



Appropriate measures for permitted facilities that take chemical waste

Consultation draft
February 2020

We are the Environment Agency. We protect and improve the environment.

We help people and wildlife adapt to climate change and reduce its impacts, including flooding, drought, sea level rise and coastal erosion.

We improve the quality of our water, land and air by tackling pollution. We work with businesses to help them comply with environmental regulations. A healthy and diverse environment enhances people's lives and contributes to economic growth.

We can't do this alone. We work as part of the Defra group (Department for Environment, Food & Rural Affairs), with the rest of government, local councils, businesses, civil society groups and local communities to create a better place for people and wildlife.

Published by:
Environment Agency
Horizon House, Deanery Road,
Bristol BS1 5AH
www.gov.uk/environment-agency

© Environment Agency 2020

All rights reserved. This document may be reproduced with prior permission of the Environment Agency.

Further copies of this report are available from our publications catalogue:

<http://www.gov.uk/government/publications> or our National Customer Contact Centre: 03708 506 506

Email: enquiries@environment-agency.gov.uk

Contents

Introduction.....	4
When appropriate measures apply	4
Implementing appropriate measures at new and existing facilities	4
General management appropriate measures	6
Staff competence.....	7
Accident management plan	7
Accident prevention measures	8
Contingency plan and procedures.....	10
Contingency for treatment sites only	11
Plant decommissioning.....	11
Waste stream management appropriate measures.....	12
Waste pre-acceptance and characterisation	12
Waste acceptance and tracking	15
Waste tracking	19
Waste storage, segregation, transfer, handling and compatibility.....	20
Sorting, repackaging and bulking	25
Laboratory smalls (laboratory chemicals in containers less than 5 litres)	26
Waste treatment	26
Aerosol canister treatment.....	28
Record keeping for treatment residues.....	30
Emissions control appropriate measures.....	31
Point source emissions to air.....	31
Fugitive emissions to air including odour	31
Emissions of noise and vibration.....	33
Point source emissions to water (including sewer)	33
Fugitive emissions to land and water	34
Emissions monitoring and limits appropriate measures	35
Emissions to air	36
Emissions to water or sewer.....	36
Process efficiency appropriate measures	37
Energy efficiency (installations only)	37
Raw materials (installations only)	37
Water use (installations only)	38
Waste minimisation, recovery and disposal	38

Introduction

We have produced this guidance to help you understand what standards (appropriate measures) are relevant to regulated facilities permitted for the treatment or transfer, by recovery or disposal, of:

- hazardous chemical wastes (for example sulphuric acid)
- wastes that contain, or are contaminated with, hazardous chemicals (for example contaminated soils)
- non-hazardous chemical wastes (for example non-hazardous sludges from physico-chemical treatment) that are treated chemically

When appropriate measures apply

There is considerable overlap between best available techniques (BAT) for waste installation facilities and necessary measures for waste operation facilities, therefore we use the term 'appropriate measures' to cover both sets of requirements.

For installations there are additional standards that cover using energy and raw materials (including water) efficiently.

Appropriate measures are the standards that operators should meet to comply with their environmental permit requirements. This guidance sets out what you must consider when assessing the appropriate measures for your site. It is not definitive nor does it replace an operator's obligation to assess appropriate measures fully.

Some measures may not be suitable for, or relevant to, your operation. Appropriate measures will depend on the:

- activities being carried out
- size and nature of the activities
- location of the site

Where a measure is not suitable or relevant, an operator can propose alternative measures that achieve the same level of environmental protection, or provide an explanation of why the specific measure is not relevant.

In certain situations, a higher standard of environmental protection may be needed, for example:

- where there are local sensitive receptors
- if there is a risk that an operator may exceed an Environmental Quality Standard

Other technical guidance also applies to hazardous chemical waste facilities including guidance on [emissions, odour and noise](#).

Specific technical guidance may also be appropriate. For example, additional [technical guidance](#) is available for operators of sites that:

- incinerate waste
- store or treat healthcare waste

We consider the accident and fire prevention measures specified in this guidance are appropriate measures for managing the fire risks of hazardous chemical waste. If you have a permit to carry out an activity that involves storing other non-hazardous combustible wastes, you may need a [fire prevention plan](#) (FPP). This must meet the requirements of our FPP guidance and you must send it to us for approval.

Combustion plant with a rated thermal input less than 50 megawatts must comply with the relevant requirements of the [medium combustion plant \(MCP\) and specified generator regulations](#).

Exempt sites that transfer or treat hazardous chemical waste must have regard to this guidance.

Implementing appropriate measures at new and existing facilities

The appropriate measures in this guidance apply to both new and existing facilities that treat or transfer hazardous chemical waste.

For new facilities the appropriate measures must be in place before operations start.

For existing facilities, if the cost of complying with the appropriate measures is disproportionate to the environmental benefit, immediate compliance may not be reasonable. Through permit reviews, the Environment Agency will assess

the current operating techniques of existing facilities against the relevant appropriate measures. Where appropriate measures are not being used, we will expect these operators to provide improvement plans and timetables for implementing the relevant appropriate measures. We will review these proposals and set formal timescales for making the improvements needed. This will be done through improvement conditions in the varied environmental permits.

Improvements at existing facilities are likely to fall into one of the following two categories:

Standard 'good-practice' requirements

For example, these could be:

- updated management systems
- waste, water and energy efficiency measures
- measures to prevent fugitive or accidental emissions
- waste-handling techniques
- appropriate monitoring equipment

Where these improvements are relatively low cost, operators should implement them as soon as possible and within 12 months.

Larger, more capital-intensive improvements

For example, these could be:

- installing significant abatement equipment
- the significant redesign of facility layout, including, for example, the design and installation of new buildings or treatment plant

These improvements should be completed as soon as practicable and within 3 years.

Local environmental impacts (for example, having sensitive receptors or an air quality management area close by) may mean an operator has to take action more quickly than the timescales provided here.

Existing installations must comply with the relevant emission levels associated with best available techniques (BAT AELs), as set out in the published [Waste Treatment BAT Conclusions document](#). They must do this by August 2022 unless we have approved a [derogation](#).

New installations (including new or replacement plant at existing facilities) must comply with any relevant BAT AELs from the start of operations, unless we approve a derogation.

General management appropriate measures

1. You must have an up to date, written [management system](#).
2. To improve your overall environmental performance, you must put in place and follow a management system that incorporates the following features:
 - 2.1 You have management commitment, including from senior managers.
 - 2.2 You have an environmental policy that is defined by senior managers and includes the continuous improvement of the facility's environmental performance.
 - 2.3 You plan and establish the resources, procedures, objectives and targets needed for environmental performance alongside your financial planning and investment.
 - 2.4 You implement your environmental performance procedures, paying particular attention to:
 - staff structure and relevant responsibilities
 - staff recruitment, training, awareness and competence
 - communication (for example, of performance measures and targets)
 - employee involvement
 - documentation
 - effective process control
 - maintenance programmes
 - management of change
 - emergency preparedness and response
 - making sure you comply with environmental legislation
 - 2.5 You check environmental performance and take corrective or preventative action, paying particular attention to:
 - monitoring and measurement
 - learning from incidents, near misses and mistakes, including those of other organisations
 - records maintenance
 - independent (where practicable) internal or external auditing of the management system to confirm it has been properly implemented and maintained
 - 2.6 Senior managers review the management system to check it is still suitable, adequate and effective.
 - 2.7 You review the development of cleaner technologies and their applicability to site operations.
 - 2.8 When designing new plant, you make sure that you assess the environmental impacts from the plant's operating life and eventual decommissioning.
 - 2.9 You risk assess whether your operations could be affected by a [changing climate](#) and have appropriate plans in place to assess and manage future risks.
 - 2.10 You compare your site's performance against relevant sector guidance and standards on a regular basis (sectoral benchmarking).
 - 2.11 You carry out appropriate [waste stream management](#).
 - 2.12 You have and maintain:
 - an inventory of [emissions to air and water](#)
 - a [residues management plan](#)
 - an [accident management plan](#)
 - a [site infrastructure plan](#)
 - a [site condition report](#)
 - an [odour management plan](#), if required
 - a [noise and vibration management plan](#), if required
 - a [dust management plan](#), if required
 - a [pest management plan](#), if required
 - a [fire prevention plan](#), if required

Staff competence

3. Your site must be operated at all times by an adequate number of staff with appropriate qualifications and [competence](#).
4. The design and maintenance of infrastructure, plant and equipment must be carried out by competent people.
5. You must have appropriately qualified managers for your waste activity who are members of a government-approved [technical competency scheme](#).
6. The person carrying out the technical appraisal of a waste's suitability for receipt at pre-acceptance must have the minimum of a [Higher National Certificate](#) (HNC) in chemistry (or equivalent qualification). For the following wastes, technical appraisals can be carried out by a person who has had enough training to determine the suitability of the waste for the site:
 - asbestos
 - non-chemical healthcare waste
 - contaminated clothing and rags
 - 'articles', for example waste electronic equipment or batteries
 - contaminated wood
 - solid non-hazardous waste other than 'mirror entries' (where waste may be allocated to a hazardous entry or to a non-hazardous entry according to the European List of Waste)
7. If you need to sample, check (other than visually), or test a hazardous waste when you accept it, acceptance must be supervised by someone with the minimum of an HNC in chemistry (or equivalent qualification). At sites where the waste needs only a visual check, the person who receives the waste must have had enough training to be able to identify and manage any non-conformances in the load received.
8. You must make sure that any required sample is representative of the waste and has been taken by someone technically competent to do so.
9. Any required analysis must be done by someone with the minimum of an HNC in chemistry (or equivalent qualification).
10. Non-supervisory staff must be reliable and technically skilled. Their skills may be based on experience and relevant training.

