poisonous substance which can cause death, even in small quantities, when swallowed, inhaled or absorbed by skin contact.
VERY TOXIC:		A very poisonous substance even in very low quantities.
CORROSIVE:		Often strong acids or alkalis [♣] which when in contact with the skin or other tissues will 'burn' and corrode.
CARCINOGENIC:		Substances that if inhaled, swallowed or absorbed by the skin can cause cancer.
EXPLOSIVE		Dangerous because of their potential to release energy rapidly, or because the product(s) of the explosion or combustion are harmful in other ways.
OXIDISING:		Substances, which give rise to exothermic reactions (gives off heat) when in contact with another substance, particularly flammable ones.

If you look back at the descriptions above you will see many of them talk about swallowed, inhaled and absorbed. Now would be a good time to look at how these substances get into the body and how we can protect against them.

If you have any doubts, about the safety of a substance or chemical you are asked to use, or about an activity that you are asked to carry out, then speak to your supervisor, ask to see the safety data sheet or risk assessment record.

If you have further doubts then you may wish to speak to a health & safety inspector or adviser by contacting your local EHO office.

[♣] The most common is caustic soda or sodium hydroxide, although some caustic cleaning chemicals are used.

ROUTES OF ENTRY

- Absorption
- Inhalation
- Ingestion

The way in which a substance gets into the body will depend on whether it is present as a gas or vapour, as a liquid or fine spray, or as a solid.

Gas, vapours and fine droplet sprays can easily be inhaled and absorbed into the body via the lungs. Absorption by the lungs is very effective, quick and perhaps the most significant 'way in' for most substances.

Liquids are most commonly absorbed by the skin. As the skin has evolved to provide a waterproof barrier, absorption by this route is slower and less effective than through the lungs.

The third most common route is by ingestion through the mouth. This is relatively rare and is only likely to happen if there is a failure in basic hygiene. That's why we were all told by our mothers to wash our hands before eating, as what is on our hands will find its way into our stomach. That's bad enough if our hands are covered in fish slime but actually much worse if we've handled something more toxic!

Two other routes to consider are direct injection and direct action on the skin. Injection will occur as part of a cut or puncture wound and is unlikely to be a significant problem in the seafood industry.

Direct action on the skin is much more common and can lead to severe dermatitis and occupational health problems, for some people, from prolonged exposure to some chemicals.

Now that we know how the substances can get into our body we can think about ways in which we can keep out.

CONTROL OF HAZARDOUS SUBSTANCES

Going back to our guiding principle that prevention is better than a cure, it is better to avoid exposure to harmful substances at all. Only if we have to use a substance should we consider the second best option of protecting against it.

Going back to the segment on Risk Assessments we would see that there is an order of importance or hierarchy in controlling hazards. We should apply the same order to hazardous substances using **ERIC P D**

- | | |
|-----------------------------|--|
| ELIMINATE | - simply don't use them |
| REDUCE BY SUBSTITUTE | - use something less harmful instead |
| ISOLATE | - segregate persons, remote operation, |

CONTROL

barrier etc.

- ventilation, health monitoring, job rotation

PPE**DISCIPLINE**

- a last resort, short term exposure procedures and rule, posters and signs, self-discipline – washing hands for instance.

In the seafood industry we are unlikely to come into contact with the more harmful substances used in other industries, our business after all is processing and selling food and food products not processing heavy metals!

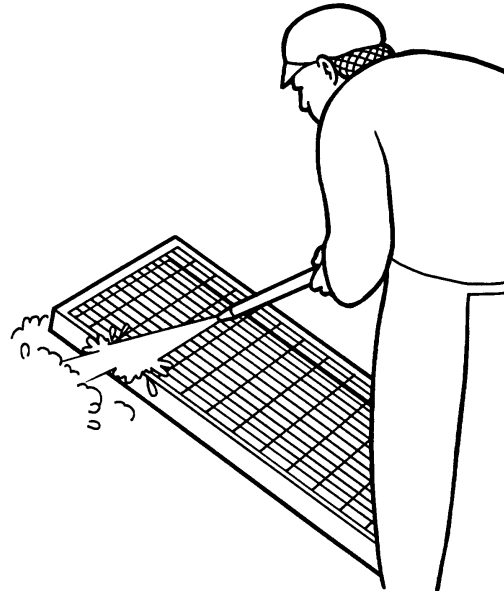
Even so, some of the substances we will come into regular contact with need to be treated with caution and control measures appropriate to the workplace used.

Here are examples of what you might encounter.

Processing Sector

Because of the nature of work carried out in these plants food safety is of a high priority, with this in mind the substances listed are in the whole used for cleaning.

- Acid detergents.
- Tray wash detergents.
- Caustic detergents.
- Alkaline detergents.
- Acid foam detergents.

**Retail and Food Service Sector**

Of all the work activities that are undertaken in the seafood industry this area would seem to have the least hazards relating to substances in the workplace identified. Even so, there are substances that are used which could be hazardous to health such as:

- bleach;
- dishwashing substances;
- hard surface cleaners;
- caustic detergents (fried fish shops for example).

