201: Health and safety in building services engineering  
**Handout 15: Environmental protection**

**Learning outcome**

The learner will:

1. Understand the procedures for dealing with Environmental and Health and Safety situations in the work environment

**Assessment Criteria**

2.5 describe the **ways in which the environment may be affected by work activities**.

2.6 specify the current **requirements and good working practices** for processing waste on site.

2.7 explain why it is important to report any hazards to the environment that arise from work procedures.

**Range**

**Ways in which the environment may be affected by work activities**: Land contamination, Air pollution, Pollution of water courses.

**Requirements and good working practices**: Recycling, Hazardous waste, Landfill.

**Environmental protection**

The environment may be affected in a number of ways by your work activities including the following:

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| **Land contamination**: In the electrical trade to determine the causes of land contamination of the site you are working on my seem difficult.  It is more likely that you could contaminate land indirectly but dumping your solid waste in an inappropriate manner.  For example, placing waste plastic from PVC conduit into the ordinary waste containers which will generally end up in landfill and this plastic will take possibly hundreds of years to degrade. |  |
| **Air pollution**: Electricity is very clean energy in use but the process of installing the electrical infrastructure can cause pollution.  Once again, this is generally indirectly although if we are using diesel generators the exhaust from these contributes to air pollution.  Burning waste on site, for example, cardboard packaging or burning the insulation off scrap cable produces a significant amount of air pollution, particularly the latter. |  |
| **Pollution of water courses**: Discharging liquids into watercourses or the sewage system can have very serious implications to wildlife and humans.  Treatment works will often take water from rivers, treat it and purify it to produce potable (drinkable) water. However, this treatment may not eradicate the chemicals and the water will not be fit for human consumption. For example, battery acid should never just be poured down the sink. |  |

**Waste management**

There legislation governing the proper disposal of waste, ranging from low risk waste through to hazardous waste. These laws are enforced by the Environment Agency and Local Authorities.

However, all waste produced can also present a real safety hazard to workers on site if it is not properly managed throughout the project. You need to decide at an early stage:

* **How** - wastes streams produced during building work will be managed in a timely and effective way; and
* **Who** - is responsible for collecting and disposal of specific wastes produced on site. Problems often arise when company and individual duties are not made clear before work starts.

Top tips for waste management on smaller projects:

* **Flammable materials** - make sure that all flammable waste materials (such as packaging and timber offcuts) are cleared away regularly to reduce fire risks.
* **Work areas** - make clearing waste a priority for all trades. Check that everyone is aware of what is required that it is being done.
* **Skips** - waste materials need storing safely before their removal from the site so make sure that you allow sufficient space for waste skips and bins etc. Plan where the skips can be positioned and how often they will need to be collected.
* **Waste within buildings** - consider waste generated inside the building and whether you need to provide wheeled bins or chutes etc. to enable it to be brought out of the building safely.

There are basically three destinations for waste generated on site and these are:

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| --- | --- |
| **Recycling**: We are encouraged these days to recycle as much of our waste as possible. If rewiring an existing building it has been the practice to ‘weigh‑in’ in recovered old cable to a scrap merchants where it is recycled for use again. However, this traditionally is the extent of recycling in the electrical installation industry.  Cardboard packaging of accessories and equipment in the past has usually been burned on bonfires on site – this is wasteful and causes air pollution and site bonfires are not allowed now. It is now easy to separate cardboard from other waste that can be recycled. |  |

If you are involved in periodic lamp changing schemes you will end up with many redundant lamps. These used to be simply thrown in a general skip the contents of which end up in landfill. Fluorescent tubes contain small quantities of mercury and when large numbers are dumped the amount of mercury becomes significant. Most electrical wholesalers offer schemes to take back used lamps for safe disposal. These are only some examples of how we can recycle on site and the list of possibilities is huge.

**Hazardous waste**: Wastes will fall into one of three categories:

* **Always hazardous**, e.g. lead acid batteries or fluorescent tubes.
* **Never hazardous**, e.g. edible oil.
* **May, or may not, be hazardous** and need to be assessed, e.g. ink or paint.

Some construction waste can be described as hazardous/special waste, i.e. waste that is harmful to human health or the environment. This waste may be flammable, corrosive, or ecotoxic.

Examples of hazardous/special waste from construction include treated timber, concrete additives, asbestos, contaminated soils, preservative, adhesives, paint, varnish, solvents, fluorescent light tubes, and lead-acid batteries.

The primary piece of European legislation relating to the management of waste is the Waste Framework Directive.

Anyone who produces, handles or manages hazardous waste must take all reasonable measures to apply the waste hierarchy when they transfer waste. Unless there is a justifiable reason not to, a waste should be managed in order of preference by prevention, re-use, recycling, other recovery (e.g. energy recovery) and disposal. Adopting best practice advised for the construction sector will help achieve the aims of the waste hierarchy.

Using good waste management practice on site helps organisations to comply with environmental legislation, reduces costs and assists in creating a positive business image. The benefits of good waste management practice include:

* lower disposal costs, e.g. reduced skip hire, landfill tax, and gate fees
* avoidance of waste transportation costs
* greater reuse/recycling of materials on site, saving on raw materials purchased
* lower levels of material wastage.

Disposal of hazardous waste should be carried out by a company authorised to dispose of the particular waste concerned. It is your responsibility to check the credentials of the disposal company to confirm that they are authorised to deal with such waste and how they are disposing of it. It is no good claiming that you have discharged you duty by handing it over to another company. If that company subsequently dispose of the waste illegally, e.g. fly tipping, and it can be traced back to you, it will be you that gets prosecuted for illegally disposing of waste.

**Landfill**: Any other waste that falls out of the categories above will generally go to landfill sites to be buried in the ground. The number of landfill sites across the nation is limited so we should try to limit the amount of waste that we generate is kept to a minimum. The aim should be to follow the three ‘Rs’:

|  |  |  |
| --- | --- | --- |
|  | **Reuse**  **Reduce**  **Recycle** |  |

**What if you discover any hazards to the environment?**

The hazard must be reported immediately to your line‑manager and/or the site manager; they should know what to do. Warn other people in the vicinity of the situation.

If the effects can be easily and safely reduced then attempt to do so providing you are not putting yourself into any danger.