



Environment
Agency



Metals shredders: appropriate measures for permitted facilities – consultation draft

Date: November 2020

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Metal shredders: appropriate measures for permitted facilities

External guidance: LIT UNASSIGNED

Guidance for regulated facilities with an environmental permit to mechanically treat metal waste in shredders.

Contents

Metal shredders: appropriate measures for permitted facilities	1
1. Introduction.....	3
1.1. When appropriate measures apply.....	3
1.2. The measures that apply to different types of facilities	4
1.3. Implementing appropriate measures at new and existing facilities.....	4
2. General management appropriate measures	7
2.1. Management system	7
2.2. Staff competence.....	8
2.3. Accident management plan	9
2.4. Accident prevention measures	11
2.5. Contingency plan and procedures.....	14
2.6. Plant decommissioning.....	15
3. Waste pre-acceptance, acceptance and tracking appropriate measures	17
3.1. Waste pre-acceptance.....	17
3.2. Waste acceptance and tracking appropriate measures.....	18
3.3. Waste tracking.....	21
4. Waste storage, segregation and handling appropriate measures	22
5. Waste treatment appropriate measures	25
5.1. General waste treatment	25
6. Emissions control appropriate measures.....	30
6.1. Point source emissions to air.....	30
6.2. Fugitive emissions to air (including odour)	31
6.3. Emissions of noise and vibration	35
6.4. Point source emissions to water and sewer	36
6.5. Fugitive emissions to land and water.....	37

7. Emission limits, monitoring and appropriate measures	41
7.1. Emissions to air	41
7.2. Emissions limits and monitoring requirements	41
7.3. Emissions to water or sewer.....	43
8. Process efficiency appropriate measures.....	45
8.1. Energy efficiency (installations only).....	45
8.2. Raw materials (installations only)	46
8.3. Water use (installations only)	46
8.4. Waste minimisation, recovery and disposal.....	48

1. Introduction

This guidance explains the standards (appropriate measures) that are relevant to regulated facilities with an environmental permit to mechanically treat metal waste in shredders.

Mechanical treatment in shredders includes plant such as:

- hammer mills
- chain mills
- rotary shears
- other similar equipment designed to fragment metal into smaller pieces to separate metallic and non-metallic fractions

Mechanical treatment in shredders also includes using such equipment to re-size metal into smaller fragments for logistical or transport reasons.

It does not include shearers and guillotines which use a range of hydraulic machinery with hard steel blades to cut metals into manageable sizes.

1.1. When appropriate measures apply

There is a lot of overlap between best available techniques (BAT) for waste installation facilities and necessary measures for waste operation facilities. The Environment Agency uses the term 'appropriate measures' to cover both sets of requirements.

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 you assess the appropriate measures for your site. It is not definitive and it does not replace your obligation to assess appropriate measures fully.

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

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

For installations there are additional requirements for using energy and raw materials (including water) efficiently. These are called 'process efficiency measures'.

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

In certain situations, you may need to provide a higher standard of environmental protection, for example:

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

This guidance also covers some activities where legislation applies directly to that activity. This guidance, and any time scales for the appropriate measures, does not remove the need to comply with that legislation. For example, legislation relating to [F-gases](#), [persistent organic pollutants \(POPs\)](#), or [hazardous waste](#). This is not an exhaustive list.

1.2. The different types of measures that apply

The standards in this technical guidance have been grouped into the following sections. All sections apply to regulated facilities with an environmental permit to mechanically treat metal waste in shredders.

- General management
- Waste pre-acceptance, acceptance and tracking
- Waste storage, segregation and handling
- Waste treatment
- Emissions control
- Emissions monitoring and limits
- Process efficiency (measures for using energy, raw materials and water apply to Industrial Emissions Directive (IED) installations only)

Other generic technical guidance also applies to metal shredding facilities, including [guidance on emissions, odour and noise](#).

You also need an approved fire prevention plan that meets the requirements of our [fire prevention plan guidance](#).

Medium combustion plant with a rated thermal input between 1 megawatt but less than 50 megawatts must comply with the relevant requirements of the Medium Combustion Plant Directive. Specified generator controls, unless excluded, apply to generators with a rated thermal input of up to 50 megawatts. See our [guidance](#).

1.3. Implementing appropriate measures at new and existing facilities

The appropriate measures in this guidance apply to both new and existing facilities with a permit to mechanically treat metal waste in shredders.

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 an operator is not using appropriate measures, we will expect them 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. We will do this by varying the environmental permit to include improvement conditions.

Improvements at existing facilities are likely to fall into one of the following 2 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 acceptance and handling techniques
- appropriate monitoring equipment

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

Larger, more capital intensive improvements

For example, these could be:

- installing significant abatement equipment
- using a pre-shredder
- the significant redesign of facility layout, including the design and installation of new buildings or treatment plant

Operators should complete these improvements as soon as practicable and in any event within 3 years. However, local environmental impacts may mean you need to take action more quickly than the timescales provided here. For example, if there are sensitive receptors or an air quality management area close by.

Existing installations must comply with relevant BAT Associated Emission Levels (AELs) **by August 2022**, unless we approve a [derogation](#). BAT AELs are set out in the published [Waste Treatment BAT Conclusions document](#).

New installations (including new or replacement plant at existing facilities or a [substantial change](#) to existing plant) must comply with any relevant BAT AELs from when operations begin, unless we approve a time limited derogation.

2. General management appropriate measures

These are the appropriate measures for the environmental management of a regulated facility with an environmental permit to mechanically treat metal waste in shredders.