In all sectors of the seafood industry there are other substances used, for instance in the maintenance of equipment, that could have a hazardous effect on health, there may also be substances produced during work activities that have unwanted effects on some people.

The most common example of this is an allergy to fish and shellfish protein. The allergy can be developed over a period of time from repeated exposure to protein as a fine aerosol in the air which is inhaled. Those processes that create this type of aerosol include scampi and crab processing. In this instance the allergy results in a form of asthma.

Another, rarer form of the allergy leads to contact dermatitis. In this instance touching raw fish or shellfish can eventually lead to dermatitis and skin irritation.

These two forms of allergic reaction should not be confused with allergies to eating seafood, as they are acquired from repeated exposure to fish protein over time.

In practice how do we control the exposure of persons working in the seafood industry to hazardous substances?

Going through our hierarchy of controls – **ERIC P D** we quickly move through **Eliminate** and **Reduce** by substitution as all the chemicals and substances used in the industry should be the safest possible ones that will still do the job required.

That is one of the reasons for buying cleaning chemicals from approved sources and manufacturers as they have done a great deal of testing to ensure that chemical safety is as good as it is possible to get.

Isolate comes next on the list. More commonly, automated box washing plants in processing factories will isolate the cleaning operative from the cleaning chemicals.

Dishwashers in the food service sector serve a similar 'isolation' function as well.

Control measures are more common as these include providing instruction and training for persons exposed as well as using job rotation to reduce the level of exposure. Health monitoring is another control method that should be employed whenever there is any possibility of long term exposure problems.

Provision of ventilation, whether general ventilation or local ventilation is an appropriate control measure in many circumstances.

We now come to the most well known and visible method of control, Personal Protective Equipment. Although well known and highly visible, I hope you will realise that your employer has or should have considered and used all the above controls before getting to PPE.

Personal Protective Equipment – gloves, overalls, goggles and face masks, headgear and even breathing protection may be used to reduce exposure to acceptably low levels. Commonly used by cleaning staff when making up and using cleaning agents.

Finally we get to **Discipline**. Following proper procedures and obeying the rules should not be underestimated as a way of controlling risks.

One of the control measures mentioned above included supervision and training. These are important measures that reduce the uncontrolled use of hazardous substances.

If a substance is assessed as hazardous, and really that is any substance that requires any kind of control measure, then access to that substance should be

controlled to trained personnel.

For example, you may use a caustic cleaner to clean out the pans in a frying range periodically. Caustic cleaners can be very dangerous if used incorrectly. An effective control measure would be to keep this cleaning chemical locked up, to designate who can use it, provide them with effective training on its use and appropriate PPE to use when cleaning.

SUMMARY

In this segment we have touched briefly on the identification, assessment and control of hazardous substances. The seafood industry is not renowned for its use of hazardous substances, but they do exist. Perhaps they are not as hazardous as those used in the petrochemical or heavy engineering industries but they can still cause harm.

However, this does not absolve seafood businesses from their responsibility to identify, evaluate and if necessary control any substances that may be harmful to health. Employers must also record their findings and continue to monitor the situation as appropriate.

ASBESTOS IN THE WORKPLACE

Asbestos can be encountered in many workplaces, and not every encounter with asbestos will be dangerous. However

*“If existing asbestos containing materials are in good condition and are not likely to be damaged, they may be left in place; their condition **monitored** and **managed** to ensure they are not disturbed.”*

Control of Asbestos Regulations 2012

The regulations also require employers to manage any asbestos that may be found in the workplace and to *identify, risk assess and control* workplace asbestos.

This duty to manage includes training for staff who may come into contact with asbestos, but for most staff in the seafood industry this will not apply, unless you have identified asbestos containing (or potentially containing) materials in your workplace.

Types of asbestos:

Asbestos may be sprayed on, mixed with cement, used as lagging, made into insulation board, as textured coatings etc.

Risks from asbestos:

Breathing in air containing asbestos fibres can lead to asbestos-related diseases, mainly cancers of the lungs and chest lining.

Asbestos is only a risk to health if asbestos fibres are released into the air and breathed in. Past exposure to asbestos currently kills around 4500 people a year in Great Britain.

Remember asbestos was used in many other materials. If you are in doubt, it is safer to presume that a material contains asbestos, unless there is strong evidence that it does not.



Asbestos warning label

Asbestos product	What it was used for
Sprayed asbestos (limpet)	Fire protection in ducts and to structural steel work, fire breaks in ceiling voids etc
Lagging	Thermal insulation of pipes and boilers
Asbestos insulating boards (AIB)	Fire protection, thermal insulation, wall partitions, ducts, soffits, ceiling and wall panels
Asbestos cement products, flat or corrugated sheets	Roofing and wall cladding, gutters, rainwater pipes, water tanks
Certain textured coatings	Decorative plasters, paints
Bitumen or vinyl materials	Roofing felt, floor and ceiling tiles

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