The Small **Environmental Guide** for Construction Workers

Reduce Waste and Save Money

Contents

Introduction

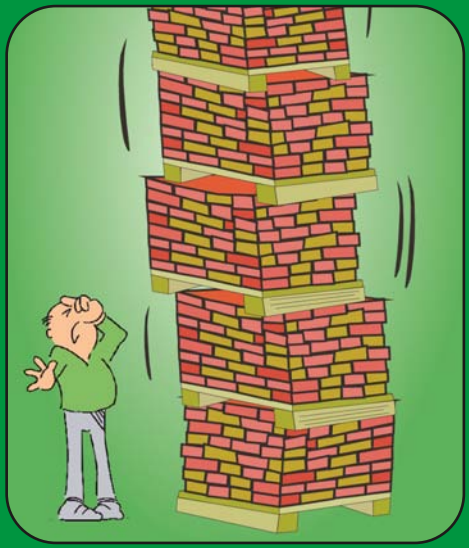
The disposal of waste from construction sites has become an expensive business. Gone are the days where everything was piled into a skip and taken off to be dumped in landfill for little or no expense.

The Small Environmental Guide for Construction Workers is for professional contractors and tradesmen working on all types of construction sites. It illustrates how working in an 'environmentally friendly' way can help to improve business performance and save you money in the process. Getting it right not only reduces the risk of prosecution, but also helps you to stay in business.

So what's in it for you? If the business can save costs from getting rid of inefficiencies, these savings could well filter down to you. Besides, you can do you bit for the environment and help save resources.

This guide includes:

- Handy tips for reducing waste
- Good practice in preventing pollution
- Relevant legislation
- Where to find more information



Buying and storing materials

Did you know that 50 per cent of the cost of a building is spent on materials?

Incorrect storage of materials can lead to increased:

- Damage and associated costs
- Risk of injury
- Risk of pollution
- Waste
- Likelihood of theft

Good practice on site

When ordering materials, consider:

- Purchasing materials that have a recycled content
- Procuring sustainable materials such as those recommended by the National Green Specification
  for example: timber from legal and well managed sources such as the Forestry Stewardship Council (FCS)
- Ordering paints with low odour and VOC emissions
- How much of each material is needed?
  Is an order of 110% really necessary?
- When and where materials are required?
- Asking suppliers to minimise packaging and to guarantee a take-back service, especially for pallets
- Ordering in standard sizes. For example can plasterboard be cut to size off site to minimise on site cutting and waste?

Be prepared for deliveries:

- Appoint a person to be in charge of and manage your stores
- Schedule your deliveries
- Audit all deliveries to make sure that all materials have been delivered. Don't just count the pallets; count the individual items where applicable
- Reject deliveries if incomplete or damaged

- Have appropriate storage areas ready which should be covered to protect against rain ingress and ideally have a hard standing surface
- Know whether special handing is required

When storing materials always remember to:

- Consider limiting access to stores to avoid wastage
- Provide adequate storage that is weatherproof and secure, such as lean-tos
- Follow suppliers' storage instructions
- Keep harmful chemicals in secure bunded areas
- Protect lightweight materials from wind
- Store liquids and sand away from drains and water courses
- Secure the site to avoid theft and vandalism

The UK produces around 400 million tonnes of waste annually, of which about 72 million tonnes comes from construction sites.

A builder ordered sand in 1 tonne bags rather than loose. He worked out that by the time loose sand was moved around the site, causing some to be wasted, he would save money despite the bagged sand costing more in the first place.

Staying on the right side of the law

To help avoid prosecution ensure that:

- Storage areas are clearly marked and kept secure at all times
- Materials are stored and used in accordance with manufacturers' guidelines
- Hazardous materials are stored and used according to details on COSHH datasheets

A Barra builder was fined £800 after admitting illegally dumping demolition waste, including asbestos tiles, on the shore. The builder had been working on renovations at a Hotel and although he had disposed of some waste legally, asbestos roof tiles, other general building waste such as electric wire, pieces of metal, block, stone and roof felt were dumped on the shore.

Where to find out more

Waste & Resources Action Programme (WRAP)
Tel: 0808 100 2040
www.wrap.org.uk/procurement
Information on procuring materials with a recycled content for use in construction.

Aggregain
Tel: 0808 100 2040
www.aggregain.org.uk
WRAP's free sustainable aggregates information service. It is designed to assist anyone interested in producing, specifying, purchasing or supplying recycled or secondary aggregates.

Recycled Products Finder
www.recycledproducts.org.uk
UK directory of recycled products.