Accident management plan

11. As part of your management system you must have a plan for [dealing with any incidents or accidents](#) that could result in pollution.
12. The accident management plan must identify the risks to human health and the hazards to the environment posed by the facility.
13. Particular areas to consider may include:
 - waste types
 - overfilling of vessels
 - transfer of substances (for example, filling or emptying of vessels)
 - failure of plant and equipment (for example, over-pressure of vessels and pipework, blocked drains)
 - failure of containment (for example, failure of the bund or overfilling of drainage sumps)
 - failure to contain firefighting water
 - making the wrong connections in drains or other systems
 - preventing incompatible substances coming into contact with each other
 - unwanted reactions and runaway reactions
 - checking the composition of an effluent before emission
 - vandalism and arson
 - extreme weather conditions for example flooding or very high winds

14. You must assess the risk of accidents and their possible consequences (risk is the combination of the likelihood that a hazard will occur and the severity of the impact resulting from that hazard). Having identified the hazards, you can assess the risks by addressing six basic questions:
 - how likely is it that the accident will happen?
 - what may be emitted and how much?
 - where will the emission go - what are the pathways and receptors?
 - what are the consequences?
 - what is the overall significance of the risk?
 - what can you do to prevent or reduce the risk?
15. In particular, you must identify any fire risks that may be caused, for example by:
 - arson or vandalism
 - self-combustion (for example due to chemical oxidation)
 - plant or equipment failure and electrical faults
 - naked lights and discarded smoking materials
 - hot works (for example welding or cutting), industrial heaters and hot exhausts
 - reactions between incompatible materials
 - neighbouring site activities
 - sparks from loading buckets
 - hot loads deposited at the site
16. The depth and type of accident risk assessment you carry out will depend on the characteristics of the plant and its location. The main factors to take into account are the:
 - scale and nature of the accident hazard presented by the plant and its activities
 - risks to areas of population and the environment (the receptors)
 - nature of the plant and complexity of the activities and how difficult it is to decide and justify adequate risk control techniques
17. Through your accident management plan, you must also identify the roles and responsibilities of the staff involved in managing accidents. You must provide them with clear guidance on how to manage each accident scenario, for example, whether to use containment or dispersion to extinguish fires, or let them burn.
18. You must appoint one facility employee as an emergency coordinator who will take lead responsibility for implementing the plan.
19. You must train your employees so they can perform their duties effectively and safely and know how to respond to an emergency.
20. You must also:
 - establish how you will communicate with relevant authorities, emergency services and neighbours, as appropriate, both before, during and after an accident
 - put in place appropriate emergency procedures, including for safe plant shutdown and site evacuation
 - put in place post-accident procedures that include undertaking an assessment of the harm that may have been caused by an accident and the remediation actions you will take
 - test the plan by carrying out emergency drills and exercises

Accident prevention measures

21. You must take the following measures, where appropriate, to prevent events that may lead to an accident.

Segregating waste

22. You must keep apart incompatible or segregated wastes and substances according to their hazardous properties.
23. You must segregate incompatible waste types into bays or store them in dedicated buildings. The minimum requirement is to use a kerbed perimeter and separate drainage collection. You must also have measures in place to prevent containers falling over into other storage areas.

Preventing accidental emissions

24. You must make sure that you contain the following (where appropriate) and route to the effluent system (where necessary):
 - process waters
 - site drainage waters
 - emergency firefighting water
 - chemically contaminated waters
 - spillages of chemicals
25. You must have a provision to contain surges and storm water flows. You must provide enough buffer storage capacity to make sure that you can achieve this. You can define this capacity using a risk-based approach, for example, by taking into account the:
 - nature of the pollutants
 - effects of downstream waste water treatment
 - sensitivity of the receiving environment
26. You can only discharge waste water from this buffer storage after you have taken appropriate measures, for example, to control, treat or reuse the water.
27. You must put spill contingency procedures in place to minimise the risk of an accidental emission of raw materials, products and waste materials, and to prevent their entry into water.
28. Your emergency firefighting water collection system must take account of additional firefighting water flows or firefighting foams. You may need emergency storage lagoons to prevent contaminated firefighting water reaching a receiving water body.
29. You must consider and, if appropriate, plan for the possibility that you may need to contain or abate accidental emissions from:
 - overflows
 - vents
 - safety relief valves
 - bursting discs

If this is not advisable on safety grounds, you must focus attention on reducing the probability of the emission.

Security measures

30. You must have security measures in place (including staff) to prevent:
 - entry by vandals and inadvertent intruders
 - damage to equipment
 - theft
 - fly-tipping
 - arson
31. Facilities must use an appropriate combination of the following measures:
 - security guards
 - total enclosure (usually with fences)
 - controlled entry points
 - adequate lighting
 - warning signs
 - 24 hour surveillance, such as CCTV

Fire prevention

32. There are 3 fire prevention objectives. You must:
 - minimise the likelihood of a fire happening
 - aim for a fire to be extinguished within 4 hours
 - minimise the spread of fire within the site and to neighbouring sites

33. You must have appropriate systems in place for fire prevention, detection and suppression or extinction.
34. You must have suitable procedures and provisions to store certain types of hazardous waste, for example, fire resistant stores, automatic alarms and possibly sprinklers.
35. Your facility must have enough water supplies to extinguish fires. You must have an alternative type of fire protection system if you store or treat any water-reactive waste, for example, dry powder extinguishers.
36. You must isolate drainage systems from flammable waste storage areas to prevent fire being spread along the drainage system by solvents or other flammable hydrocarbons.
37. You must regularly inspect and clean your site to prevent the build-up of loose combustible material (including waste and dust), particularly around treatment plant, equipment and other potential sources of ignition.

Other accident prevention measures

38. You must maintain plant control in an emergency using one or a combination of the following measures:
 - alarms
 - process trips and interlocks
 - automatic systems based on microprocessor control and valve control
 - tank level readings such as ultrasonic gauges, high level warnings, process interlocks and process parameters
39. You must:
 - make sure that all the measurement and control devices you would need in an emergency are easy to access and operate in an emergency situation
 - maintain plant in a good state through a preventive maintenance programme and a control and testing programme
 - use techniques such as suitable barriers to prevent moving vehicles damaging equipment
 - put procedures in place to avoid incidents due to poor communication between operating staff - during shift changes and following maintenance or other engineering work
 - where relevant, use equipment and protective systems designed for use in potentially explosive atmospheres

Records keeping and procedures

40. You must:
 - keep an up to date record of all accidents, incidents, near misses, changes to procedures, abnormal events, and the findings of maintenance inspections
 - carry out investigations into accidents, incidents, near misses and abnormal events and record the steps taken to prevent them happening again
 - maintain an inventory of substances which are present (or likely to be) and which could have environmental consequences if they escape - many apparently innocuous substances can damage the environment if they escape
 - have procedures in place for checking raw materials and wastes to make sure they are compatible with other substances they may accidentally come into contact with

Contingency plan and procedures

41. You must have and implement a contingency plan which makes sure that you:
 - comply with all your permit conditions and operating procedures during maintenance or shutdown at your site or elsewhere
 - do not exceed storage limits in your permit and you continue to apply appropriate measures for waste storage and handling
 - stop accepting waste unless you have a clearly defined method of recovery or disposal and enough permitted storage capacity
42. You must have contingency procedures in place to make sure that, as far as possible, you know in advance about any planned shutdowns at waste management facilities where you send waste.

43. You must make your customers aware of your contingency plan, and of the circumstances in which you would stop accepting waste from them.
44. You must consider whether the sites or companies you rely on in your contingency plan:
 - can take the waste at short notice
 - are authorised to do so in the quantities and types likely to be needed - in addition to carrying out their existing activities
45. You must not discount alternative disposal or recovery options on the basis of additional cost, or geographical distance, if doing this may result in exceeding your permitted storage limits, or compromising your storage procedures.
46. You must not include unauthorised capacity in your contingency plan. If your contingency plan includes using temporary storage for additional waste on your site, then you must make sure your site is authorised for this storage and the appropriate infrastructure is in place.

Contingency for treatment sites only

47. Your management procedures and contingency plan must:
 - identify known or predictable malfunctions associated with your technology and the procedures, spare parts, tools and expertise needed to deal with them
 - include a record of spare parts held, especially critical spares - or state where you can get them from and how long it would take
 - have a defined procedure to identify, review and prioritise items of plant which need a preventative regime
 - include all equipment or plant whose failure could directly or indirectly lead to an impact on the environment or human health
 - identify 'non-productive' or redundant items such as tanks, pipework, retaining walls, bunds, reusable waste containers (for example wheeled carts), ducts, filters and security systems
 - make sure you have the spare parts, tools, and competent staff needed before you start maintenance
48. Your management system must include procedures for auditing your performance against all the contingency measures detailed above and for reporting the audit results to the site manager.
49. If you produce an end of waste material at your facility, your contingency planning must consider storage capacity issues for any end of waste products and materials that fail the end of waste specification.

Plant decommissioning

50. You must consider the decommissioning of the plant at the design stage and make suitable plans to minimise risks during later decommissioning.
51. For existing plants where potential problems are identified, you must put in place a programme of design improvements. These design improvements need to make sure that you:
 - avoid using underground tanks and pipework - if it is not economically possible to replace them, you must protect them by secondary containment or a suitable monitoring programme
 - drain and clean out vessels and pipework before dismantling
 - use insulation which you can dismantle easily without dust or hazard
 - use recyclable materials, taking into account operational or other environmental objectives
52. You must have and maintain a decommissioning plan to demonstrate that:
 - plant will be decommissioned without causing pollution
 - the site will be returned to a satisfactory condition
53. Your decommissioning plan should include details on:
 - whether you will remove or flush out pipelines and vessels (where appropriate) and how you will empty them of any potentially harmful contents
 - site plans showing the location of underground pipes and vessels
 - the method and resources you will need to clear lagoons
 - the method you will use to close any on-site landfills

- how you will remove asbestos or other potentially harmful materials, unless we have agreed it is reasonable to leave these liabilities to future owners
- how you will dismantle buildings and other structures in a way that protects surface water and groundwater at the site
- the soil testing you will carry out to assess pollution caused by the site activities
- what remediation is needed to return the site to a satisfactory state when you cease activities
- how you will clear residues, waste and any contamination resulting from the waste treatment activities

54. You should make sure that equipment taken out of use is decontaminated and removed from the site.

Waste stream management appropriate measures

Waste pre-acceptance and characterisation

1. You must implement waste pre-acceptance procedures so that you know enough about a waste (including its composition) before it arrives at your facility. You need to do this to assess and confirm the waste is technically and legally suitable for your facility. Your procedures must follow a risk-based approach, considering:
 - the source and nature of the waste and its hazardous properties
 - potential risks to process safety, occupational safety and the environment (for example, from odour and other emissions) from the waste
 - knowledge about the previous waste holder(s)
2. When you receive a customer query, and before the waste arrives at the facility, you must obtain the following in writing or in an electronic form:
 - details of the waste producer including their organisation name, address and contact details
 - the source of the waste (the process that gives rise to the waste)
 - information on the nature and variability of the waste production process and the waste

You must also obtain (in writing or electronic form) details about the waste including:

- a description
- the List of Waste code (European Waste Classification, EWC, code)
- its physical form
- its composition (based on representative samples)
- any hazardous properties
- the potential for self-heating, self-reactivity or reactivity to moisture or air
- any odour
- its age, that is [when it first became waste](#)
- the type of packaging
- an estimate of the quantity you expect to receive in each load and in a year

You must also obtain confirmation that the waste does not contain a radioactive source. If there is a risk of radioactive contamination you must obtain confirmation that the waste is not radioactive, unless your facility is permitted to accept such waste.

3. You must consider whether specific wastes, from among those you are permitted to receive, have properties that can pose unacceptable risks to the site or process, for example, due to:
 - a risk of explosion (for example, if ammunition or aerosol canisters are present, or mixing processes that could lead to explosion)
 - corrosion caused by strong acids
 - a risk of uncontrolled reactions (for example, if peroxides or strong oxidants are present, or polymerising components such as certain isocyanates)
 - a risk of the evolution of gases (for example if cyanides, sulphides or dissolved gas are present)

You should establish a list of such wastes.

4. You should verify the pre-acceptance information by contacting or visiting the producer. Dealing with staff directly involved in waste production can help to fully characterise a waste.
5. You must obtain and analyse a representative sample of a waste if:
 - the chemical composition or variability of the waste is unclear from the information supplied by the customer

- there are doubts about whether the sample analysed is representative of the waste
- you will treat the waste at your facility (this allows you to carry out tests to determine if the planned treatment will be safe and effective)

Where you rely on a customer sample you must record that you have done this and the reason why the customer sample is acceptable.