2.1. Management system

1. You must have and follow an up-to-date, [written management system](#). It must incorporate the following features.
2. You have:
 - management commitment, including from senior managers
 - an environmental policy that is approved by senior managers and includes the continuous improvement of the facility's environmental performance
3. You plan and establish the resources, procedures, objectives and targets needed for environmental performance alongside your financial planning and investment.
4. You implement 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
 - the management of change (including legislative changes and waste classification changes)
 - emergency preparedness and response
 - making sure you comply with environmental legislation
5. You check environmental performance and take corrective 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

6. Senior managers review the management system to check it is still suitable, adequate and effective.
7. You review the development of cleaner technologies and their applicability to site operations.
8. When designing new plant, you make sure you assess the environmental impacts from the plant's operating life and eventual decommissioning.
9. You consider the risks a [changing climate](#) poses to your operations. You have appropriate plans in place to assess and manage future risks.
10. You compare your site's performance against relevant sector guidance and standards on a regular basis, known as sectoral benchmarking.
11. You have and maintain the following documentation:
 - inventory of emissions to air and water
 - residues management plan
 - accident management plan
 - [site infrastructure plan](#)
 - [site condition report](#)
 - [fire prevention plan](#),
12. If required, you have and maintain the following documentation:
 - [deflagration management plan](#)
 - [odour management plan](#)
 - noise and vibration management plan
 - dust management plan
 - pest management plan

2.2. Staff competence

1. Your site must be operated at all times by an adequate number of staff with [appropriate qualifications and competence](#).
2. The design, installation and maintenance of infrastructure, plant and equipment must be carried out by competent people.

3. You must have appropriately qualified managers for your waste activity who are either:

- qualified under a [technical competence scheme](#)
- operating under a government approved technical competence scheme

Non-supervisory staff must be reliable and technically skilled. Their skills may be based on experience and relevant training.

2.3. Accident management plan

1. As part of your management system you must have a [plan for dealing with any incidents or accidents](#) that could result in pollution.

2. The accident management plan must identify and assess the risks the facility poses to human health and the environment.

3. Particular areas to consider may include:

- waste types and the risks that they pose
- robust waste acceptance procedures to avoid receiving unwanted items, such as gas cylinders and undepolluted end-of-life vehicles (ELVs)
- failure of abatement system
- failure of plant and equipment (for example over-pressure of vessels and pipework, blocked drains)
- failure of containment (for example, bund failure, or drainage sumps overflowing)
- damaged Li-ion batteries
- failure to contain firefighting water
- making the wrong connections in drains or other systems
- checking the composition of an effluent before emission
- vandalism and arson
- extreme weather conditions for example flooding or very high winds

Assessing the risks

4. 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 6 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?
5. In particular, you must identify any fire risks that may be caused, for example by:
- arson or vandalism
 - self-combustion, for example within the finer fractions of the shredder residue or within swarf piles
 - 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
 - damaged li-ion batteries in WEEE and light iron, heavy melting steel piles and waste from household waste recycling centres.
 - batteries left connected in ELVs which can short circuit
 - batteries (storage, processing and handling)
 - ELV depollution activities (if undertaken on site)
 - deflagrations within the shredder and pre-shredders

The above list is not exhaustive and you must have a fire prevention plan that identifies the risks at your site and meets the requirements of our [fire prevention plan guidance](#).

6. 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
7. 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.
8. You must appoint one facility employee as an emergency co-ordinator who will take lead responsibility for implementing the plan. You must train your

employees so they can perform their duties effectively and safely and know how to respond to an emergency.

9. You must also:

- establish how you will communicate with relevant authorities, emergency services and neighbours (as appropriate) both before, during and after an accident
- have appropriate emergency procedures, including for safe plant shutdown and site evacuation
- have post-accident procedures that include making 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

2.4. Accident prevention measures

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

2. **Segregating waste**

You must keep apart incompatible wastes. Examples could include but are not limited to;

- storing lead acid batteries separately to nickel metal hydride batteries
- segregating flammable gas cylinders in cages away from oxygen cylinders

3. **Preventing accidental emissions**

You must make sure you contain the following (where appropriate) or route to the effluent system (where necessary):

- process waters
- site drainage waters
- emergency firefighting water
- oil or chemical contaminated waters
- spillages of oils and chemicals

4. You must be able to contain surges and storm water flows. You must provide enough buffer storage capacity to make sure 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

5. You can only discharge waste water from this buffer storage after you have taken appropriate measures, to control, treat or reuse the water.
6. You must have spill contingency procedures to minimise the risk of an accidental emission of raw materials, products and waste materials, and to prevent their entry into water.
7. 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. This should be considered as part of your fire prevention plan
8. You must consider and, if appropriate, plan for the possibility that you 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 on reducing the probability of the emission.

9. **Security measures**

You must have security measures in place to prevent:

- entry by vandals and intruders
 - damage to equipment
 - theft
 - fly-tipping
 - arson
10. 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

11. **Fire prevention**

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

You must have a fire prevention plan that meets the requirements of [our guidance](#).

12. Other accident prevention measures

You must maintain plant control in an emergency using one or a combination of the following measures:

- alarms
- process trips and interlocks
- manual interventions

13. You must:

- make sure all the measurement and control devices you would need in an emergency are easy to access and operate in an emergency situation
- maintain the plant so it is in a good state of repair through a preventive maintenance programme and a control and testing programme
- use techniques such as suitable barriers to prevent moving vehicles damaging equipment
- have procedures in place to avoid incidents due to poor communication between operating staff during shift changes, or following maintenance or other engineering work
- where relevant, use equipment and protective systems designed for use in potentially explosive atmospheres

14. Record keeping and procedures

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 their reoccurrence
- 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 (for example, AdBlu) can damage the environment if they escape
- have procedures for checking raw materials and wastes to make sure they are compatible with other substances they may accidentally come into contact with

- make sure that any documents that may be needed in the event of an incident are accessible