NetRegs
www.netregs.gov.uk
Guidance on how to comply with environmental law as well as advice on good environmental practice.

CIRIA
020 7549 3300
www.ciria.org
Guidance on managing materials and components on site (SP146)

National Green Specification (NGS)
www.greenspec.co.uk
The NGS is an independent organisation. It is partnered with the Building Research Establishment (BRE) to produce an Internet-based resource for all building designers, constructors and manufacturers involved with 'Sustainable Construction'.

Managing waste (reduce, reuse, recycle)

In the UK an average of 13% of all materials delivered to site go into the skip without ever being used.

Waste can be generated on sites due to:

- Composite designs of buildings
- Changes in designs
- Material damage from careless delivery or storage
- Lack of communication between different tradesmen
- Lack of recording of material supplied and used on site
- Excess material left from site preparation
- Office waste

Do you know your waste costs?

You are responsible for waste on your site and for its correct disposal. Time and money can be saved by:

- Improving the way you work
- Carrying out staff training and awareness
- Avoiding prosecution

The average 8 cubic yard skip costs around £150.

The average cost of what is being thrown away in that skip is over £1,200.

Costs

It is becoming increasingly expensive to dispose of waste as the landfill tax increases and landfill gate fees go up and up. Disposal is the most expensive option and should be the last resort. So always remember to:

1. **reduce** the amount to start with
2. **reuse** the quantity of materials on site
3. **recycle** materials on and off site
4. **disposal** is the most expensive option and should be the last resort

A joinery firm decided to make up a rota where each day, a different member of staff was responsible for cutting wood. This meant that less was wasted and the site was much tidier as there was only one area allocated to cutting. More saw dust was salvaged too.

A major housebuilder constructed a luxury housing development at Langley Park in Beckenham. This is one of Laing Homes' largest housing developments. They managed to save £480,000 by re-using roofing tiles and demolition concrete.

Good practice on site

Reduce wastes

A lack of space available to store materials and skips can be an issue on construction sites. To minimise wastage associated with lack of storage, consider the following:

- For each trade, allocate specific areas on site
- Limit cutting of materials to one person who has overall responsibility
- Bring the tradesmen together regularly and encourage good communication to avoid creating waste in the first place

Reuse wastes

Materials should be stored in protective or safe areas so they can be reused.

Consider hiring a mobile crusher to crush waste aggregates that can be used for infill purposes rather than paying to haul inert materials off site for disposal.
Remember to check with SEPA if this requires a waste management licence or exemption.

The following materials can be reused (on or off site):

- Surplus topsoil
- Excavated soil
- Roof tiles
- Bricks
- Paint
- Timber and timber pallets
- Damaged bricks and rubble can be crushed

If on site reuse is not possible, check for local social enterprises or charities which may be able to make high value use of timbers, inert and plasterboard offcuts.

Recycle wastes by careful segregation

Segregating waste materials is a simple action that any forward-thinking company can achieve, no matter how large or small. Timber, metals, rubble and packaging, can all go for recycling and help save money by avoiding/reducing disposal costs.

- Segregate different wastes into as many different skips as there is space for
- Correctly label skips, based on the national colour coding system which uses internationally-recognised safety colours. This is endorsed by Waste Aware Scotland, the Institution of Civil Engineers, DEFRA, SEPA and the Environment Agency
- Make sure signage is robust and stands up to the weather

Ref: www.wasteawareconstruction.com

A major construction company has produced posters at central recycling points on their larger sites, as well as satellite mini-recycling points (using wheelie bins and tipping skips). It also makes use of a waste compactor and the various waste streams on a number of its sites.

National Colour Coding system for wastes

Ref: www.wasteawareconstruction.com

Developing a site waste management plan

A Site Waste Management Plan is an important tool for construction companies and their clients. A plan will outline roles, responsibilities and targets for managing waste on site in a sustainable way. It will help the workforce manage materials supply, materials storage & handling better and will assess the potential for their re-use and recycling both on and off site.

Working with sub contractors

It is good practice to ensure that subcontractors manage waste (and other environmental issues) on site, instead of leaving the entire responsibility to the principle contractor. Issues to consider include putting time and labour aside each day to segregate and manage their own waste; providing drip trays for mobile plant and mechanisms to dispose of waste water.

Dealing with special wastes

Any waste which has hazardous properties that may make it harmful to human health or the environment is classified as hazardous in the European Waste Catalogue (EWC). In Scotland, this waste is termed 'special waste'. The EWC lists all wastes, grouped according to generic industry or process. Each waste type is allocated a six-digit code. Wastes classed as hazardous are identified in the EWC with an asterisk(*).