6. You may not need a representative sample where, for example, the waste is:

- asbestos
- a pure product chemical or aerosol where the chemical composition and hazardous properties are available in a REACH-compliant safety data sheet
- packaged cosmetics and pharmaceuticals
- contaminated clothing, packaging or rags
- an 'article', for example batteries, lighting tubes, waste electrical or electronic equipment, end-of-life vehicles or parts of vehicles, metal waste and scrap metal
- solid non-hazardous waste except for mirror entries when the waste composition is unknown
- contaminated wood and roofing material
- produced in an emergency - such wastes must remain quarantined until you have completed a full characterisation

6.1 You also may not need a representative sample if the waste is laboratory smalls in containers of, for example, less than five litres.

When drums are used for laboratory smalls, a list of the contents must be stored within the drum below the lid. Similarly for other types of packages containing laboratory smalls, a list of contents is appropriately stored within (or attached to) the packaging. Each packed drum (or other package) is then labelled with the hazard for carriage (for example under the International Carriage of Dangerous Goods by Road (ADR) regulations).

You should provide packaging guidance to your customer or their intermediary when the person packing the laboratory smalls does not work for you.

6.2 You also may not need a representative sample of waste oils for treatment. Pre-acceptance sampling is not critical for a waste oil treatment plant, but it would be required if the waste will be treated at a mineral oil refinery. Typically waste oil comes from a large number of small-volume sources, such as garages, but its composition is essentially fixed.

You should obtain a representative sample for the following types of waste oil:

- one-off industrial arisings of waste oil
- arisings from sources where other chemicals and potential contaminants may be handled, for example from chemical manufacturing

You should advise your customers that they must avoid contaminating waste oil because during treatment low-flashpoint solvents or petrol will cause handling difficulties, increase VOC emissions and increase the risk of accidents

Contamination with polychlorinated biphenyls (PCBs) can transfer those PCBs either to the:

- product (which may cause dioxin formation if used in a subsequent combustion process)
- tank bottom oil sludges
- effluent

If you suspect that waste oil has become contaminated for example by solvents, petrol or PCBs, you must identify the contamination.

6.3 If you do not take a pre-acceptance sample of any hazardous waste you must record the reason.

7. If the customer has a number of containers holding the same waste you can apply 'the square root of (n+1)' rule to sampling those containers. Producing a composite sample of this waste may be appropriate. If the waste is variable you will need a sample from each container.

8. After fully characterising a waste, you must technically assess the waste's suitability for treatment or storage to make sure you can meet permit conditions. You must also do this to meet any Control of Major Accident Hazards

(COMAH) requirements as wastes, raw materials and end of waste materials all contribute to COMAH limits. You must make sure that the waste complies with the site's treatment capabilities. In the case of water-based liquid waste, you may perform laboratory-scale tests to predict the treatment's performance, for example on breaking of emulsion or biodegradability.

9. You should use material flow analysis for the components in the waste to help identify their flow(s) and fate(s). This analysis can be helpful in choosing the most appropriate forms of treatment for the waste, either directly at the site or at any subsequent treatment site. It also helps make sure that hazardous components are correctly treated. These must either be destroyed or removed (when not desired) from the product cycle into a 'sink' and not diluted into the recycling or product cycle.
10. You must keep pre-acceptance records for at least 3 years (in a computerised waste tracking system) following receipt of the waste. If an enquiry from a waste producer does not lead to the receipt of waste, you do not need to keep records.
11. You must reassess the information required at pre-acceptance if the:
 - waste changes
 - process giving rise to the waste changes
 - waste received does not conform to the pre-acceptance information

In all cases you must reassess the information required at pre-acceptance on an annual basis.

12. You must apply odour criteria to decide whether to accept wastes that are already releasing, or have the potential to release:
 - mercaptans or other VOCs
 - low molecular weight amines
 - acrylates
 - other similarly highly odorous materials

These substances are only suitable for acceptance under special handling requirements.

13. You must keep separate the roles and responsibilities of sales staff and technical staff. If sales staff are involved in waste enquiries then technical staff must carry out a final technical assessment before approval. You must use this final technical check, independent of commercial considerations, to make sure that you:
 - only accept wastes that are suitable for the site
 - avoid accumulating waste
 - have enough storage and treatment capacity
14. Characterising the waste's composition is an essential step in the pre-acceptance procedure because hazardous wastes can be very complex. You must be sure that you know what the waste is so that you can safely handle or treat it. You must select analytical tests based on knowing the process that generates the waste. You must characterise the waste's composition at the pre-acceptance stage. You need to do this to make sure you comply with regulatory requirements and to work out the most appropriate waste storage, transfer or treatment route.
15. For liquid waste, any or all of the following may be appropriate:
 - measure the density of the sample
 - measure the water content
 - measure the ash content after calcination at 550 °C
 - test whether the stream might inhibit biological treatment
 - test for cyanide, and if present determine the free and complexed cyanide levels
 - test for persistent organic pollutants (POPs)
 - check the content of volatile and semi-volatile substances
 - check the mass balance of liquid waste

You can also measure the pH, redox potential and electrical conductivity of liquid wastes. For pastes and oils, perform these measurements on a water extract of crude sample using a ratio of 10 l/kg of dry matter. You should mix the water with the sample in a closed container to limit exchanges with the atmosphere.

You can also test for the 12 heavy metals (As, Ba, Cd, Cr, Cu, Hg, Mo, Ni, Pb, Sb, Se, Zn) and determine their levels individually and quantitatively. You may use any specific classical method of (partial) extraction of these metals. Where it is present, check specifically for chromium (VI). If the waste is saline (conductivity > 0.15 S/m),

measure the chlorides and preferably all the halogens that are soluble in water to make sure that you correctly speciate the metals.

You can also test for other metal content and other elements (for example silicon, sulphur, phosphorous).

16. If you suspect the analysis methods applied to a liquid sample will not extract and quantify the compounds present in any solid particles or in any separate phases, separate the sample into two fractions by a suitable method. For example, this could be by filtration, centrifugation or decantation. Then you can determine the mass of each fraction, and perform a comprehensive analysis of the separated liquid fraction and solid fraction, or of each phase.
17. For solid waste, any or all of the following may be appropriate:
 - measure the bulk density of the sample, without pre-treatment of the sample
 - measure the water content
 - measure the ash content after calcination at 550 °C
 - test for cyanide, and if present determine the free and complexed cyanide levels
 - test for POPs
 - check the content of volatile and semi-volatile substances
 - check the mass balance of solid waste

You can also measure the pH, redox potential and electrical conductivity on a water extract of crude sample using a ratio of 10 l/kg of dry matter.

You can also test for the 12 heavy metals (As, Ba, Cd, Cr, Cu, Hg, Mo, Ni, Pb, Sb, Se, Zn) and determine their levels individually and quantitatively. You may use any specific classical method of (partial) extraction of these metals. Where it is present, check specifically for chromium (VI). If the waste is saline (conductivity > 0.15 S/m), measure the chlorides and preferably all the halogens to make sure that you correctly speciate the metals.

You can also test for other metal content and other elements (for example silicon, sulphur, phosphorous).

18. Analyses must be carried out by laboratories that have robust quality assurance procedures and use recognised test methods. The EN ISO 17025 accreditation represents best practice. When multiple immiscible phases or fractions are present, you can perform the analysis on each phase and combine them to provide the final result.
19. When you agree that you will accept waste from a customer, you should decide and record what parameters you will check at the acceptance stage. The checks could be visual (for example colour, phase, fuming), physical (for example pumpability, form), chemical (for example pH range, maximum acceptable metals content) or odour-based parameters. You should also record the criteria for non-conformance or rejection. The person checking the waste for acceptance can also decide on their own additional parameters.

Waste acceptance and tracking

20. You must implement waste acceptance procedures to check that the characteristics of the waste received matches the information you obtained during waste pre-acceptance. This is to confirm that the waste is as expected and you can accept it. If it is not, you must confirm that you can accept it as a non-conforming waste, or you must reject it.
21. Your procedures should follow a risk-based approach, considering:
 - the source, nature and age of the waste
 - the waste's hazardous properties
 - potential risks to process safety, occupational safety and the environment (for example, from odour and other emissions)
 - potential for self-heating, self-reactivity or reactivity to moisture or air
 - knowledge about the previous waste holder(s)
22. Other than in an emergency (for example, taking waste resulting from an emergency incident clean-up), you must only receive pre-booked wastes onto site that have been adequately pre-accepted and that are consistent with the pre-acceptance information.
23. All relevant storage areas (quarantine, reception and general) and treatment processes in your facility must have the physical capacity needed for the waste you receive. You must not receive wastes if this capacity is not

available. The amount of waste you receive must also comply with storage limits in your permit and the limits set under COMAH.

24. You must visually check wastes or their packages and verify them against pre-acceptance information and transfer documentation before you accept them on site. The extent of the initial visual check is determined by the waste type and how it is packaged.
25. You must check and validate all transfer documentation and resolve discrepancies before you accept the waste. If you believe the incoming waste classification and description is incorrect or incomplete, then you must address this with the original waste producer during waste acceptance. You must record any non-conformances. If you have assessed the waste as acceptable for on-site storage or treatment, you must document this.
26. You must have clear criteria for non-conforming wastes including rejection of such waste. You must also have a written procedure for recording, reporting and tracking non-conforming wastes, including notifying the relevant customer or waste producer, and the regulator.
27. You must weigh each consignment of waste on arrival to confirm the quantities against the accompanying paperwork, unless alternative reliable systems are available (for example, based upon density and volume). You must record the weight in the computerised waste tracking system.
28. The person carrying out waste acceptance checks must be trained to effectively identify and manage any non-conformances in the loads received, complying with this guidance and your permit conditions.
29. If there is a known risk of radioactive contamination (for example, a site is thought to use radioactive materials but it is unclear whether or not all suitable systems are in place to manage and segregate the wastes produced), you must check the waste to determine that it does not include radioactive material, unless you are permitted to accept these materials.
30. You must minimise the manual handling of waste. You should use mechanical unloading technologies where it is possible, safe and practicable to do so.
31. Offloading, sampling point, reception and quarantine areas must have an impermeable surface with self-contained drainage, to prevent any spillage entering the storage systems or escaping off site.
32. The designated sampling point or reception area must be close to the laboratory or checking area and needs to be visible.

Acceptance of containerised waste

33. After you have carried out the initial visual inspection and confirmatory checks, you must offload waste containers into a dedicated reception area to await detailed checks or sampling. Wastes that do not require further checking can go directly into the appropriate storage area. You must not unload wastes if you do not have enough space.
34. All waste containers must be fit for purpose, that is:
 - in sound condition
 - undamaged
 - not corroded, if metal
 - have well-fitting lids
 - suitable for the contents
 - with caps, valves and bungs in place and secure
 - within the manufacturer's use-by date, particularly for plastic containers

You must quarantine non-conforming containers and deal with them immediately and appropriately. You must record all non-conformances.