2.5. Contingency plan and procedures

1. You must have and implement a contingency plan and management procedures to make certain you comply with all your permit conditions and operating procedures during maintenance or shutdown at your site.
2. Your contingency plan must also contain provisions and procedures to make sure that you:
 - do not exceed storage limits in your permit and you continue to apply appropriate measures for storing and handling waste
 - stop accepting waste unless you have a clearly defined method of recovery or disposal and enough permitted storage capacity
 - as far as possible, know in advance about any planned shutdowns at waste management facilities where you send waste
3. Your contingency plan must include plans and procedures for circumstances where you cannot send your wastes to other sites due to their planned or unplanned shutdown.
4. If you produce an end-of-waste material at your facility, your contingency planning must consider issues with storage capacity for end-of-waste products. In addition iron, steel, aluminium and copper produced in accordance with the End-of-Waste Regulations remain waste and subject to waste controls until they are passed to the next holder.
5. You must make your customers aware of your contingency plan, and of the circumstances in which you would stop accepting waste from them.
6. 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
7. Where circumstances mean you could exceed your permitted storage limits or compromise your storage procedures, you must look for alternative disposal or recovery options. You must not discount alternative disposal or recovery options on the basis of extra cost or geographical distance.
8. 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 you have the appropriate infrastructure in place.

9. Your management procedures and contingency plan must also:
 - 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, ducts, filters and security systems
 - make sure you have the spare parts, tools, and competent staff needed before you start maintenance

10. Your management system must include procedures for auditing your performance against all of these contingency measures and for reporting the audit results to the site manager.

2.6. Plant decommissioning

1. You must consider the decommissioning of the plant at the design stage and make suitable plans to minimise risks during later decommissioning.

2. For existing plant, identify potential decommissioning risks and take steps to address these. Changes and design improvements should be made as and when plant is upgraded, or when construction and development works are carried out at your site. Examples of design improvements could include avoiding 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.

3. 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

4. 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 all underground pipes and vessels
 - how asbestos or other potentially harmful materials will be removed, unless we have agreed it is reasonable to leave such liabilities to future owners
 - methods for dismantling buildings and other structures, and for protecting surface water and groundwater during construction or demolition at your site
 - any soil testing needed to check for any pollution caused by the site activities, and information on any remediation needed to return the site to a satisfactory state when you cease activities, as defined by the initial site condition report
 - the measures proposed, once activities have definitively stopped, to avoid any pollution risk and to return the site of operation to a satisfactory state (including, where appropriate, measures relating to the design and construction of the plant)
 - the clearing of deposited residues, waste and any contamination resulting from the waste treatment activities

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

3. Waste pre-acceptance, acceptance and tracking appropriate measures

These are the appropriate measures for waste pre-acceptance, acceptance and tracking at regulated facilities with an environmental permit to mechanically treat metal waste in shredders.

These measures are designed to make sure operators select only appropriate infeed for processing, to achieve low emission levels in line with overall BAT objectives.

3.1. Waste pre-acceptance

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 and processes. Your procedures must follow a risk-based approach, considering:
 - the source and nature of the waste
 - its hazardous properties
 - potential risks to process safety, occupational safety and the environment (for example, from deflagrations and other emissions such as noise or particulates)
2. You must get the following information in writing when you receive a customer query:
 - details of the waste producer including organisation name, address and contact details
 - the specific source of the waste – for example, ELV depollution site, general scrap metal transfer station, car manufacture, or metal from other types of manufacturing processes
 - a description of the waste including its composition and quantity
 - the List of Waste code (European Waste Classification, EWC, code)
 - if the waste has an EWC showing it is a non-hazardous mirror entry, you should request evidence of the assessment from the producer
 - any hazardous properties or whether it contains any regulated chemicals, for example, POPs
 - confirmation from the producer that ELVs have been depolluted to ELV directive requirements
 - confirmation from the producer that drums will be accompanied by a certificate of cleanliness
3. 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.

4. 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 deflagration (for example, gas or aerosol canisters, baled ELVs or undepolluted ELVs)
 - a risk of fire (for example, small mixed WEEE containing Li-ion batteries, or Li-ion batteries within metal loads from other sources)
5. You should establish a list of such wastes and procedures for managing the risks from these wastes.
6. You can 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.
7. 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.
8. 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
9. In all cases you must reassess the information required at pre-acceptance on an annual basis. The information required and the assessment made at the pre-acceptance stage is to make sure you:
 - only accept wastes that are suitable for the site
 - avoid accumulating waste
 - have enough storage and treatment capacity

3.2. Waste acceptance and tracking appropriate measures

1. 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 that you can accept it.

2. If it is not, you must confirm that you can accept it as a non-conforming waste, or you must reject it. If you are rejecting hazardous waste you must follow the [guidance on the procedure for rejecting hazardous waste](#).
3. Procedures should be documented and auditable and must follow a risk-based approach, considering:
 - the source, nature and age of the waste
 - the waste's hazardous properties
 - the waste's potential to contain POPs, potential risks to process safety, occupational safety and the environment (for example, from odour and other emissions)
 - knowledge about the previous waste holder(s)
4. If you have not received any pre-acceptance information, which may occur with loads of metal waste, you must assess the load to make sure it is technically (and legally) suitable for the plant. Your checks and assessment must be risk-based considering, for example, the:
 - hazardous properties of the waste
 - risks posed by the waste in terms of process safety, occupational safety and environmental impact

5. **Storage areas**

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.

6. The waste offloading, reception and quarantine areas must have impermeable surfaces with a sealed drainage system. This system must collect all surface water run-off and channel it to a blind sump, unless you can lawfully discharge it in another way.
7. You must clearly designate a materials reception area (or areas). Staff controlling the inspection, reception and validation of materials at the installation, must be trained in their respective roles.