Never mix hazardous waste with non-hazardous waste in a skip or you will be throwing money down the drain as it will cost more to dispose of!

A company who mixed 34 tonnes of wood waste in with other 160 tonnes of hazardous wastes paid an extra £1000 in disposal and landfill tax charges as the wood was classed as hazardous rather than inert.

What should I do if I think my waste is hazardous?

- Discuss with you local SEPA office
- Check your waste contractor or disposal sites can take your waste
- Ensure your waste consignment has the correct documentation and includes the six digit European Waste Catalogue code (EWC)
- Reduce the amount of hazardous waste you produce and minimise other types of waste
- Follow the guidance for classifying hazardous waste* **www.sepa.org.uk/guidance/waste**

Wastes that are ALWAYS classified as hazardous

- Fluorescent tubes and other mercury-containing waste
- Waste oils and acids
- Solvents
- Coal tar and tarred products
- Lead, Ni-Cad and mercury-containing batteries
- Construction materials containing asbestos
- Insulation materials containing asbestos

*For a list of construction wastes that may be hazardous, refer to guidance from SEPA

Staying on the right side of the law

To help avoid prosecution ensure that:

- All waste is stored and disposed of responsibly, in accordance with your 'Duty of Care' for wastes
- All contractors carrying your waste have a valid waste carriers registration certificate
- All wastes are disposed of at a correctly licensed site
- Waste transfer notes are completed for non-hazardous wastes before any waste leaves the site
- For special waste, a consignment note is completed before any waste leaves the site
- SEPA is notified at least 3 days ahead of the movement of special waste and, again when it is finally disposed of. All parties must retain copies of the paperwork for at least 3 years
- If waste is being brought onto a site from a company elsewhere, that you have an appropriate waste management license or exemption

A small developer was fined over £57,000 for allowing asbestos and tyres to be dumped on land. He failed his 'Duty of Care' as he didn't check that these wastes were disposed of at a correctly licensed site.

www.netregs.gov.uk

Where to find out more

Waste Aware Construction
www.wasteawareconstruction.com
This is an online resource to enable companies to create posters based on the national colour coding system for the source segregation of materials on construction sites.

NetRegs
www.netregs.gov.uk
Guidance on how to comply with environmental law as well as advice on good environmental practice. The comprehensive section on construction provides advice and guidance on hundreds of activities.

SEPA
www.sepa.org.uk/guidance
Tel: 01786 457 700
- A Guide to Consigning Special Waste
- Special Waste Amendment (Scotland) Regulations 2004 - Frequently Asked Questions
- Hazardous Waste: Interpretation of the definition and classification of hazardous waste
- European Waste Codes
- Waste minimisation

Hazred
www.hazred.org.uk
HAZRED is a three-year European project co-funded by the EU Life Environment programme, which aims to help small and medium sized enterprises (SMEs) prevent and reduce their production of hazardous wastes, saving them money in the process.

BRE
www.smartwaste.co.uk
www.brebookshop.com
Tel: 01344 404407
BRE provides a range of tools, training and publications to help the construction industry improve environmental and business performance. Publications can be purchased from BRE Bookshop and case studies can be downloaded from the SMARTWaste website.

CIRIA
www.ciria.co.uk/themes.htm
Tel: 020 7549 3300
Go to waste management theme to view a list of publications on waste minimisation and recycling in construction.

Construction and Waste Resources website www.ciria.org/cwr
This web-site encourages waste reduction and improved resource productivity in the building and civil engineering sectors.

CONSOL (Scotland)
www.consolscotland.co.uk
T: 0141 249 6612
Consol Scotland provides expertise in waste management, waste minimisation, training and Corporate Social Responsibility issues to help the construction industry improve environmental and business performance.

DTI Site Waste Management Plan
Site Waste Management Plans - Guidance for Construction Contractors and Clients
Voluntary code of practice
Date issued: 8 July 2004
www.dti.gov.uk/construction

Managing resources

Water

Every year, thousands of gallons of water are wasted by the construction industry through taps being left on, machinery leaks, over-watering roads to keep dust down, or by careless wash-downs and equipment cleaning.

Despite the fact that Scotland has a good water supply, water and waste water bills are rising steadily!

You can save money by:

- Making staff aware of the need to use water wisely
- Reducing amount of water used by being careful with how it is used
- Reusing water whenever practical to do so
- Storing water for future use

Nine litres of water can be wasted every minute from a leaking hosepipe. That means 540 litres of water wasted every hour!