35. You must check, and where appropriate sample and analyse, the contents of all containers in the reception area within 1 working day of receipt. You must then transfer compliant containers to the relevant general storage area on site. You must move non-compliant containers to quarantine unless you can safely store the waste in a general storage area with other compatible wastes whilst you investigate the non-conformance. You must record all non-conformances.

36. Where containers hold laboratory smalls, you must open each container held in reception within 1 working day of receipt to check that the contents remain undamaged and that the inventory is as expected. All of the contents in each drum must be compatible. Once checked the container can be moved to the appropriate storage area. Laboratory smalls that need to be sorted must be moved to a dedicated repackaging area and repackaged immediately.
37. You must make sure that all waste packages you receive are marked or labelled with:
- a short description of the waste
 - a unique tracking system reference identifier
 - the date of arrival on site
 - a hazard code or codes (using either a product symbol or a transport symbol)
- The unique identifier must allow you to track the waste and easily identify the producer of the waste.
38. If waste containers are received shrink-wrapped on pallets, or you shrink-wrap containers, you can label the shrink wrap with all the relevant information. If a shrink-wrapped load is split, you must make sure that you mark or label each individual container with all the relevant information.
39. Where bar code systems are used for labelling, the hazardous property of the waste and the date of receipt of the container must be directly visible.
40. You should, wherever possible, keep wastes segregated in reception, to minimise the risk of incompatible materials reacting together.

Acceptance of bulk wastes

41. Bulk loads (liquid or solid) can only be offloaded after they have been fully verified as compliant. You must not accept a non-compliant bulk load for interim storage except in an emergency. Verification testing should include:
- checking consistency with the pre-acceptance information
 - compatibility with the receiving vessel contents
 - where appropriate, checking treatability by using laboratory-scale simulation
42. Deliveries in a bulk road tanker must be accompanied by a 'wash-out' certificate or a declaration of the previous load so that contamination by this route can be checked.
43. Samples from tankers should wherever possible be taken representatively by taking a core sample from the top hatch and from a suitable gantry. You must sample from each compartment where the tanker is divided into multiple compartments. If you have to take a sample from the back valve, you must take precautions to avoid spillages.

Acceptance sampling

44. You must representatively sample all wastes, bulk or containerised (including from every container) at the acceptance stage and carry out verification and compliance testing. You must not just rely on the written information supplied. The requirement to sample does not apply to some wastes, for example:
- pure product chemicals
 - asbestos
 - contaminated clothing, packaging or rags
 - 'articles'
 - laboratory smalls
 - packaged cosmetics and pharmaceuticals
 - solid non-hazardous waste (except for mirror entries when the waste composition is unknown)
 - contaminated wood and roofing material
 - green wastes and food wastes

Where a sample is not required, you must still visually check the waste. You must record the reason why you did not sample the waste in your computerised waste tracking system.

45. A representative sample is one that takes account of the full variation and any partitioning of the load so you can account for worst case scenarios.

46. You must take a sample from every container. You can make a composite sample if each of the containers making up the composite holds the same waste and the waste is known not to be variable. You must obtain a representative sample by taking a core sample down to the base of the container. You must make sure that you replace lids, bungs and valves immediately after sampling.
47. On-site sampling must take place under the supervision of the site's qualified staff. Where a driver arrives at the site with a sample taken elsewhere, the sample:
 - must be verified as representative, reliable and obtained by a person technically competent to take it
 - is only acceptable if it was taken for specific health or safety purposes
48. Sampling must not increase the risk of incompatible substances coming into contact with one another, for example within a sump serving the sampling point, or due to contaminated sampling equipment.
49. You must have suitable absorbents and spill kit material available to deal with any spills.
50. You must keep a record of the sampling regime, process and justification in your computerised waste tracking system.
51. You should keep acceptance samples on site for at least 2 working days after you have:
 - treated a waste and removed its treatment residues from the facility
 - transferred a waste from your site
52. You must have a sampling and analysis procedure. You must design it based on the risk factors for the waste, for example:
 - the type of waste (for example hazardous or non-hazardous)
 - knowledge of the customer (for example waste producer)
 - the impact of potential mixing or blending and the possibilities for subsequent treatment
53. You must check any relevant physico-chemical parameters using, for example, viscometry, infrared, chromatography and mass spectrometry.
54. Sampling procedures must be customised for:
 - bulk liquid
 - bulk solids
 - large and small containers or vessels (the number of samples increases with the number of containers or vessels and the variability of the waste)
 - laboratory smalls
55. You must determine and record the following information:
 - the sampling regime for each load, together with your justification for selecting each option
 - a suitable location for the sampling points
 - the capacity of the sampled vessel (for samples from drums, an additional parameter would be the total number of drums)
 - the number of samples and degree of consolidation
 - the operating conditions at the time of sampling
56. Wherever possible you should sample waste in accordance with:
 - EN 14899 Characterization of waste - Sampling of waste materials - Framework for the preparation and application of a Sampling Plan
 - CEN/TR 15310-1 Characterization of waste - Waste Collection - Part 1: Guide on the selection and application of criteria for sampling under various conditions
 - CEN/TR 15310-2 Characterization of waste - Waste Collection - Part 2: Guide on sampling techniques
 - CEN/TR 15310-3 Characterization of waste - Waste Collection - Part 3: Guide on procedures for sub-sampling in the field
 - CEN/TR 15310-4 Characterization of waste - Waste Collection - Part 4: Guide to the packaging procedures for storage, conservation, transportation and delivery of samples
 - CEN/TR 15310-5 Characterization of waste - Sampling of waste - Part 5: Guide on the process of developing a sampling plan

Testing and analysis

57. You must test each waste for acceptance according to the parameters decided at pre-acceptance, plus any additional checks that are considered appropriate. You should record the results of the tests in the computerised waste tracking system. You should note and investigate any discrepancies.
58. Analysis of waste must be carried out by a laboratory with suitably recognised test methods. Where the waste received is hazardous, the laboratory should be on site, or routinely available at another site capable of providing test results within 1 working day of receipt of the waste at your site.

Quarantine

59. Your facility should have a dedicated waste quarantine area. You must segregate or isolate incompatible quarantined wastes and record their location and reason for quarantine.
60. Quarantine storage must be for a maximum of five working days. You must have written procedures in place for dealing with wastes held in quarantine, together with a maximum storage volume. For some limited and specific cases (for example detection of radioactivity), you can extend quarantine storage time if the Environment Agency agrees.

Waste tracking

61. You must use a computerised tracking system to hold up to date information about the available capacity of the waste quarantine, reception, general and bulk storage areas of your facility including treatment residues and end of waste product materials.
62. Your waste tracking system must hold all the information generated during:
 - pre-acceptance
 - acceptance
 - non-conformance or rejection
 - storage
 - repackaging
 - treatment
 - removal off-site

This information must be readily accessible.

63. You must create records and update them to reflect deliveries, on-site treatment and despatches. Your tracking system will operate as a waste inventory and stock control system. It must include as a minimum:
 - the date the waste arrived on site
 - the original producer's details
 - details of all previous holders
 - a unique reference number
 - the pre-acceptance and acceptance information, including any required analysis results
 - the package type and size
 - the intended treatment or disposal route
 - accurate records of the nature, quantity and hazardous properties of wastes held on site
 - where the waste is physically located on site
 - where the waste is in the designated disposal route
 - identities of staff who have taken any decisions about accepting or rejecting waste streams and who have decided on recovery or disposal options
 - details that link each waste container accepted to its consignment or transfer note
 - details of any non-conformances and rejections
64. The tracking system must be able to report:
 - the total quantity of waste present on site at any one time
 - a breakdown by type of the waste quantities you are storing awaiting on-site treatment or onward transfer
 - a breakdown of the waste quantities by hazardous property
 - an indication of where a batch or consignment of waste is located based on a site plan
 - the quantity of waste on site compared with the limits authorised by your permit
 - the length of time the waste has been on site

- the quantity of end of waste product materials on site at any one time, where applicable
65. You must store back-up copies of computer records off site. Records must be readily accessible in an emergency.
66. You must hold acceptance records for a minimum of 2 years after you have treated the waste or removed it off site. You may have to keep some records for longer if they are required for other purposes, for example hazardous waste consignment notes.

Waste storage, segregation, transfer, handling and compatibility

67. You must store waste in locations that minimise the handling of waste. Waste handling must be carried out by competent staff using appropriate equipment.
68. Where possible, you should locate storage areas away from watercourses and sensitive perimeters (for example, those close to public rights of way, housing or schools). You must store all waste within the security-protected area of your facility to prevent unauthorised access and vandalism.
69. Where relevant, you must conform to [HSE standards](#) and in particular to:
- [HSG51 The storage of flammable liquids in containers](#)
 - [HSG71 Chemical warehousing: The storage of packaged dangerous substances](#)
 - [HSG76 Warehousing and storage](#)
 - [HSG140 Safe use and handling of flammable liquids](#)
 - [HSG176 The storage of flammable liquids in tanks](#)
 - [CS21 The storage and handling of organic peroxides](#)
70. You must clearly document the maximum storage capacity of the site and designated storage areas. You must not exceed these maximum capacities. You must define capacity in terms of, for example, maximum tank or vessel capacities, tonnage and numbers of skips, pallets or containers. You must regularly monitor the quantity of stored waste on the site and designated areas to check against the allowed maximum capacities.
71. You must clearly mark hazardous waste storage areas and provide signs indicating the maximum quantity and hazardous properties of the wastes that can be stored there.
72. Storage area drainage infrastructure must:
- contain all possible contaminated run-off
 - prevent incompatible wastes coming into contact with each other
 - make sure that fire cannot spread
73. Packaged liquid storage systems must conform to [CIRIA guidance C736](#) Containment systems for the prevention of pollution.
74. You must store containerised wastes that are sensitive to light, heat, extreme ambient temperatures or water ingress under cover, protected from such ambient conditions. Covered areas must have good ventilation. This applies to any such container:
- held in general storage, reception storage (pending acceptance) or quarantine
 - being emptied, repackaged or otherwise managed

For example, waste held in fibre or cardboard primary or secondary packaging should always be stored under cover in a dry area and must not be exposed to rain or moisture. They must be kept off floors to prevent them being damaged by damp.

75. You should store wastes in sealed, ventilated metal containers if they have the potential for:
- self-heating,
 - self-reactivity
 - reactivity to moisture or air

You should monitor the containers for heat build-up.