8. **Waste acceptance**

You must weigh each load of waste on arrival to confirm the quantities against the accompanying paperwork, unless alternative reliable systems are available (for example, based upon volume). You must record the weight in the computerised waste tracking system.

9. 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 customer 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.

10. You must have clear criteria that you use to reject non-conforming wastes. You must also have a written procedure for recording, reporting and tracking non-conforming wastes, including notifying the relevant customer or waste producer to prevent reoccurrence.

11. Acceptance of drums and tanks

You must make sure you only receive and accept drums or tanks:

- that have a certificate of cleanliness
- with prior notice
- with hazard warning symbols obliterated

12. Acceptance of baled metal waste

You must produce and follow a detailed procedure for accepting and inspecting baled material before accepting bales for processing. For example batch acceptance, inspection and upstream auditing.

13. You must carry out risk-based assessments for baled and other infeed materials. You must base your inspection and pre-processing procedures on these assessments before fragmentising. This may include, but not be limited to, different inspection frequencies for different customers, depending on risk.

14. Quarantine storage

You must establish quarantine areas for materials that are prohibited, awaiting full inspection, or awaiting testing or removal.

15. Quarantine storage must be for a maximum of fourteen working days. For some limited and specific cases (for example gas cylinders and beer barrels) you can extend the quarantine storage time if the Environment Agency agrees.

16. You must have written procedures in place for dealing with wastes held in quarantine, and a maximum storage volume.

17. Quarantine storage must be separate from all other storage and clearly marked as a quarantine area.

18. You must identify and isolate gas cylinders and other prohibited items to remove them from the waste stream. You must store gas cylinders in locked

cages. Where possible, you must send prohibited items back to the appropriate owner.

3.3. Waste tracking

1. 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. This must also include treatment residues and end-of-waste product materials.
2. Your waste tracking system must hold all the information generated during:
 - pre-acceptance
 - acceptance
 - non-conformance or rejection
 - storage
 - repackaging
 - treatment
 - removal off site
3. This information must be readily accessible.
4. You must create records and update them to reflect deliveries, on-site treatment and despatches. Your tracking system will also operate as a waste inventory and stock control system. It must include this information as a minimum:
 - the date the waste arrived on-site
 - the original producer's details (or unique identifier)
 - a unique reference number
 - waste pre-acceptance and acceptance information
 - the intended treatment or disposal route
 - accurate records of the nature and quantity of wastes held on site, including all hazards – and identifying the primary hazards
 - where the waste is physically located on site
5. 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 pending treatment or transfer
 - 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, and where applicable details of any non-conformances and rejections
6. You must store back-up copies of computer records off site. Records must be readily accessible in an emergency.
 7. 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.

4. Waste storage, segregation and handling appropriate measures

These are the appropriate measures for waste storage, segregation and handling at regulated facilities with an environmental permit to mechanically treat metal waste in shredders.

1. Storage locations

You must store waste in locations that minimise the handling of waste. Waste handling must be carried out by competent staff using appropriate equipment.

2. You should design and operate your facility in a way that minimises waste handling.
3. You must store shredder non-metallic fractions under cover.
4. 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).
5. You must store all waste within the security protected area of your facility to prevent unauthorised access and vandalism.

6. Storage duration and capacity

You must clearly establish the maximum storage capacity of the site and the designated storage areas. You must not exceed these maximum capacities.

7. You must define capacity in pile sizes as well as tonnage. You must regularly monitor the quantity of stored waste on the site and within the designated areas to check against the allowed maximum capacity. You must also monitor the quantities and pile sizes against those set out in your fire prevention plan.

8. You must not accumulate waste. You must treat wastes, or remove them from the site, as soon as possible. Generally all wastes must be removed within a maximum of 6 months of receipt. If you have a shorter time period as a permit condition, you must comply with that condition for that waste.
9. You must store all waste in a way that allows easy inspection. You must maintain safe access between piles of wastes. There must be pedestrian and vehicular access (for example shovel loader, crane, grab loader) at all times to the whole of the storage area.
10. You must store and handle waste in a way that prevents pests and vermin, see our [guidance on pest management plans](#). You must have specific measures and procedures in place to identify and manage any wastes that are causing pests or vermin at your site.
11. 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.
12. You must not carry out activities that represent a clear fire risk within any storage area unless they are clear of waste. Examples include:
 - grinding and cutting repairs within the storage area
 - welding or brazing of metalwork within the storage area
 - smoking
 - parking of normal road vehicles except while unloading or loading
 - recharging forklift truck or power tool batteries
13. **Dangerous Substances and Explosive Atmospheres Regulation 2002 (DSEAR).**

You should assess areas of the site where explosive atmospheres could occur (for example, shredder or ELV depollution bays). Where appropriate, you must classify these into hazardous zones, following the [Dangerous Substances and Explosive Atmospheres Regulation 2002 \(DSEAR\)](#).

14. **Battery storage**

You must check for damage and the chemistry type of any batteries:

- produced through depollution activities on site
- accepted as discrete loads

15. You must do this before allocating them to the storage area.

16. You must isolate damaged batteries from other batteries.

17. You must store batteries in either appropriate weatherproof containers, or in appropriate containers within a building.

18. You must store:

- lead acid batteries upright with terminals taped off, capped in acid proof containers to prevent leaks and short circuits
- nickel metal hydride (Ni-MH) batteries in a way that will prevent them being damaged

19. You must not mix batteries of incompatible chemistries, for example lead acid batteries with Ni-MH batteries.

20. You must store Li-ion batteries from electric vehicles separately from other batteries. You must store them in a way that prevents them from:

- coming into contact with any liquids
- being damaged
- being exposed to high temperatures

5. Waste treatment appropriate measures

These are the appropriate measures for waste treatment at regulated facilities with an environmental permit to mechanically treat metal waste in shredders.

