Information is presented in good faith and is intended to be representative, however as circumstances may vary, please satisfy yourself that requirements are met.
• Why do I need a risk assessment?
• What is a risk?
• What is a risk assessment?
• Hazards.
• Risks.
• Control measures.
• Case Study.
Why do I need a risk assessment?

**Employer’s Duties**

- Employers who have identified hazards on site must carry out a Risk assessment.

- If a hazard is present, they must:
  - Identify what it is
  - Assess its risk/health effects
  - Try to eliminate/prevent the risk
  - Or reduce the risk

- As a last resort, if it is not possible or prohibitive to eliminate or reduce the hazard, PPE may be the only viable solution.

- The employer is responsible for selection, maintenance & training of PPE.
Risks and Hazards are often confused;

- A **hazard** is the potential of a substance or process to cause harm to people
  
e.g. sulphuric acid will cause burns to skin

- A **risk** is the probability of a hazard actually causing harm
What is a risk?

For Example;

**Hazard** of Asbestos = causes mesothelioma (lung cancer)

**Risk** of inhaling Asbestos fibres = minimal if asbestos board is in good condition. **However**, risk is greater if the asbestos board is in poor condition or is being broken.
A risk assessment is an information gathering exercise about:

**Hazards, Risks and Controls**

Requires information on:

- **Substances.**
- **Work processes (location & duration).**
- **Assessments of the levels of exposure.**
- **Evaluations of control measures.**
A **Hazard** is *any substance or process* which may cause harm.

In order to conduct a risk assessment it is necessary to consider any hazards that may be present in your workplace.

For example:
- Do you use any hazardous substances, e.g., Paints, solvents, acids?
- Is it a noisy environment?
- Do you work at heights?
- Does your process generate any particles or gases?
Some hazards affecting the body:

- Peak noise exceeding 135dB.
- Continuous noise exceeding 80dB.
- Chemical splashes
- Metal/plastic shards
- Chemical gases & vapours
- Particulate dusts, mists, metal fumes
- Radiation: UV, visible, infra red.
- Metal/plastic shards
Where can I find information on hazards?

Where to look for information on substances:

- Material Safety Data Sheets (MSDS)
- Container labels
- Trade journals
- Risk phrases
- HSE
Where can I find information on hazards?

Materials Safety Data Sheets

Includes details on:

- Name & Address of supplier
- Chemical Composition/Ingredients
- Physical Data
- Exposure Controls & PPE
- Fire Fighting Information
- First Aid Advice

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Where can I find information on hazards?

Container labels & trade journals

- Container labels will often list the “ingredients” in a product.

- Industry trade journals may provide useful information on various common hazards.
Risk Phrases

These are definitions of chemicals – as detailed in CHIP 2 Regulations

Examples:

- R1 - explosive when dry
- R26 - very toxic by inhalation
- R35 - causes severe burns
- R42 - may cause sensitisation by inhalation
- R43 - may cause sensitisation by skin contact
- R49 - may cause cancer by inhalation
Remember: Substances are not the only hazard!

- When conducting a risk assessment, it is important to consider not just what you are using but how you are using it.

- Work processes may also have an associated hazard, for example, what does the process generate?
A risk is the probability of a hazard actually causing harm.

The level of risk can be different for different workers, for example, expectant mothers, people with disabilities or new workers.

For respiratory and hearing hazards, the risk associated is usually assessed by the level of exposure experienced by an individual compared with occupational limits.
Assessment of level of exposure.

- The level of exposure to a hazard is critical when conducting a risk assessment.
- This will determine whether the hazard is a threat.
- Monitoring methods include: passive badge samplers, noise meters and personal pump monitoring.
- This can indicate a personal dose, which is the best assessment of the potential risk to an individual.
- Other assessment methods also exist. E.g. HSG53, HSE Guide to Selecting RPE.
Assessment of level of exposure.

An example of some results collected during monitoring:

8 hour average
Assessment of level of exposure

• Once the level of exposure has been determined the next step is to compare this value to the limit value.