76. Wherever practicable you should store all other wastes under cover. Covered areas must have good ventilation. This applies to any such container:

- held in general storage, reception storage (pending acceptance) or quarantine
- being emptied, repackaged or otherwise managed

Under cover storage provides better protection for containers than open air storage and minimises the generation of contaminated water. Covered storage also:

- lowers temperature fluctuations that can cause a pressure build-up in containers
- reduces the degradation of containers through weathering

77. You must not store hazardous waste in open-topped containers. Empty open-topped containers should be protected from rain water.
78. You must not store or hold hazardous waste on site in vehicles or vehicle trailers unless being prepared for imminent transfer (where the waste will be removed from site within 24 hours, or 72 hours if over a weekend).
79. You should store flammable wastes in well ventilated covered areas, constructed of fire resistant material and equipped with automatic fire suppression systems
80. You should pay particular attention to avoid the build-up of static electricity when you are storing or handling flammable materials. You should put in place leak detection systems and alarms (for example VOC alarms) and automatic fire suppression equipment based on a recorded risk assessment.
81. You must provide adequate bunding of all storage areas, and containment and treatment of any water run-off.
82. You must not accumulate waste. You must treat wastes, or remove them from the site, as soon as possible. Generally you should do this within one month of receipt but all wastes must be removed within a maximum of six months of receipt. This applies even when the waste might be used as a reactant. Where a shorter time period is given in a permit condition you must comply with the permit for that waste.
83. All containers in storage must keep the labelling that they had at acceptance.
84. You must handle and store containers so that the label is readily visible and continues to be legible.
85. Your facility's waste inventory must be readily available.
86. You should keep solid waste dry and avoid the dilution of hazardous waste.
87. You must keep clean rainwater and clean cooling water separate from wastes and waste waters.
88. You must keep incompatible wastes segregated so that they cannot come into contact with one another. You must store flammable wastes apart from other wastes to prevent fire spreading between them and other materials. You must use sealed drainage systems to prevent leaks and spillages contaminating other wastes.
89. There must be pedestrian and vehicular access (for example, forklift) at all times to the whole of the storage area so that you can retrieve containers without removing others that may be blocking access - other than removing those in the same row.
90. You must store all waste containers in a way that allows easy inspection. You must maintain safe access between rows of bulk containers or palletised wastes.
91. You must move drums and other mobile containers between different locations (or loaded for removal off site) following written procedures. You must then amend your waste tracking system to record these changes.
92. You must store containers stably and upright on pallets. You must not stack containers directly on other containers. You must not stack pallets more than 2 high, except for empty containers which can be stacked 3 high. You must provide access for the inspection of all containers.
93. All waste containers must remain fit for purpose. You must check any containers (and pallets they may be stored on) daily and record non-conformances. Non-compliant containers and pallets must be made safe. You must immediately and appropriately manage any unsound, poorly labelled or unlabelled containers (for example, by relabelling, over-drumming and transferring the container's contents). You must not use containers, tanks and

vessels beyond their specified design life. You must only use them for the purpose, or substances, they were designed for.

94. You should design and operate your facility in a way that minimises waste handling. You must never throw, walk on or handle wastes in a way that might damage the integrity of the waste or its packaging.
95. You should, where applicable and based on a recorded risk assessment, make inert the atmosphere of tanks containing organic liquid waste with a flashpoint less than 21 °C. This can be done for example by using nitrogen.
96. You must store [asbestos waste bagged or wrapped](#), in sealed, closed and locked containers. You must not store asbestos waste loose. You must not put asbestos wastes into bays or transfer it between different skips or containers. You must not use mechanical equipment for example loading shovels, chutes and conveyors to move asbestos waste.
97. You must not stack wheeled containers.
98. All containers that need them should have a lid or bung, and the lid or bung must be closed except when the container is being sampled, loaded or unloaded.
99. You must not stack skips containing waste. Skips containing hazardous waste must be enclosed and locked when not being loaded or unloaded. You should store loose bulk hazardous wastes under cover.
100. You can use racking systems to store waste but you must consider segregation, separation and fire suppression measures.
101. You must contain wash-waters within an impermeable area and either discharge them to foul sewer or dispose of them appropriately off site. You must prevent run-off into external areas or to surface water drains.
102. You must manage waste in a way that prevents pests or vermin. You must have specific measures and procedures in place to deal with wastes that are identified as causing [pests or vermin](#).
103. You must inspect storage areas, containers and infrastructure daily. You must deal with any issues immediately. You must keep written records of the inspections. You must rectify and log any spillages of waste.
104. You must train forklift drivers in the handling of palletised goods, to minimise forklift truck damage to the integrity of containers and infrastructure.
105. You must not carry out activities that represent a clear fire risk within any storage area. Examples include:
 - grinding
 - welding or brazing of metalwork
 - smoking
 - parking of normal road vehicles except while unloading or loading
 - recharging forklift truck batteries

Bulk storage

106. You must use tanks and associated equipment that are suitably designed, constructed and maintained. You must carry out a risk assessment to validate the design and operation of bulk storage systems. Before you use new tanks and equipment you must check they are working correctly.
107. You should vent bulk storage tanks and silos through suitable abatement.
108. Bulk storage systems must conform to the following [CIRIA guidance](#):
 - C535 Above-ground proprietary prefabricated oil storage tank systems
 - C736 Containment systems for the prevention of pollution
109. You must locate bulk storage vessels on an impermeable surface which is resistant to the material being stored. The surface must have self-contained drainage to prevent any spillage entering the storage systems or escaping off site. Impermeable surfaces must have sealed construction joints.

110. You must bund all above-ground tanks containing liquids whose spillage could be harmful to the environment. Bunds must:
- be impermeable, stable and resistant to the stored materials
 - have no outlet (that is, no drains or taps) and drain to a blind collection point
 - have pipework routed within banded areas with no penetration of contained surfaces
 - be designed to catch leaks from tanks or fittings
 - have a capacity calculated following the relevant CIRIA guidance
 - have regular visual inspections – you must pump out or remove any contents under manual control after checking for contamination
 - be fitted with a high-level probe and an alarm (as appropriate) if not frequently inspected
 - have tanker connection points within the bund (where possible), and if not possible you must provide adequate containment for spillages or leakage
 - have programmed engineering inspections (extending to water testing if structural integrity is in doubt)
 - be emptied of rainwater regularly to maintain the containment capacity
111. You must control sludge build-up and emergence of foams in tanks, for example by regularly sucking out the sludge and using anti-foaming agents.
112. You must equip storage and treatment tanks with an automatic level monitoring system and an associated alarm or trip system. These systems must be sufficiently robust (for example, be able to work if sludge and foam are present) and regularly maintained. You must fit tanks with suitable overfill protection.
113. You must be able to close all connections to vessels, tanks and secondary containment via suitable valves. You must fit a valve close to the tank if you have bottom outlets, and have at least 2 isolation points in case of valve failure.
114. You must direct overflow pipes to a contained drainage system (for example the relevant secondary containment) or to another vessel where suitable control measures are in place.
115. Tanks, pipework and fittings must be examined by a competent person, following a written scheme. The scope and frequency of examination must also be determined by a competent person. You must work out how often to carry out these internal examinations using a risk assessment approach. This should be based on:
- tank service
 - maintenance history
 - known and potential damage mechanisms and their rates of attack.
- You should also carry out intermediate external examinations. You must act on the results of the examinations and carry out any necessary repairs to ensure the tanks remain fit for service. You must keep records of the results of examinations and repairs.
116. You must have systems in place to make sure that loading, unloading and storage are safe, considering any associated risks. This can include:
- having piping and instrumentation diagrams
 - using ticketing systems
 - using key-locked coupling systems
 - having colour coded points, fittings and hoses
 - using specific coupling or hose sizes for certain waste transfers
117. As a general rule, you must not use open-topped tanks, containers, vessels or pits to store or treat hazardous or liquid wastes.
118. All pipes, hoses, connections, couplings and transfer lines must be fit for purpose and resistant to the wastes being stored. You must use a suitable pipework coding system (for example RAL European standard colour coding).
119. Site staff must supervise loading and unloading activities, either directly or via CCTV.

Aerosol storage

120. You must store aerosol canisters under cover in secure, well-ventilated containers, and within caged storage areas. You must also store them in a well-vented location that is not subject to extreme temperatures or direct

sunlight. You must not store canisters in open containers to prevent the risk of them spreading fires by 'missiling' or 'ejection'.

121. You must segregate aerosol canisters from other flammable wastes and potential sources of ignition. This should preferably be in a separate building, or by using a fire-resistant enclosure or fire wall. You must not hold any combustible material within the storage area, other than the canister's packaging, containers and the pallets on which they stand.
122. You must provide suitable containment measures (for example drip trays) for aerosol canisters held in containers which are not able to collect and hold liquids released from the canisters. Or you should transfer them to secure containers that are able to retain free liquid.
123. During storage, lids on containers holding aerosol canisters must remain securely closed at all times when not being filled, emptied or internally inspected. When not in use, the doors or hatches of cages must remain closed and locked.
124. You must not overfill containers used to store canisters. Overfilling can result in canisters being actuated and discharging their contents, either:
 - under the weight of the canisters above them
 - when the container lid is closed
 - when containers are stacked
125. Cages used for storage of aerosol canister containers must be robust, fire-resistant and of an appropriate mesh size (based upon the size of the canisters to be stored). This is to constrain the canisters and prevent any ejection. Where the cage is not constructed with a mesh roof, the mesh wall panels must extend into the roof space of the storage area to make sure that the structure is completely enclosed.
126. You should store aluminium canisters separately from steel canisters. This will:
 - prevent thermite sparks during storage, handling and treatment
 - allow the different metals to be more easily recovered

You must not store aluminium canisters in direct contact with unprotected or rusty steel containers because the risk of thermite sparks is increased.

Transfer of waste into and from tankers

127. You must make sure that transfers from tankers only take place after you have completed any relevant compatibility testing, and then only with the approval of an appropriate chemist or manager. The approver must specify:
 - which batch or load of material is to be transferred
 - the receiving storage vessel
 - the equipment required, including spillage control and recovery equipment
 - any special provisions relevant to that batch or load including minimising fugitive emissions
128. You must have in place systems to prevent 'tanker drive off' (a vehicle pulling away whilst still coupled).
129. You must make sure that the transfer of waste from tankers is only carried out by competent staff and with an appropriate amount of time so they are not under pressure to work more quickly than is deemed acceptable.
130. You must have measures in place to make sure that couplings are a correct fit. This will prevent couplings from loosening or becoming detached. You should provide, maintain and clean your own couplings and hoses to guarantee their integrity and fitness. You should also:
 - make sure you take special care so that a coupling is able to withstand the maximum shut valve pressure of the transfer pump
 - maintain a sound coupling at each end of the transfer hose, even when a gravity feed system is in place, and protect the transfer hose
 - control potential leaks from coupling devices by using fairly simple systems such as drip trays
131. You must carry out routine maintenance to prevent failure of the plant or equipment. This may include the failure of a pump seal or the blockage of a filter pot commonly used at transfer points.