Energy

According to the Building Employers Confederation, construction firms spend more than £1 billion on energy each year during the construction process - a figure equal to 3 per cent of total UK energy consumption and CO_2 emissions. This is from:

- Construction and demolition activities
- The transport of construction materials and products
- The transport of construction and demolition wastes.
- Operations on construction sites such as Contractors' offices.
- Operating lighting and machinery

Construction costs in the UK could be slashed by £100 million a year if contractors were more energy-conscious.

Good practice on site

Water

Reduce the amount of water wasted by:

- Ensuring taps and hoses do not leak and are not left running unnecessarily

- Avoiding over consumption of water during wash downs
- Using manual spray guns to control use by fitting trigger controls to hosepipes
- Reducing the water pressure of hoses
- Not overspraying roads to control dust
- Collecting rain water in barrels if there is space, and use it for cleaning
- Metering and monitoring water use and investigating any abnormally high measurements which might indicate a leak

Energy

Reduce the amount of energy used on site by:

- Considering backhauling to reduce haulage journeys and do not send vehicles (e.g. waste skips) out half empty
- Turning off vehicle and machinery engines when not in use
- Avoiding overheating site huts
- Controlling the over-specification of temporary electrical fittings
- Restricting security lighting to perimeter lighting and/or infra red detectors
- Switching from compressed-air power tools to electric-powered equipment (instantly achieving ten times greater energy efficiency)
- Reducing the use of wet trades where possible to avoid the overuse of de-humidifiers and heaters
- Metering and monitoring energy and fuel use and investigating any abnormally high measurements

Staying on the right side of the law

You can reduce the risk of prosecution by ensuring that you:

- Obtain permission from the SEPA before discharging anything to surface water drains or rivers
- Obtain permission from Scottish Water before discharging anything into a foul or combined sewer
- Are aware of correct connections of foul water pipes into foul water sewers?
- Are aware that the SEPA must be informed straight away if hazardous and potentially polluting substances are spilt into drains

Allow only clean, uncontaminated rain water to flow off site in line with the appropriate discharge content.

A house builder pled guilty to a charge under the Control of Pollution Act and were fined £2,500. The company allowed contaminated water run-off from a building site causing recurring pollution problems at Eliburn Reservoir, Livingston.

Where to find out more

CIRIA
www.ciria.org/water
020 7549 3300
Guidance on surface water and drainage, water supply and sewerage.

SEPA
www.sepa.org.uk/wastemin
01786 452554
Guidance on water and energy efficiency measures.

NetRegs
www.netregs.gov.uk
Guidance on how to comply with environmental law as well as advice on good environmental practice.

Environment Agency
www.environment-agency.gov.uk (Water Resources)
0845 9333 111
Guidance on water efficiency and conservation, top tips for saving water, alternative sources of water.

Scottish Water
www.scottishwater.co.uk (Water Management)
0845 601 8855
Information on water and waste water services, including water management.

Carbon Trust
www.thecarbontrust.co.uk
0800 585794
The Carbon Trust provides free, independent advice and information to UK businesses and public sector organisations to help them cut their energy costs. It offers an extensive library of free publications, a number of free services such as site surveys, and interest-free loans to encourage businesses to improve energy efficiency and cut carbon emissions.

Preventing pollution

Every year in the UK, the construction industry is prosecuted for more than 500 water pollution incidents.

You are responsible for preventing pollution. By using common sense you can reduce:

- Harm to surrounding area
- Chances of prosecution
- Bad publicity and likely loss of customers
- Delays to your project

Costs

Pollution, whether accidental or deliberate, will cost you money, so remember to:

- Reduce the use of potentially harmful products
- Make sure the site is secure
- Know what to do if you have a spill
- Have appropriate spill kits on site and make sure your staff know how to use them properly

Spillages of oils, fuels or chemicals are not hard to spot. A spilt gallon of oil can completely cover a lake the size of two football pitches!

When a driver reversed into a drum of oil and split it, a builder avoided pollution and a costly fine by making sure on site drains had covers on them.

Good practice on site

Ensure you have up-to-date and accurate drainage plans at all times.

Before starting work on a site, **always** identify the location of:

- Location of rivers and streams
- Surface water drains (leading to rivers etc)
- Foul water drains (leading to sewers)
- Absorbent materials to deal with spillages

Colour-code your drainage system to prevent liquids going down the wrong drain (blue for surface water drains and red for foul water drains).