5.1. General waste treatment

1. Waste treatment must have a clear and defined benefit. You must fully understand, monitor and optimise the waste treatment process to make sure you treat waste effectively and efficiently. You must not treat waste to deliberately dilute it.
2. The treated output material must meet your expectations and be suitable for its intended disposal or recovery route.
3. You must identify and characterise emissions from the process, and take appropriate measures to control them at source.
4. 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 you will treat and the waste treatment processes, including:
 - simplified process flow sheets that show the origin of any emissions
 - details of emission control and abatement techniques for emissions to air and water, including details of their performance
 - diagrams of the main plant items where they have environmental relevance – for example, storage, tanks, treatment and abatement plant design
 - details of physical treatment processes, for example shredding, separation, compaction or washing
 - details of any chemical treatment processes
 - details of any biological treatment processes
 - details of any effluent treatment, including 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 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

5. 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
 - shut-down
 - deflagrations

6. 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.

7. Material flow analysis considers the contaminant quantity in the:
 - waste input
 - different waste treatment outputs
 - waste treatment emissions

8. You should use the analysis and your knowledge of the fate of the contaminants to make sure you correctly treat and either destroy or remove them. See also the section on [persistent organic pollutants](#).

9. The use of material flow analysis is risk-based and should consider:
 - 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)

10. 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.

11. 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

12. **Metal shredding plant and downstream processes**

The metal shredding plant and downstream plant and processes must be specifically designed, commissioned and operated to be fit for purpose.

13. The designs need to consider physical hazards and include an assessment of the environmental risks and emissions from the plant and processes. 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

14. If you treat small mixed WEEE or large domestic appliances you must comply with the requirements of [Waste Electrical and Electronic Equipment \(WEEE\) guidance](#). Further guidance on appropriate measures for permitted WEEE facilities is being produced.

15. You must process shredder non-metallic fractions under cover. You may use a range of separation technologies to further segregate and purify shredded fractions. Examples include:

- air classification
- all-metal separator
- electromagnetic separation of non-ferrous metals
- manual separation
- magnetic separation
- density separation
- vibration tables either at the shredding facility or elsewhere

16. You must sample and analyse the fractions produced by these treatment processes to accurately classify and code the waste. This should be carried out in accordance with the [waste classification guidance](#).

17. You must not use a waste code for a single material fraction, such as plastic, unless the process is specifically aimed to produce that single fraction. Contamination by other materials must be negligible.

18. You must also fully characterise and classify process solutions and washings from density separation processes before determining suitable disposal options.

19. POPs

Some plastic components found in metal waste may contain flame retardants that are POPs.

20. You must assess fractions containing plastic (including process solutions and washings from density separation processes) for POPs.

21. You must treat any POPs waste as required by article 7 of Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on POPs.

22. This means the treatment must make sure the POP content is destroyed, or irreversibly transformed. An example would be by incineration or similar thermal treatment. You must not recycle this plastic.

23. You must therefore assess plastic containing fractions at each stage in the treatment process to establish whether the threshold is exceeded. See further [information on identifying and disposing of POPs contaminated waste](#).

24. Separating POPs waste from non-POPs waste

You can treat any plastic that is POPs waste for the purposes of separating the POPs containing fraction from the non-POPs containing plastic.

For example, you can use density separation to separate plastic containing all brominated flame retardants (BFR) from that which doesn't. You may then recycle the non-BFR plastic (provided it does not contain any other POP) but you must destroy or irreversibly transform the BFR plastic.

25. You must fully characterise and classify the following (including for POPs) before determining suitable disposal options:

- process solutions and washings from density separation processes
- solid fractions produced by any process

26. Antimony trioxide

Antimony trioxide has been widely used as a synergist with a range of BFRs. It is present in some plastics at concentrations which exceed the hazardous waste threshold. You must therefore consider antimony trioxide when you are classifying any plastic containing fraction.

27. Minimising diffuse emissions from the process

You must minimise releasing diffuse emissions to air from activities which may create them, for example shredding or granulating. You must do this by:

- carrying out the activity using enclosed equipment or in a closed building
- maintaining the enclosed equipment or building under an appropriate pressure
- collecting and directing the emission to an appropriate abatement system
- using a shredder system with water or foam injection into the mill

28. To track and control changes to processes, you must have a written procedure for proposing, considering and approving changes to both:

- technical developments
- procedural or quality changes to the plant and processes

29. Where you expect an emission, you must enclose all treatment plants and only vent to air using an appropriate scrubbing and abatement system (subject to deflagration relief).

30. **Record keeping for all treatment residues**

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

6. Emissions control appropriate measures

These are the appropriate measures for emissions control at regulated facilities with an environmental permit to mechanically treat metal waste in shredders.

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

6.1. Point source emissions to air

1. You must contain the waste treatment plant (including shredders) to make sure 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. You must include the speciation of volatile organic compounds (VOCs) if you have identified them in the emissions inventory and it is practicable to do so.
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, VOCs and odour) from waste treatment, you must use an appropriate combination of abatement techniques, including one or more of the following systems:
 - cyclonic filtration
 - fabric filters
 - wet scrubbing
 - high efficiency particulate (HEPA) filter
5. You must assess and design vent and stack locations and heights to make sure dispersion capability is adequate.
6. Where monitoring is required, you must install suitable monitoring points. Monitoring points will be required to meet MCERTS standards. Further guidance can be found in the Environment Agency's [M1 – Guidance on sampling requirements for monitoring stack emissions](#).
7. Your procedures must make sure you correctly install, operate, monitor and maintain abatement equipment. For example, this includes monitoring and maintaining:
 - appropriate flow and chemical concentration of scrubber liquor