132. You must make sure that transfers into and from road tankers only take place in bunded areas designed to contain a worst case spillage. You must have emergency storage for leaking vehicles to minimise any acute incidents caused by a seal on a road tanker failing.
133. You must have measures in place to make sure that the correct waste is discharged to and from the correct tank and road tanker. For example, you could use a lockable isolating valve fitted to the loading connection. This must be kept locked during periods when the unloading points are not supervised.
134. You should have in place systems and procedures to make sure that wastes due to be transferred comply with the safe carriage of dangerous goods when they are packaged and transported.
135. You must make sure that the transfer from a tanker to a drum or vice versa is done in a dedicated area and uses a minimum of two people to check the pipes and valves at all times. You must fit dip pipes with a shut-off valve to control the dispensing into containers and prevent overfilling.
136. You must continue the waste tracking system that began at the pre-acceptance stage, throughout the duration waste is kept at the site.
137. You must make a record of any spillages. You must retain spillages within the bunded areas and collect them promptly using pumps or absorbents. If you do not do this, the spillage could exit the site through the rainwater collection systems or generate fugitive emissions (for example VOCs).
138. You must make sure that tankers are not used as blending or reaction vessels as this is not their designed purpose.
139. You must make sure that bulking into tankers only takes place once you have carried out suitable verification and compatibility testing.
140. You must take operational and design precautions when mixing or blending wastes, depending on the composition and consistency of the wastes to be mixed or blended (for example when vacuuming dusty or powdery wastes).
141. Where you use rotary-type pumps, they must be equipped with a pressure control system and safety valve.
142. You must pump sludges and not pour them.
143. You must transfer wastes in containers into storage vessels using a dip pipe.
144. During loading and offloading of malodorous, flammable or volatile liquids between bulk storage tanks and road tankers, you must use vapour balance lines to transfer the displaced vapours from the receiving vessel to the vessel you are pumping from.
145. You must only transfer waste from powder tankers into silos following safe operating procedures.

Sorting, repackaging and bulking

146. Sorting is the placing together of containers with other waste containers of the same type, without emptying the contents from the container. This activity is storage (coded D15 or R13).
147. Repackaging is the removal of waste from a container, or into a container, and this may involve bulking it with other wastes of the same type from other containers. You must have a permit that specifically allows you to carry out repackaging activities (coded D14 or R12).
148. Bulking of waste that is not regarded as repackaging includes:
- discharging from a tanker to bulk storage of wastes of the same type
 - tank-to-tank transfer where both tanks contain wastes of the same type

This activity is considered as storage (coded D15 or R13).

149. You must only bulk or repackage wastes together if they are materially the same. They must not react when they are bulked and they must not change the waste's composition.

150. If a waste is mixed with other similar wastes, where the resulting mixture does not have significantly different characteristics from the mixed wastes (for example blending compatible combustible or flammable wastes as a fuel), this activity is mixing or blending (D13 or R12). Any other mixing that leads to a change to a waste, for example dilution or reaction, is [treatment](#).
151. You must be permitted to [mix hazardous waste](#), including where the mixing leads to treatment, with any:
- non-hazardous waste
 - hazardous waste in a different category
 - non-waste
152. You must not bulk or repackage:
- wastes which could be recovered with other wastes meaning that the waste must now be sent for disposal or a lower form of recovery
 - liquid wastes or infectious wastes with other wastes for the purpose of landfilling
 - oils where this could affect their regeneration or recycling
 - wastes containing Persistent Organic Pollutants (POPs) with another material solely to generate a mixture below the defined low POPs content
 - waste to deliberately dilute it
153. Repackaging must only take place in a dedicated area or store which is equipped with the plant and equipment needed to deal with the specific risks of that process.
154. You must manipulate containers using mechanical means, for example a forklift truck with a rotating drum-handling fitting, or pumps for liquids.
155. You must label containers of repackaged wastes so that you can identify their contents and origin through the tracking system. After repackaging, you must move the bulked materials and emptied containers to an appropriate segregated storage area.
156. You must have a risk assessment and carry out appropriate [compatibility testing](#) to make sure that bulked wastes will not react with each other, or with the container into which they are being placed.

Laboratory smalls (laboratory chemicals in containers less than 5 litres)

157. Where possible, you should sort and segregate laboratory smalls at source so that you do not need to reopen or re-sort containers.
158. If you sort laboratory smalls for compatibility reasons you must carry this out in a dedicated building, with self-contained drainage.
159. You must write and follow procedures for the segregation, sorting and repackaging of laboratory smalls.

Waste treatment

160. Waste treatment must have a clear and defined benefit. You must fully understand, monitor and optimise the waste treatment process to make sure that you treat waste effectively and efficiently. The treated output material must meet your expectations and be suitable for its intended disposal or recovery route. You must identify and characterise emissions from the process, and take appropriate measures to control them at source.
161. You must have up to date written details of your treatment activities, and the abatement and control equipment you are using. This should include information about the characteristics of the waste to be treated and the waste treatment processes, including:
- simplified process flowsheets that show the origin of any emissions
 - descriptions of process-integrated techniques and waste water or waste gas treatment at source including their performances
 - diagrams of the main plant items where they have environmental relevance, for example, storage, tanks, treatment and abatement plant design
 - details of chemical reactions and their reaction kinetics and energy balance

- details of physical processes for example thermal desorption, distillation, phase separation, shredding, filtration, centrifuging, heating, cooling or washing
- details of biological treatment process
- details of effluent treatment
- a description of any flocculants or coagulants used
- an equipment inventory, detailing plant type and design parameters, for example, time, temperature, pressure
- waste types to be subjected to the process
- the control system philosophy and how the control system incorporates environmental monitoring information
- process flow diagrams (schematics)
- venting and emergency relief provisions
- a summary of operating and maintenance procedures
- process instrumentation diagrams

162. You must have up to date written details of the measures you will take during abnormal operating conditions to make sure you continue to comply with permit conditions. Abnormal operating conditions include:

- unexpected releases
- start-up
- momentary stoppages
- shutdown

163. You should use material flow analysis for relevant contaminants in the waste to help identify their flow and fate. You should use the analysis to determine the appropriate treatment for the waste either directly at the site or at any subsequent treatment site.

Material flow analysis considers the contaminant quantity in the:

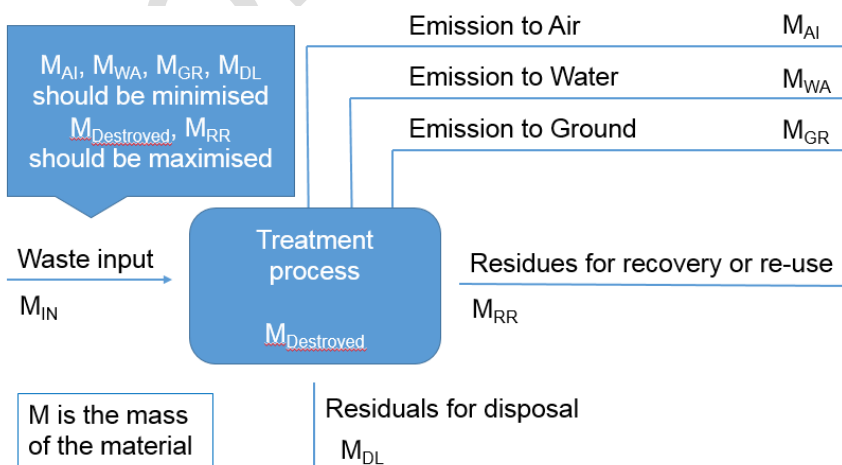
- waste input
- different waste treatment outputs
- waste treatment emissions

You should use the analysis and your knowledge of the fate of the contaminants to make sure that you correctly treat and either destroy or remove them.

The use of material flow analysis is risk-based considering:

- the hazardous properties of the waste
- the risks posed by the waste in terms of process safety
- occupational safety and environmental impact
- knowledge of the previous waste holder(s)

A treatment process may destroy certain substances in the waste. It could also put substances into the air, water or the ground, or have residues which are sent for disposal. The weight of these outputs should be minimised. The treatment may produce residues for recovery or reuse and the weight of these substances should be maximised. This is illustrated below:



164. You must not proceed with the treatment if your risk assessment or material flow analysis indicates that losses from a process will cause:
- the breach of an environmental quality standard
 - the breach of a benchmark
 - a significant environmental impact
165. You must clearly define the objectives and reaction (chemical, physical or biological) processes for each treatment process. You must define the end-point to the process so that you can monitor and control the reaction. You must define the suitable inputs to the process, and the design must take into account the likely variables expected within the waste stream. You must sample and analyse the waste to check that an adequate end-point has been reached.
166. For each new reaction, you must assess the proposed mixes of wastes and reagents before treatment by carrying out a scale laboratory test mix of the wastes and reagents to be used. You must predetermine a batch 'recipe' for all reactions and mixes of wastes. You must also take into account the potential scale-up effects, for example, the increased:
- heat of reaction with increased reaction mass relative to the reactor volume
 - residence time within the reactor and modified reaction properties
- Your treatment must comply with [HSG143](#) Designing and operating safe chemical reaction processes.
167. The reactor vessel and plant must be specifically designed, commissioned and operated to be fit for purpose. The designs need to consider chemical process hazards and a hazard assessment of the chemical reactions. They also need to consider prevention and protective measures and process management, such as:
- working instructions
 - staff training
 - appropriate process control measures
 - monitoring systems, alarms and interlocks
 - plant maintenance
 - checks
 - audits
 - emergency procedures
168. In order to track and control the process of change, you must have a written procedure for proposing, considering and approving changes to technical developments, or to procedural or quality changes.
169. Where an emission is expected, all treatment or reactor vessels must be enclosed and only vented to the atmosphere via an appropriate scrubbing and abatement system (subject to explosion relief).
170. Where appropriate, you must charge reactor vessels (or mixing vessels where the treatment is carried out) with pre-mixed wastes and reagents. For example, you could 'pre-lime' or charge reactor vessels with the reacting alkali to control the reaction. You must avoid decanting sacks or drums to the vessel. Failure to charge the vessel can lead to:
- concentration 'hot spots' at the surface of the reaction liquor
 - loss of reaction control
 - the emission of fumes from the instantaneous reaction at the interface
 - the open hatch venting fumes and by-passing appropriate abatement
171. You must monitor the reaction to make sure that it is under control and proceeding towards the anticipated result. Vessels used for treatment must be equipped appropriately, for example with high-level, pH and temperature monitors. These monitors must be automatic and continuous, linked to a clear display in the control room or laboratory, and have an audible alarm. Your risk assessment may require you to link process monitors to cut-off devices.

Aerosol canister treatment

172. Any aerosol treatment process must be fit for purpose. It must be specifically designed to:
- treat canisters and recover their materials and residues
 - manage potentially flammable substances and prevent explosive atmospheres

173. You must design and operate the treatment process (for example, the waste feed rate, duration of treatment cycle and gas or liquid extraction) so that the canisters' residual contents are fully discharged and removed in a safe and efficient manner.

174. You must locate the treatment plant in a designated covered area or ventilated building. This must:

- have impermeable surfaces and sealed drainage systems
- be located away from stored combustible materials, other sources of ignition and sensitive receptors

You must design the treatment area to avoid the potential build-up of flammable gases that are heavier than air, for example in sumps or similar sunken areas.

175. The treatment process must be:

- designed by a competent person
- carried out in an enclosed and sealed system, fitted with an appropriate gas extraction system
- provided with a means to contain or control an explosion
- strong enough to contain an explosion (typically up to 10 bar over-pressure), or have explosion relief directed to a safe space or explosion suppression fitted.

Design, operation and explosion relief provisions must satisfy the requirements of relevant Health & Safety legislation. The gas extraction system must be interlocked with plant operation, so that the plant cannot operate unless the system is working.