Site workers should be made aware of:

- The pollution problems resulting from washing paints, chemicals, mud, sand or other pollutants into drains
- The problems associated with connecting foul water pipes with surface water drains
- What to do if a spillage occurs and who to contact (ie your pollution incident response procedure)

Prevent spillages on site by storing materials:

- As recommended by manufacturers
- Away from drains and watercourses
- In appropriately-bunded areas
- Away from extremes of temperature
- Only until the end of shelf-life and then dispose of them properly

In the event of a spillage:

- Stop work immediately
- Contain the spillage if safe to do so
- Report it IMMEDIATELY via SEPA's emergency hotline (0800 807060). Notify the fire brigade at the same time

Following a spillage:

- Work out how and why it happened
- Alter site practices to prevent it happening again
- Ensure all site workers are aware of what to do
- Regularly monitor and maintain storage containers

A bowser parked in a layby filled with fuel oil leaked fuel above the water main serving most of Edinburgh, contaminating the drinking supply for 250,000 households.

Staying on the right side of the law

Causing pollution is a criminal offence so you should remember that:

- SEPA must be informed of any pollution incident
- Failure to comply with a Local Authority statutory notice to clean up pollution is an offence
- SEPA can stop work on your site where there is a risk of pollution
- Prior authorisation is required if you wish to dispose of liquids to surface water drains or sewers
- Fuel and oil tanks/drums should be contained in a bund

A construction company in Aberdeenshire, was fined £2,000 in Aberdeen Sheriff Court for contamination of the River Ythan by 600 gallons of diesel from their premises. Clean up costs were estimated at £16,000, plus the cost of 10,000 fish to restock the river.

www.netregs.gov.uk

Where to find out more:

SEPA pollution report line 0800 80 70 60
This should be used in the event of a pollution problem.

CIRIA
www.ciria.org
Guidance on the control of water pollution from construction sites (C532)

Netregs
www.netregs.org.uk/resources
Pollution Prevention Guidelines for the construction industry can be downloaded from the site, including the storage of oils and other chemicals, use of oil interceptors, cleaning operations, control of spillages and activities near a watercourse.

Considering neighbours

The local authority can stop you working if you are found to be making too much noise or causing other nuisance.

It is your responsibility to minimise nuisance in the vicinity of your site by reducing:

- Noise
- Vibration
- Dust and emissions
- Odours

Costs

Considering these issues when working on site can save you money and avoid delays:

- Reduce dust, emissions and odours
- Inform neighbours of likely noise in advance
- Use mufflers on noisy equipment
- Use electric generators instead of petrol/diesel

To reduce disturbance when working in a residential area, a contractor placed straw bales at a safe distance around a generator to screen the noise created.

Good practice on site

Reduce the impact of noise and vibration by:

- Erecting a solid screen close to the source of noise
- Informing neighbours of time and duration of noisy activities and whey they are being conducted
- Minimising vibration produced by machinery

Prevent unnecessary emissions and odours by:

- Keeping plant regularly serviced
- Switching engines off when not in use
- Storing fuels and chemicals appropriately
- Keep refuelling areas well away from the public

Avoid dust being generated by:

- Keeping the site clean and tidy
- Protecting sands and soils from the wind by covering with a tarpaulin

Staying on the right side of the law

There is a great deal of legislation covering these issues and you should remember that:

- Noise in residential areas should not exceed permitted levels during work hours
- The local authority can stop your work if they decide you are causing a nuisance
- Equipment should only be used as recommended by the manufacturer

A housing contractor was fined £1000 following complaints by local residents about noise when work started at 6.30am each morning.

A builder was fined £8,500 for carrying dusty material in uncovered containers on a public road.

www.netregs.gov.uk

Where to find out more:

Your Local Council Environmental Health Officer
Contact for advice on noise and dust issues.

Considerate Constructors Scheme
www.considerateconstructorsscheme.org.uk
A voluntary code of practice driven by the industry covering a wide range of activities carried out on site.

CIRIA
www.ciria.org
Guidance on assessing and managing noise on construction sites (PR70).

Disclaimer

This publication has been designed to provide accurate information in regard to the subject matter covered. Every effort has been made to ensure the accuracy and completeness of the publication, but no warranty is provided or implied, and the authors and publisher shall have neither liability nor responsibility to any person or entity with respect to any loss or damage arising from its use.

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NetRegs | Guiding small businesses through environmental regulations

NetRegs provides guidance on how to comply with environmental law as well as advice on good environmental practice. The construction sector guideline covers the major processes that take place on building and civil engineering contracts:

- brownfield regeneration
- site investigations
- demolition
- pipe and tunnel installation
- construction work at harbours and docks
- house building
- buildings
- building refurbishment
- construction work on airports
- dam and reservoir construction
- construction of new roads and highways
- road maintenance works
- rail maintenance works

The paper used in this publication is Totally Chlorine Free (TCF) and contains a minimum of 75% recycled material
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