- the handling and disposal or regeneration of spent scrubber or filter medium

6.2. Fugitive emissions to air (including odour)

1. You must use appropriate measures to prevent emissions of dust, mud and litter and odour. See our guidance on [suggested appropriate measures to control dust, mud and litter](#), and to [control odour](#).
2. You must design, operate and maintain storage and treatment plant in a way that prevents fugitive emissions to air, including dust, organic compounds and odour. Where that is not possible, you must minimise these emissions.
3. Storage and treatment plant includes associated equipment and infrastructure such as:
 - shredders
 - conveyors
 - skips or containers
 - building fabric, including doors and windows
 - pipework and ducting
4. You must minimise the number of potential diffuse dust and particulates emission sources, using a combination of the following:
 - limiting the drop height of material
 - using wind barriers
 - covering conveyor belts, including enclosure of transfer points
 - fitting spray nozzles or rubber flaps to the inlet and outlet of the shredder mill
 - using misting systems and wind barriers in areas with significant dust formation
 - venting pipe work and ducting to an appropriate abatement system to prevent fugitive emissions
5. To make sure fugitive emissions are collected and directed to appropriate abatement, your treatment plant must use high integrity components (for example, seals or gaskets).
6. 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. Examples could include gas cylinders, items concealed in baled waste, or poorly depolluted ELVs. When you identify any of these wastes you must:
 - take appropriate, risk assessed measures to prevent and control emissions

- prioritise their treatment or transfer

7. **Storage of odorous or dusty wastes**

Where necessary, to prevent fugitive emissions to air from the storage and handling of odorous or dusty wastes, you should use a combination of the following measures.

8. You should store and handle the waste within an enclosed building including:
 - light fractions of the shredder residue
 - dust derived from sweeping of the waste treatment and storage areas
 - dust derived from the abatement equipment
9. You should use fully enclosed material transfer and storage systems and equipment, for example:
 - conveyors,
 - hoppers,
 - containers
 - tanks and skips
10. You should keep enclosed buildings and equipment under adequate negative pressure with an appropriate abated air circulation and extraction system. Where possible, locate air extraction points close to potential emissions sources.
11. You should:
 - use fast-acting or 'airlock' doors that default closed
 - dampen potential sources of diffuse dust emissions (such as the shredder inlet and outlet, traffic areas and open handling processes) with water or fog
12. You must fully enclose and contain pre- and post-treatment shredder plant to prevent emissions.
13. You must design and operate the shredder plant using appropriate process interlocks. The plant should not operate unless it is enclosed and contained, for example, only working when the loading door on the hopper has been closed or sealed.
14. You must contain and extract dust emissions from the shredder plant to an appropriate abatement system, for example HEPA air filtration.
15. Where ambient dust monitoring is required it must be carried out by MCERTS qualified staff.

16. The monitoring equipment used must meet as a minimum the MCERTS Performance Standards for Indicative Ambient Particulate Monitors. The equipment must be calibrated following the manufacturer's recommendations and be capable of providing representative data that accurately reflect PM10 levels produced operations at the site.

17. Where a [dust management plan](#) is required, you must develop and implement it following our guidance.

18. Maintenance and cleaning

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, tanks).

19. You must regularly inspect and clean all waste storage and treatment areas, equipment (including conveyor belts) and containers. You must contain any residues collected during cleaning.

20. Your maintenance and cleaning schedules must make sure that tanks and plant are regularly cleaned to avoid large-scale decontamination activities.

21. 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
- regularly inspecting and maintaining plant

22. 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.

23. If you carry out drum or 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, you could carry out this activity in a contained or enclosed system.

24. Odorous wastes

You must have 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 to manage waste during periods of peak volume.

25. You must have measures 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 to treat odorous emissions.
26. You must monitor odour abatement systems to ensure optimum performance. For example, you should make sure that scrubber liquors are maintained at the correct pH and replenished or replaced at an appropriate frequency.
27. Contaminated waters have potential for odours. You must store them in covered or enclosed tanks that are vented to abatement systems, or store them in containers.
28. Where you expect odour pollution at sensitive receptors, or it has been substantiated, you must periodically monitor odour emissions using European (EN) standards, for example either:
- dynamic olfactometry according to EN 13725 to determine the odour concentration
 - EN 16841-1 or -2 to determine the odour exposure
29. If you are using alternative methods that are not covered by EN standards (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.
30. Where you expect odour pollution at sensitive receptors, or it has been substantiated, you must also set up, implement and regularly review an odour management plan. It must be part of your management system and include all of the following elements:
- actions and timelines to address any issues identified
 - a procedure for conducting 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
31. Where an odour management plan is required, you must develop and implement it following our [guidance](#).

32. Deflagration Management

To prevent deflagrations and to reduce emissions when deflagrations occur, you must have a deflagration management plan. This should include:

- a deflagration reduction programme designed to identify the source(s), and to implement measures to prevent deflagrations, for example, inspecting waste input and removing dangerous items such as gas cylinders and undepolluted ELVs
- a review of historical deflagration incidents and remedies and sharing deflagration knowledge
- a protocol for responding to deflagration incidents

33. You must also have one or both of the following:

- pressure relief dampers, to relieve pressure waves from deflagrations that may otherwise cause damage and subsequent emissions
- pre-shredding - a low speed shredder installed upstream of the main shredder

34. Where there are a large number of deflagration incidents at a site, and other measures taken do not reduce the number, we may require you to install a pre-shredder.

6.3. Emissions of noise and vibration

1. You should design the layout of the facility to 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.
2. You must use appropriate measures to control noise, including for example:
 - adequately maintaining plant or equipment parts which may become more noisy as they deteriorate - for example, bearings, air handling plant, 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 broadband (white noise) reversing alarms and enforcing the on-site speed limit
 - using low-noise equipment, for example, drive motors, fans, compressors and 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

- including pressure relief control on shredder plant enclosures to take account of possible deflagration incidents
3. Where you expect noise or vibration pollution at sensitive receptors, or it has been substantiated, you must create, use and regularly review a noise and vibration management plan. This must be part of your environmental management system, and must include:
 - actions and timelines to address any issues identified
 - a procedure for conducting noise and vibration monitoring
 - a procedure for responding to identified noise and vibration events, for example, complaints
 4. 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
 5. Where a noise management plan is required, you must develop and implement it following our [guidance](#).

