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Chemical waste: appropriate measures for permitted facilities

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6. Emissions control appropriate measures

These are the appropriate measures for emissions control at regulated facilities with an environmental permit for treating or transferring chemical waste.

You must identify, characterise and control emissions (https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit) from your activities that may cause pollution.

6.1. Point source emissions to air

1. You must contain storage tanks, silos and 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.

3. You must assess the fate and impact of the substances emitted to air, following the Environment Agency's risk assessment methodology (https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit).

4. To reduce point source emissions to air (for example, dust, volatile organic compounds and odour) from the treatment of waste, you must use an appropriate combination of abatement techniques, including one or more of the following systems:

- adsorption (for example, activated carbon)
- biofiltration
- wet scrubbing
- fabric filters
- high efficiency particulate (HEPA) filtration
- condensation and cryogenic condensation
- cyclonic separation
- electrostatic precipitation
- 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 suitable monitoring points.

6. 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

7. You should design and operate abatement systems to minimise water vapour plumes.

6.2. Fugitive emissions to air (including odour)

1. You must use appropriate measures to prevent emissions of dust, mud and litter (https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#dust-mud-and-litter) and odour (https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#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. 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

3. 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). Your treatment plant must be fully enclosed, with air extraction systems located close to emission sources where possible.

4. 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 of these wastes you must:

- take appropriate, risk assessed measures to prevent and control emissions
- prioritise their treatment or transfer

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

- store and handle such wastes within a building or enclosed equipment
- keep buildings and equipment under adequate negative pressure with an appropriate abated air circulation or extraction system
- where possible, locate air extraction points close to potential emissions sources
- use fully enclosed material transfer and storage systems and equipment, for example, conveyors, hoppers, containers, tanks and skips
- use fast-acting or ‘airlock’ doors that default closed
- keep building doors and windows shut to provide containment, other than when access is required
- minimising drop height
- use misting systems and wind barriers to prevent dust

6. 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).

7. You must regularly inspect and clean all waste storage and treatment areas, equipment (including conveyor belts) and containers. 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.

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

9. 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.

10. If you wash containers or tanks, you must design and operate the washing process and associated equipment in a way that prevents fugitive emissions to air. For example, you could do this activity in a contained or enclosed system.

11. You must fully enclose and contain pre- and post-treatment shredder plant to prevent emissions. 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. Dust and microbial emissions from the shredder plant must be contained and extracted to an appropriate abatement system, for example HEPA air filtration.

12. Where a dust management plan (https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#emissions-management-plan-for-dust) is required, you must develop and implement it following our guidance.

13. 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.

14. 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 for the treatment of odorous emissions.

15. You must monitor and maintain 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.

16. You must store contaminated waters that have potential for odours in covered or enclosed tanks or containers vented through suitable abatement.

17. Where odour pollution at sensitive receptors is expected, or 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

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.

18. Where odour pollution at sensitive receptors is expected, or 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 odour monitoring
- a procedure for responding to odour incidents, for example, complaints
- an odour prevention and reduction programme designed to identify the source(s), characterise the contributions of the sources and prevent and reduce them

19. Where an odour management plan (https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#odour-management-plan) is required, you must develop and implement it following our guidance.

6.3. Emissions of noise and vibration

1. You should design the facility so that potential sources of noise (including building exits and entrances) are away from sensitive receptors and boundaries. You should locate buildings, walls, and embankments so they act as noise screens.

2. You must employ appropriate 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, 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 sources of noise – for example, noise reducers or attenuators, insulation, or sound-proof enclosures

3. Where noise or vibration pollution at sensitive receptors is expected, or 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 noise and vibration monitoring
- a procedure for responding to identified noise and vibration events, for example, complaints

4. Your noise and vibration management plan should also include a noise and vibration reduction programme designed to:

- identify the sources 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 and vibration management plan (https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#noise-and-vibration-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 (https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit).

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:

- water or condensate collected from treatment processes
- 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

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, 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

5. You must direct wash waters from cleaning containers to a foul sewer or sealed drainage system for on-site re-use or off-site disposal. You may need to pre-treat the waters to meet any limits on the effluent discharge consent. Discharges of wash waters to surface water or storm drains are not acceptable.

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 (https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#emissions-to-water) and leaks from containers (https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit#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. You must have measures in place to prevent overflows and failures from tanks and vessels, including where relevant:

- overflow detectors and alarms
- directing over-flow pipes to a 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

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. You must also collect wash waters and occasional spillages. Depending on the pollutant content, you must either recirculate what you have collected or send it for further treatment.

6. 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.

7. 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

8. You must have appropriate measures in place to monitor, treat and reuse water held in the buffer storage before discharging.

9. 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 solutions in contained areas of the site and never in areas that drain to the surface water system

10. Where relevant, you must have measures to prevent pollution from the on-site storage, handling and use of oils and fuels (https://www.gov.uk/guidance/storing-oil-at-a-home-or-business).

11. You must produce and implement a spillage response plan and train staff to follow and test it.

12. Your procedures and associated training must make sure you deal with spillages immediately.

13. 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.

14. You must stop spillages from entering drains, channels, gullies, watercourses and unmade ground. You must make proprietary sorbent materials, sand or drain mats available.

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

16. Container washing equipment must be contained and located in a designated area of the facility that has self-contained drainage. The

equipment must be designed to collect and contain all wash waters, including any spray. Trained staff must operate, inspect and maintain it regularly.

17. For sub-surface structures, you must:

- establish and record the routing of all site drains and sub-surface 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 (https://www.gov.uk/government/publications/values-for-groundwater-risk-assessments/hazardous-substances-to-groundwater-minimum-reporting-values#list-of-hazardous-substances) are involved
- provide secondary containment or leakage detection for sub-surface pipework, sumps and storage vessels
- establish an inspection and maintenance programme for all sub-surface 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
- materials of construction
- permeability
- resistance to chemical attack
- inspection and maintenance procedures

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