176. You must carry out the aerosol treatment process, including tipping and loading, within a controlled inert atmosphere. For example, you could use gas extraction and nitrogen gas injection to displace air from the plant and to purge it before and after a treatment cycle. If the inerting system fails or high oxygen levels are detected, the treatment should stop automatically. Similarly, if you use ventilation to prevent an explosive atmosphere forming, the equipment should automatically stop operating when the lower explosion limit is approached.

177. You must make sure that you have checked and sorted all canisters before feeding them into the treatment process. This makes sure you exclude incompatible or untreatable wastes (for example foams).

178. Wherever possible and practical to do so, you should process batches of aluminium and steel cans separately to make it easier to recycle the metals recovered from the treatment process and prevent thermite reactions.

179. You must keep waste sorting and storage distinct and separate from the treatment process.

180. For safety considerations and to prevent wastes accumulating on site, you must make sure that you identify available and reliable recovery or disposal routes. Where necessary you should have contracts in place to take the:

- residues or materials recovered from the treatment process
- any canisters you have accepted but cannot treat on site

181. You must make sure that as a minimum all LPG piping systems comply with [UKLPG Code of Practice 22](#) and are securely sealed, tested and have a procedure in place for their regular inspection.

182. Containers and tanks holding liquids collected from the treatment process should be:

- compatible with the materials held
- fully earthed
- UN tested
- integrally sound
- designed and constructed to prevent the release of fugitive emissions to air (including odour) and ground, whilst allowing for emergency venting where necessary

183. You should store containers that cannot be enclosed (for example skips containing recovered metal which are open to allow for ventilation and drying) in well-ventilated, covered storage areas. This will prevent:

- rainwater collecting (and potentially becoming contaminated)
- the materials held corroding or deteriorating

184. You should not collect or hold flammable liquids in plastic drums or non-conductive plastic IBCs. Containers used to collect and hold flammable liquids from the treatment process should preferably be constructed from steel, or at least anti-static plastic. They should be designed so that they can be sealed for handling and storage

purposes. You must only use anti-static plastic containers to collect and hold flammable liquids if you are holding them separate from other wastes, within a self-contained bund.

185. You must collect, and allow to dry, any residues that remain on the recovered metals before they are stored or sent for recycling.

Record keeping for all treatment residues

186. You must record in the computerised waste tracking system:

- that a waste has been treated
- what the treatment residues are and their weight
- what end of waste products have been made and their weight

Consultation Draft

Emissions control appropriate measures

You must identify, characterise and control [emissions](#) from your activities that may cause pollution.

Point source emissions to air

1. You must contain storage tanks, silos and waste treatment plant (including shredders) to make sure that you collect, extract and direct all process emissions to an appropriate abatement system for treatment before release.
2. You must identify the main chemical constituents of the site's point source emissions as part of the site's inventory of emissions to air, including VOC speciation if this has been identified in the emissions inventory and it is practicable.
3. You must make an assessment of the fate and impact of the substances emitted to air, following the Environment Agency's air emissions [risk assessment methodology](#).
4. To reduce point source emissions to air (for example dust, volatile organic compounds and odour) from the treatment of waste, you must use one or a combination of the following abatement techniques:
 - adsorption
 - biofilter
 - fabric filter
 - wet scrubbing
 - high efficiency particulate (HEPA) filter
 - condensation and cryogenic condensation
 - cyclone
 - electrostatic precipitation (ESP)
 - thermal oxidation
5. You must assess and design vent and stack locations and heights to make sure dispersion capability is adequate. Where monitoring is required, including for odour, you must install a suitable monitoring point.
6. You must have procedures in place to make sure that you correctly install, operate, monitor and maintain abatement equipment. For example, this includes monitoring and maintaining:
 - appropriate liquor flow and concentration of wet scrubbers
 - the handling and disposal or regeneration of spent scrubber or filter medium.
7. You should design and operate abatement systems to minimise water vapour plumes.

Fugitive emissions to air (including odour)

8. You must use appropriate measures to prevent emissions of [dust, mud and litter](#) and [odour](#).
9. You must design, operate and maintain storage and treatment plant in a way that prevents or, where this is not possible, minimises fugitive emissions to air. This includes associated equipment and infrastructure such as:
 - shredders
 - conveyors
 - skips or containers
 - building fabric, including doors and windows
 - pipework and ducting
10. To make sure that fugitive emissions to air can be collected and directed to appropriate abatement, your treatment plant must:
 - use high integrity components (for example, seals or gaskets)
 - be fully enclosed with air extraction systems located close to emission sources
11. You must use your waste pre-acceptance, waste acceptance and site inspection checks and procedures to identify and manage wastes that could cause, or are causing, fugitive emissions to air. When you identify any such wastes you must:
 - take appropriate risk assessed measures to prevent and control emissions
 - prioritise their treatment or transfer

12. If you need to prevent fugitive emissions to air from storing and handling odorous or dusty wastes, you should use a combination of the following measures:
 - store and handle the waste within an enclosed building
 - use fully enclosed material transfer and storage systems and equipment (for example conveyors, hoppers, containers, tanks and skips)
 - keep building doors and windows shut to provide containment (other than when you need access for loading or unloading)
 - keep enclosed buildings and equipment under adequate negative pressure with an appropriate abated air circulation or extraction system, where possible locating air extraction points close to potential emissions sources
 - use fast-acting or 'airlock' doors that default closed
13. You must set up a leak detection and repair programme and use it to promptly identify and mitigate any fugitive emissions from treatment plant and associated infrastructure (for example, pipework, conveyors or tanks).
14. You must regularly inspect and clean all waste storage and treatment areas, and equipment (including conveyor belts).
15. Your maintenance and cleaning schedules must make sure that tanks and plant are regularly cleaned to avoid large-scale decontamination activities.
16. You must take measures to prevent the corrosion of plant and equipment (for example, conveyors or pipes). This includes selecting and using appropriate construction materials, lining or coating equipment with corrosion inhibitors and regularly inspecting and maintaining plant.
17. You must have an appropriate regular maintenance programme covering all buildings, plant and equipment. This must also include protective equipment such as air ventilation and extraction systems, curtains and fast-action doors used to prevent and contain fugitive releases.
18. If you carry out container washing activities, you must design and operate the washing process and associated equipment in a way that prevents fugitive emissions to air (for example, carrying out this activity in a contained or enclosed system).
19. You must fully enclose and contain pre- and post-treatment shredder plant in order to prevent emissions. You must design and operate the shredder plant using appropriate process interlocks so that it cannot operate unless it is enclosed and contained (for example, only when the loading door on the hopper has been closed or sealed). Emissions of dust from the shredder plant must be contained and extracted to an appropriate abatement system (for example HEPA air filtration).
20. Where a [dust management plan](#) is required, you must develop and implement it following our guidance.
21. You must put in place and use procedures to minimise the amount of time odorous wastes spend in your storage and handling systems (for example pipes, conveyors, hoppers, tanks). In particular, you must have provisions in place to manage waste during periods of peak volume.
22. You must have measures in place to contain, collect and treat odorous emissions, including using contained buildings and plant or equipment with appropriate air extraction and abatement. We do not consider masking agents to be appropriate measures for treating odorous emissions.
23. You must monitor odour abatement systems to ensure optimum performance, for example, by making sure that scrubber liquors are maintained at the correct pH and replenished or replaced at an appropriate frequency.
24. Contaminated waters have potential for odours and you must store them in covered or enclosed tanks or containers.
25. Where you expect an odour nuisance at sensitive receptors, or one has been substantiated, you must periodically monitor odour emissions using EN standards, for example either:
 - dynamic olfactometry according to EN 13725 in order to determine the odour concentration
 - EN 16841-1 or -2 in order to determine the odour exposure

If you are using alternative methods for which no EN standards are available (for example, estimating odour impact), you should use ISO, national or other international standards to make sure you use data of an equivalent scientific quality. You must set out the monitoring frequency in the odour management plan (see paragraph 26 below).

26. Where you expect an odour nuisance at sensitive receptors, or one has been substantiated, you must set up, implement and regularly review an [odour management plan](#). It must be part of your management system and include all of the following:
- actions and timelines to address any issues identified
 - a procedure for carrying out odour monitoring
 - a procedure for responding to identified odour incidents, for example, complaints
 - an odour prevention and reduction programme designed to identify the source(s), to characterise the contributions of the sources and to implement prevention and reduction measures
27. Where an odour management plan is required, you must develop and implement it following our guidance.

Emissions of noise and vibration

28. You should design the layout of the facility to make sure that, where possible, you locate potential sources of noise (including building exits and entrances) away from sensitive receptors and boundaries. You should locate buildings, walls, and embankments so they act as noise screens.
29. You must employ basic good practice measures to control noise, for example including:
- adequately maintaining plant or equipment parts which may become more noisy as they deteriorate (for example, bearings, air handling plant, the building fabric, and specific noise attenuation kit associated with plant or machinery)
 - closing doors and windows of enclosed areas and buildings
 - avoiding noisy activities at night or early in the morning
 - minimising drop heights and the movement of waste and containers.
 - using white noise reversing alarms and enforcing an on-site speed limit
 - using low-noise equipment (for example, drive motors, fans, compressors, pumps)
 - adequately training and supervising staff
 - where possible, providing additional noise and vibration control equipment for specific noise sources (for example, noise reducers or attenuators, insulation, or sound-proof enclosures)
30. If you expect a noise or vibration nuisance at sensitive receptors, or if one has been substantiated, you must create, use and regularly review a [noise and vibration management plan](#). This must be part of the environmental management system, and must include:
- actions and timelines to address any issues identified
 - a procedure for carrying out noise and vibration monitoring
 - a procedure for responding to identified noise and vibration events, for example, complaints
31. The noise and vibration management plan should also include a noise and vibration reduction programme designed to:
- identify the source(s) of noise and vibration
 - measure or estimate noise and vibration exposure
 - characterise the contributions of the sources
 - implement prevention and reduction measures
32. Where a noise and vibration management plan is required, you must develop and implement it following our guidance.

Point source emissions to water (including sewer)

33. You must identify the main chemical constituents of the site's point source emissions to water and sewer as part of the site's inventory of emissions.
34. You must assess the fate and impact of the substances emitted to water and sewer following the Environment Agency's [risk assessment guidance](#).

35. Discharges to water or sewer must comply with the conditions of an environmental permit or trade effluent consent. Relevant sources of waste water include:
- process water or condensate collected from treatment process
 - waste compactor run-off
 - vehicle washing
 - vehicle oil and fuel leaks
 - washing of containers
 - spills and leaks in waste storage areas
 - loading and unloading areas
36. In order to reduce emissions to water and sewer, if you need to treat waste water before discharge or disposal, you must use an appropriate combination of these techniques:
- preliminary or primary treatment – for example, equalisation, neutralisation or physical separation
 - physico-chemical treatment – for example, adsorption, distillation or rectification, precipitation, chemical oxidation or reduction, evaporation, ion exchange, or stripping
 - biological treatment – for example, activated sludge process or membrane bioreactor
 - nitrogen removal – for example, nitrification and denitrification
 - solids removal – for example, coagulation and flocculation, sedimentation, filtration or flotation
37. You must direct wash-waters from cleaning containers to foul sewer, or a sealed drainage system, for on-site reuse or off-site disposal. You may need to pre-treat the waters in order to meet any limits on the effluent discharge consent. Discharges to surface water or storm drains are not acceptable.