6.4. Point source emissions to water and sewer

1. 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.
2. You must assess the fate and impact of the substances emitted to water and sewer following the Environment Agency's [risk assessment guidance](#).
3. Discharges to water or sewer must comply with the conditions of an environmental permit or trade effluent consent. Relevant sources of waste water include (but are not limited to):
 - water or condensate collected from treatment processes
 - vehicle washing
 - vehicle oil and fuel leaks
 - washing of containers
 - spills and leaks in waste storage areas
 - loading and unloading areas
 - uncovered storage areas

4. 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 treatment techniques, including one or more of the following:
 - preliminary or primary treatment – for example, physical separation
 - physico-chemical treatment – for example, adsorption, precipitation, chemical oxidation or reduction
 - solids removal – for example, coagulation, sedimentation, filtration or flotation

6.5. Fugitive emissions to land and water

1. You must use appropriate measures to control potential fugitive emissions and make sure that they do not cause pollution. See the guidance on [emissions to water](#) and [leaks from containers](#).
2. You must have these in all operational areas of the facility:
 - an impermeable surface
 - spill containment kerbs
 - sealed construction joints
 - a sealed drainage system
3. The sealed drainage system must contain all surface water run-off and channel it to a blind sump, unless you can lawfully discharge it.
4. 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 you segregate uncontaminated water streams from those that require treatment.
5. You must use suitable drainage infrastructure to collect surface drainage from areas of the facility where you store, handle and treat waste. Drainage must be effective to make sure waste is not stored or treated in standing water.
6. Depending on the pollutant content, you must either:
 - recirculate what you have collected
 - discharge it in accordance with an environmental permit or trade discharge consent
 - send it for further treatment
7. 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.

8. 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
9. You must have appropriate measures in place to monitor, treat and reuse the water held in the buffer storage before discharging.
10. 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 cleaning or disinfection solutions in contained areas of the site and never in areas that drain to the surface water system
11. Where relevant, you must have measures to prevent pollution from the on-site storage, handling and use of oils and fuels. See the [guidance on oil storage regulations for business](#).
12. **Spill response plan**
You must produce and implement a spillage response plan and train staff to follow it and test it.
13. Your procedures and associated training must make sure you deal with spillages immediately.
14. 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.
15. 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.

16. Designing and maintaining surfacing and subsurface structures

You must make sure your spillage response plan includes information about how to recover, handle and correctly dispose of waste produced from a spillage.

17. For subsurface structures, you must:

- establish and record the routing of all site drains and subsurface pipework
- identify all sub-surface sumps and storage vessels
- engineer systems to minimise leakages from pipes and make sure they are detected quickly if they do occur, particularly where hazardous substances are involved, see the [list of hazardous substances](#)
- provide secondary containment or leakage detection for sub-surface 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

18. 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
- construction materials
- permeability
- resistance to chemical attack
- inspection and maintenance procedures

19. You must have an inspection and maintenance programme for impermeable surfaces and containment facilities.

20. Tanks and bunding

You must bund all above-ground tanks containing liquids whose spillage could be harmful to the environment. Bunds must:

- be impermeable 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 greater than 110 percent of the largest tank or 25 percent of the total tankage, whichever is the larger
- have regular visual inspections – any contents must be pumped out or otherwise removed 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), otherwise provide adequate containment
- have programmed engineering inspections – normally visual, but extending to water testing if structural integrity is in doubt
- be emptied of rainwater regularly to maintain their containment capacity

7. Emission limits, monitoring and appropriate measures

These are the emissions limits and appropriate measures for monitoring emissions to air and water at regulated facilities with an Environmental Permit to mechanically treat metal waste in shredders.

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

Where you are required to monitor emissions to comply with the requirements of your environmental permit you must follow our [monitoring guidance](#) when carrying this out.

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

7.1. Emissions to air

1. 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
2. Monitoring locations must meet MCERTS standards. Monitoring must be carried out using MCERTS qualified accredited methods and MCERTS certified staff. Further guidance can be found in the Environment Agency's [M1 – Guidance on sampling requirements for monitoring stack emissions](#).

7.2. Emissions limits and monitoring requirements

1. You must apply the following emission limits and monitoring requirements for point source emissions to air.
2. You must comply with any other emission limits or monitoring requirements set in your environmental permit. There may be situations where we set lower emission limits for the substances listed below.

3. **Dust emissions**

Dust monitoring must be carried out **every six months** using method BS EN 13284-1.

4. The emission limits are as follows. When using:

- fabric filters – 5 mg/m³
- other abatement techniques – a higher emission limit of 10 mg/m³ may be appropriate

5. You must report results as the average value of 3 consecutive measurements of at least 30 minutes each. The 3 consecutive measurements must be representative of the dust and particulate emissions from the operations at the site.

6. **Other point source emissions to air**

You must apply the following emission limits and monitoring requirements for point source emissions to air where they are relevant, based on your facility's emissions inventory and environmental risk assessment.