• For example:
  – For respiratory hazards this is the workplace exposure limits (WELs) detailed in EH40*.
  – For Noise this is the action levels detailed in European Union Physical Agents (Noise) Directive, 2003/10/EC.

• This will help you to evaluate whether any control measures are necessary.

• *EH40 is a document written by the HSE that is updated regularly, use of an up-to-date version is essential.
Workplace Exposure Limits

- WELs are occupational exposure limits set under CoSHH (Control of Substances Hazardous to Health).
- They are concentrations of hazardous substances in the air, averaged over a specified period of time.
- Two time periods are used, short term (15 minutes) and long term (8 hours).
- Employers have a legal duty under CoSHH to control exposure to chemicals hazardous to health.
The European Union Physical Agents (Noise) Directive, 2003/10/EC details the thresholds that exposure to occupational noise must not exceed.

<table>
<thead>
<tr>
<th>Lower Exposure Action Value</th>
<th>80dB(A) Continuous</th>
<th>135dB Peak</th>
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</thead>
<tbody>
<tr>
<td>HPE available upon request</td>
<td>Not enforced</td>
<td></td>
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<table>
<thead>
<tr>
<th>Upper Exposure Action Value</th>
<th>85dB(A) Continuous</th>
<th>137dB Peak</th>
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<tbody>
<tr>
<td>HPE must be provided</td>
<td>Strictly enforced</td>
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</table>

<table>
<thead>
<tr>
<th>Exposure Limit Value</th>
<th>87dB(A) Continuous</th>
<th>140dB Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must never exceed this noise level at the ear whilst wearing hearing protection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Control Measures

There is a hierarchy of control that should be followed:

1. Elimination/substitution
2. Engineering Controls
3. Personal Protective Equipment

Best use of PPE is in combination with other control measures, during inspection or whilst other control measures are being put in place.
• Is it possible to alter your work process in order to eliminate or reduce the risk of a hazard?

• Could you substitute a hazardous substance for a less hazardous chemical?

• Elimination/substitution should be your first consideration when aiming to reduce risk, but this may not always be a viable option.
If you are not able to eliminate the hazard, you should next consider whether engineering controls could be put in place to reduce the risk of the hazard. For instance could better ventilation reduce exposure to a hazardous particle? Or could non-slip matting be fitted to reduce the risk of falls? In some cases however, the hazard may still present a significant risk after engineering controls have been put in place. In this case PPE can be considered...
Personal Protective Equipment

- The best use of PPE* is in combination with other control measures, during inspection or whilst other control measures are being put in place.

* It should, however, be noted that over attenuation when using HPE can be dangerous and is not advisable.
If your risk assessment considers PPE to be necessary, 3M can offer a wide range of solutions.
Case Study

Hazard

• An employer identifies a hazard: Substance x, a residual dust is generated by the manufacturing process.

• The risk phrase for substance x is R23, toxic by inhalation.
Case Study

Risk

- The WEL value is 10mgm$^{-3}$ over an 8 hour TWA.

- The 8 hr TWA exposure of his employee to substance x is 120mgm$^{-3}$.

- The exposure to substance x needs to be reduced by at least 12 times.
Control Measures

- He cannot eliminate or substitute substance x for another material as it is a critical ingredient to his process.
- He has incorporated on-line extraction and ventilation.
- The employer decides to evaluate PPE as an additional control measure.
- He decides to use an FFP3 respirator as this has a APF of 20 when fitted correctly i.e would reduce exposure by a factor of 20.
• Employers who have identified hazards on site must carry out a Risk assessment.

• A risk is the probability of a hazard actually causing harm.

• A risk assessment should;
  • identify hazards
  • consider the risks
  • control the risks

• PPE is the last resort.

• The best use of PPE is in combination with other control measures, during inspection or whilst other control measures are being put in place.
• For more information on this presentation, other support tools or our products, please see www.3m.co.uk/ohes.

• Alternatively please ring the 3M Health & Safety Helpline;

0870 60 800 60 (United Kingdom)
1 800 320 500 (Ireland)