Fugitive emissions to land and water

38. You must use appropriate measures to [control potential fugitive emissions](#) and make sure that they do not cause pollution.
39. Unless the risk is negligible, you must have the following measures in place in all operational areas of the facility:
- an impermeable surface
 - spill containment kerbs
 - sealed construction joints
 - a sealed drainage system
40. You must have measures in place to prevent overflows and failures from tanks and vessels, including where relevant:
- overflow detectors and alarms
 - directing overflow pipes to contained drainage system
 - locating tanks and packaged liquids in suitable secondary containment (bunds)
 - providing isolation mechanisms (for example, closing valves) for tanks, vessels and secondary containment
41. You must collect and treat separately each water stream generated at the facility, for example, surface run-off water or process water. Separation must be based on pollutant content and treatment required. In particular you must make sure that you segregate uncontaminated water streams from those that require treatment.
42. You must use suitable drainage infrastructure to collect surface drainage from areas of the facility where you store, handle and treat waste. You must also collect washing water and occasional spillages. Depending on the pollutant content, you must either recirculate what you have collected or send it for further treatment.
43. You must have design and maintenance provisions in place to detect and repair leaks. These must include regularly monitoring, inspecting and repairing equipment and minimising underground equipment and infrastructure.
44. You should provide appropriate buffer storage capacity at your facility to store waste waters, taking into account:
- potential abnormal operating scenarios and incidents
 - the nature of any polluting substances and their impact on the downstream waste water treatment plant and receiving environment
45. You must have appropriate measures in place to monitor, treat and reuse the water held in the buffer storage before discharging.

46. You must take measures to prevent emissions from washing and cleaning activities, including:
 - directing liquid effluent and wash-waters to foul sewer or collecting them in a sealed system for off-site disposal – you must not discharge them to surface or storm drains
 - where possible, using biodegradable and non-corrosive washing and cleaning products
 - storing all detergents, emulsifiers and other cleaning agents in suitable bunded or containment facilities, within a locked storage area, or in a building away from any surface water drains
 - preparing working strength cleaning or disinfection solutions in contained areas of the site and never in areas that drain to the surface water system
47. Where relevant, you must have measures to prevent pollution from the on-site [storage, handling and use of oils and fuels](#).
48. You must produce and implement a spillage response plan and train staff to follow it and test it.
49. You must have procedures and associated training in place to make sure that you deal with spillages immediately.
50. You must keep spill kits at locations close to areas where a spillage could occur and make sure relevant staff know how to use them. Make sure kits are replenished after use.
51. You must stop spillages from entering drains, channels, gullies, watercourses and unmade ground. You must make available proprietary sorbent materials, sand or drain mats for use when required.
52. You must make sure your spillage response plan includes information about how recover, handle and correctly dispose of waste produced from a spillage.
53. Container washing equipment must be purpose-built, contained and located in a designated area of the facility provided with self-contained drainage. The container wash must be designed to collect and contain all wash-waters, including any spray. It must be operated by trained staff and inspected and maintained regularly.
54. For subsurface structures, you must:
 - establish and record the routing of all site drains and subsurface pipework
 - identify all subsurface sumps and storage vessels
 - engineer systems to minimise leakages from pipes and make sure they can be detected quickly if they do occur, particularly where [hazardous substances](#) are involved
 - provide secondary containment or leak detection for subsurface pipework, sumps and storage vessels
 - establish an inspection and maintenance programme for all subsurface structures, for example, pressure tests, leak tests, material thickness checks or CCTV
55. For surfacing, you must design appropriate surfacing and containment or drainage facilities for all operational areas, taking into account:
 - collection capacities
 - surface thicknesses
 - strength and reinforcement
 - falls
 - materials of construction
 - permeability
 - resistance to chemical attack
 - inspection and maintenance procedures
56. You must have an inspection and maintenance programme for impermeable surfaces and containment facilities.

Emissions monitoring and limits appropriate measures

We may set emission limits and monitoring requirements in your permit, based upon your emissions inventory and [environmental risk assessment](#).

1. Where you are required to monitor emissions to comply with the requirements of your environmental permit you must do so in accordance with our [monitoring guidance](#).

2. You must create and maintain an inventory (emissions inventory) of point source emissions to air and water (including emissions to sewer) for your facility.

Emissions to air

3. Your facility's emissions inventory must include information about the relevant characteristics of point source emissions to air, such as the:
 - average values and variability of flow and temperature
 - average concentration and load values of relevant substances and their variability
 - flammability, lower and higher explosive limits and reactivity
 - presence of other substances that may affect the waste gas treatment system or plant safety (for example, oxygen, nitrogen, water vapour, dust)

Emissions to water or sewer

4. Your facility's emissions inventory must include information about the relevant characteristics of point source emissions to water or sewer, such as:
 - average values and variability of flow, pH, temperature, and conductivity
 - average concentration and load values of relevant substances and their variability, for example, COD and TOC, nitrogen species, phosphorus, metals, priority substances or micro-pollutants
 - data on bio-eliminability, for example, BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (for example, inhibition of activated sludge)
5. For relevant emissions to water or sewer identified by the emissions inventory, you must carry out monitoring of key process parameters (for example, waste water flow, pH, temperature, conductivity, or BOD) at key locations. For example, these could either be at the:
 - inlet or outlet (or both) of the pre-treatment
 - inlet to the final treatment
 - point where the emission leaves the facility boundary

Process efficiency appropriate measures

1. You must monitor and review the annual consumption of water, energy and raw materials, as well as the annual generation of residues and waste water, for your facility, with a frequency of at least once every year.

Energy efficiency (installations only)

2. You must create and implement an energy efficiency plan at your facility. This must:
 - define and calculate the specific energy consumption of the activity (or activities) you carry out and waste stream(s) you treat
 - set annual key performance indicators - for example, specific energy consumption (expressed in kWh/tonne of waste processed)
 - plan periodic improvement targets and related actions
3. You must regularly review and update your energy efficiency plan as part of your facility's management system.
4. You must have an energy balance record in place. This must provide a breakdown of your energy consumption and generation (including any exportation of energy or heat) by the type of source (electricity, gas, conventional liquid fuels, conventional solid fuels, and waste).
5. The record must include:
 - information on energy consumption in terms of delivered energy
 - information on energy exported from the facility
 - energy flow information (for example, Sankey diagrams or energy balances) showing how the energy is used throughout the process
6. You must regularly review and update your energy balance record as part of your facility's management system, alongside the energy efficiency plan.
7. You must have operating, maintenance and housekeeping measures in place in relevant areas, for example:
 - air conditioning, process refrigeration and cooling systems (leaks, seals, temperature control, evaporator or condenser maintenance)
 - operation of motors and drives
 - compressed gas systems (leaks, procedures for use)
 - steam distribution systems (leaks, traps, insulation)
 - space heating and hot-water systems
 - lubrication to avoid high-friction losses
 - boiler operation and maintenance, for example, optimising excess air
 - other maintenance relevant to the activities within the facility
8. You must have basic low-cost physical techniques in place to avoid gross energy inefficiencies. These should include for example:
 - insulation
 - containment methods (such as seals and self-closing doors)
 - avoiding unnecessary discharge of heated water or air (for example, by fitting simple control systems such as timers and sensors)
9. Additional [energy efficiency measures](#) should be implemented at the facility as appropriate in accordance with our guidance

Raw materials (installations only)

10. You must maintain a list of the raw materials used at your facility and their properties (including auxiliary materials and other substances that could have an environmental impact).
11. You must have procedures for regularly reviewing new developments in raw materials and using any suitable ones that are less hazardous. This should include, where possible, substituting raw materials with waste.
12. You must justify the continued use of any substance for which there is a less hazardous alternative.

13. You must have quality-assurance procedures in place to control the content of raw materials.

Water use (installations only)

14. You must take measures to make sure you optimise water consumption in order to:

- reduce the volume of waste water generated
- prevent or, where that is not practicable, reduce emissions to soil and water

15. Measures you must take include:

- implementing a water saving plan (involving establishing water efficiency objectives, flow diagrams and water mass balances)
- optimising the use of washing water (for example, dry cleaning instead of hosing down, using trigger control on all washing equipment)
- recirculating and reusing water streams within the plant or facility, if necessary after treatment
- reducing the use of water for vacuum generation (for example, using liquid ring pumps with high boiling point liquids), where relevant

16. You must carry out a regular review of water use (a water efficiency audit) at least every 4 years.

17. You must also:

- produce flow diagrams and water mass balances for your activities
- establish water-efficiency objectives and identify constraints on reducing water use beyond a certain level (usually this will be site specific)
- use water pinch techniques in more complex situations such as chemical plant, to identify the opportunities for maximising reuse and minimising use of water
- have a timetabled improvement plan for implementing additional water reduction measures

18. To reduce emissions to water, you should apply these general principles in sequence:

- use water-efficient techniques at source where possible
- reuse water within the process, by treating it first if necessary. If this is not practicable use it in another part of the process or facility that has a lower water quality requirement
- if you cannot use uncontaminated roof and surface water in the process, you should keep it separate from other discharge streams - at least until after you have treated the contaminated streams in an effluent treatment system and have carried out final monitoring

19. You should establish the water quality requirements associated with each activity and identify whether you can substitute water from recycled sources and where you can include it in your improvement plan.

20. Where there is scope for reuse (possibly after some form of treatment) you should keep less contaminated water streams, such as cooling waters, separate from more contaminated streams.

21. You must minimise the volume of water you use for cleaning and washing down by:

- vacuuming, scraping or mopping in preference to hosing down
- reusing wash-water (or recycled water) where practicable
- using trigger controls on all hoses, hand lances and washing equipment

22. You must directly measure fresh water consumption and record it regularly at every significant usage point, ideally on a daily basis.

Waste minimisation, recovery and disposal

23. You must have and implement a residues management plan that:

- minimises generating residues arising from the treatment of waste
- optimises the reuse, regeneration, recycling or energy recovery of residues, including packaging
- makes sure you properly dispose of residues where recovery is technically or economically impractical

24. Where you must dispose of waste, you must carry out a detailed assessment identifying the best environmental options for waste disposal.

25. You must review on a regular basis options for recovering and disposing of waste produced at the facility. You must do this as part of the management system to make sure that you are still using the best environmental options and promoting the recovery of waste where technically and economically viable.

Consultation Draft

Would you like to find out more about us or your environment?

Then call us on

03708 506 506 (Monday to Friday, 8am to 6pm)

email

enquiries@environment-agency.gov.uk

or visit our website

www.gov.uk/environment-agency

incident hotline

0800 807060 (24 hours)

floodline

0345 988 1188 (24 hours)

Find out about call charges (www.gov.uk/call-charges)

Environment first:

Are you viewing this onscreen? Please consider the environment and only print if absolutely necessary. If you are reading a paper copy, please don't forget to reuse and recycle.