7. You must also comply with any other emission limits or monitoring requirements set in your environmental permit.

8. **BFRs**

- annual monitoring
- you should report results as the average value of three consecutive representative measurements of at least 30 minutes each

9. **Dioxin-like polychlorinated biphenyls**

- annual monitoring following standard EN1948-4
- you should report results from one sampling period of at least 6-8 hours

10. **Metals and metalloids except mercury**

- annual monitoring following standard EN14385
- you should report results as the average value of three consecutive representative measurements of at least 30 minutes each

11. **Polychlorinated dibenzo-p-dioxin/furan(s)**

- annual monitoring following standard EN1948-1 Parts 1, 2 and 3
- you should report results from one sampling period of at least 6-8 hours

12. **Total volatile organic compounds**

- 6 - monthly monitoring following standard BS EN 12619

- you should report results as the average value of three consecutive representative measurements of at least 30 minutes each

7.3. Emissions to water or sewer

1. 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, chemical oxygen demand (COD) and total organic carbon (TOC), nitrogen species, phosphorus, metals, priority substances or micro pollutants
 - data on bio-eliminability – for example, biological oxygen demand (BOD), BOD to COD ratio, Zahn-Wellens test, biological inhibition potential, for example, inhibition of activated sludge
2. 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
3. You must comply with any other emission limits or monitoring requirements set in your environmental permit. We may set lower emission limits for the parameters listed below.
4. In addition to any other parameters specified by your permit. You must monitor the following emissions to water:
5. **Hydrocarbon Oil Index (HOI)**
 - monthly monitoring following EN ISO-9377-2
 - the emission limit for metal is 10mg/l whether direct or indirect (to water body or to sewer)
 - if you discharge directly to a water body, you must monitor TOC or COD - TOC is the preferred monitoring parameter
6. **TOC**
 - monthly monitoring following EN1484
 - the emission limit is 60mg/l

7. **COD**

- monthly monitoring
- the emission limit is 80 mg/l

8. **Total suspended solids (TSS)**

- If you discharge directly to a water body, you must monitor TSS monthly in accordance with EN 872
- the emission limit is 60 mg/l

9. If your waste water emissions inventory identified the following parameters are relevant, then you must monitor for them. You should monitor them on a monthly basis. There are various standards available for these parameters (for example, EN ISO 11885, EN ISO 17294-2, EN ISO 15586).

10. The emission limits apply whether the discharge is to a water body or to the sewer.

- **Arsenic (As)** - emission limit 0.05 mg/l
- **Cadmium (Cd)** - emission limit 0.05 mg/l
- **Chromium (Cr)** - emission limit 0.15 mg/l
- **Copper (Cu)** - emission limit 0.5 mg/l
- **Nickel (Ni)** - emission limit 0.5 mg/l
- **Lead (Pb)** - emission limit 0.3 mg/l
- **Zinc (Zn)** - emission limit 2 mg/l
- **Mercury (Hg)** - emission limit is 5 ug/l (SORT microgram) and the relevant standards are EN ISO 17852, EN ISO 12846)

11. **Perfluorooctanoic acid and perfluorooctanesulphonic acid**

- monitored 6 monthly
- there is no EN standard available for the monitoring and no emission limit has been set

8. Process efficiency appropriate measures

These are the appropriate measures for process efficiency at regulated facilities with an environmental permit to mechanically treat metal waste in shredders.

For your facility, you must monitor and review the annual quantity of:

- water, energy and raw materials used
- residues and waste water produced

You must do this at least once every year.

8.1. Energy efficiency (installations only)

1. 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
2. You must regularly review and update your energy efficiency plan as part of your facility's management system.
3. You must have and maintain an energy balance record for your facility. This must provide a breakdown of your energy consumption and generation (including any energy or heat exported) by the type of source (electricity, gas, conventional liquid fuels, conventional solid fuels, and waste). You should provide Sankey diagrams or energy balances to show how energy is used in your waste treatment processes.
4. You must regularly review and update your energy balance record as part of your facility's management system, alongside the energy efficiency plan.
5. You must have operating, maintenance and housekeeping measures in place in relevant areas, for example, for:
 - air conditioning, process refrigeration and cooling systems (leaks, seals, temperature control, evaporator or condenser maintenance)
 - operating 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
6. You must have measures in place to avoid gross energy inefficiencies. These should include, for example:
- Keeping the shredder infeed stable
 - 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)

You should implement additional energy efficiency measures at the facility as appropriate, following our [guidance](#).

8.2. Raw materials (installations only)

1. You must maintain a list of the raw materials used at your facility and their properties. This includes auxiliary materials and other substances that could have an environmental impact.
2. You must regularly review the availability of alternative raw materials and use any suitable ones that are less hazardous or polluting. This should include, where possible, substituting raw materials with waste or waste-derived products.
3. You must justify the continued use of any substance for which there is a less hazardous alternative.
4. You must have quality assurance procedures in place to control the content of raw materials.

8.3. Water use (installations only)

1. You must take measures to make sure you optimise water consumption to:
 - reduce the volume of waste water generated
 - prevent or, where that is not practicable, reduce emissions to soil and water
2. 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
 - reusing in a closed circuit water injected into the mill
 - collecting run off water and damping water for dust suppression
3. You must carry out a regular review of water use (a water efficiency audit) at least every 4 years.
4. 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)
 - identify the opportunities for maximising reuse and minimising use of water
 - have a timetabled improvement plan for implementing additional water reduction measures
5. To reduce water use and associated 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 not practicable, use it in another part of the process or facility that has a lower water quality requirement
6. 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.
7. You should establish the water quality requirements associated with each activity and identify whether you can substitute water from recycled sources. Where you can, include it in your improvement plan.
8. 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.
9. 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

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

8.4. Waste minimisation, recovery and disposal

1. You must have and implement a residues management plan that:
 - minimises the generation of residues arising from waste treatment
 - 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
2. Where you must dispose of waste, you must carry out a detailed assessment identifying the best environmental options for waste disposal.
3. You must review options for recovering and disposing of waste produced at the facility on a regular basis. You must do this as part of the management system to make sure you are still using the best environmental options and promoting the recovery of waste where technically and economically viable.

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