**4 BAT conclusions for techniques generally applicable to all biological treatments**

This section presents the BAT elements related to the techniques generally applicable to all biological treatments. It has been structured as per the previous chapters.

1. **Waste pre-acceptance procedures**

In order to ensure waste suitability for the proposed treatment route prior to acceptance at the plant, BAT is to use the techniques given below.

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| Techniques | Description | Applicability |
|  | Pre-acceptance procedure | The procedure should contain the following items depending on the type of waste and installation:1. Waste characterisation
2. Waste type according to the European Waste Catalogue or national waste code system.
3. General information (e.g. contact details of the waste producer, description/origin of the waste, relevant information needed for planning waste handling). This may not be applicable and practicable when waste is received from private sources.
4. Evidence of compliance with the authorised waste types as listed in the installation permit and any other non-statutory document that the site may have to comply with, and with proposed treatment.
5. Indication of the foreseen loads and schedule of delivery when possible.
6. Internal audits to assess compliance with the pre-acceptance procedures with a record kept of any issues.
7. In case of risk of contamination for specific waste streams periodic verification of the initial characterisation may also be required.
8. Pre-acceptance criteria with each customer should be reviewed on a regular basis, at a frequency stated in the operator’s documentation system.
 | Applicable to all biological treatments |
|  | Waste characterisation  | 1. The type of waste characterisation may involve sampling and testing or other type of assessment (e.g. visual assessment), particularly in the event contamination may be present. The type of initial assessment required to characterise the waste and periodic verification will depend upon: the nature of the waste, the process to be used, the quality requirements of final output products produced and their intended use, and what is already known about the waste.
2. The results of all assessments or analyses should be kept within the operator’s documentation system.
 | Applicable to all biological treatments |

1. **Waste acceptance procedures**

In order to ensure the waste received at the plant is only accepted if suitable for treatment and consistent with pre-accepted wastes, BAT is to use the techniques given below.

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| Techniques | Description | Applicability |
|  | Waste acceptance procedure | The procedure should contain the following items depending on the type of waste and installation:1. Waste is accepted at the facility from known customers or new customers subject to pre-acceptance procedures.
2. A person with appropriate training shall be on site to receive the waste materials during opening hours.
3. Where possible contracts with clear acceptance criteria should be issued with waste suppliers. The contracts should identify the actions that will be taken in the event the criteria are exceeded and who has the responsibility for those actions.
4. The operator should have clear and unambiguous criteria for the rejection of wastes or any actions to be taken to remove or reduce physical contaminants or any other unsuitable content prior to processing, together with a written procedure for handling, tracking and reporting non-conformance. Operators should also have procedures in place to deal with handling and storage of rejected wastes.
5. The operator should verify accompanying documents and compliance with acceptance criteria. Waste arriving at the facility is assessed against waste acceptance criteria (e.g. by visual inspection), weighed, documented and directed to the waste reception or intermediate waste storage area. The type, origin and quantity of feedstock arriving at the installation should be recorded at the weighbridge.
6. If the inspection indicates that the wastes fail to meet the acceptance criteria, then such loads are stored in a dedicated area and dealt with appropriately. This may include returning to source, directing to an alternative destination, or processing to enable use on-site. In all cases the waste producer should be informed of the actions taken.
7. The operator should have a clear procedure to ensure that accepted waste is unloaded in the right area depending on the following treatment procedures (pre-treatment such as unpacking, shredding, screening, blending, and sorting of specific feedstock types before feeding into the biological processing unit).
8. Unloading of putrescible wastes should be on an impermeable surface with sealed drainage.
9. Contingency plans should be well understood by staff where there is plant failure and waste is required to be diverted.
10. Accepted wastes should be treated as quickly as possible in order to prevent/minimise uncontrolled emissions.
11. Input materials accepted for treatment shall be kept separate and shall not be cross contaminated by any other materials destined to or being treated in other process lines.
 | Applicable to all biological treatments |

1. **Storage & handling of incoming waste**

In order to ensure that wastes are stored under appropriate conditions at aa biological treatment plant, BAT is to use the techniques given below:

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| Techniques | Description | Applicability |
|  | Storage of liquid and solid wastes. | 1. The storage area is appropriately sized and clearly identified to accommodate the expected volume of waste, including seasonal fluctuations, according to the daily capacity of the installation.
2. There needs to be a dedicated area for off-loading and inspections of accepted waste /feedstock, a dedicated area for unacceptable or rejected loads and a dedicated area allocated to pre-treatment.
3. The storage area for putrescible, non woody feedstock is designed to allow complete emptying and cleaning including drainage (when needed at this stage) to allow appropriate leachate and wash waters collection, transfer and discharge into gullies via a sump or similar. These can be used within the process, discharged into sewers, tankered to a WWTP or other authorised waste treatment plant or used on land.
4. Run off and leachate (dirty water) is collected via a sump, covered container, tank or lagoon (as appropriate to the type of leachate and run-off), which is clearly identifiable.
5. The level of protection measures shall be proportional to the risk of surface and/or ground water pollution. All storage areas for putrescible, non woody feedstock have an impermeable surface with sealed drainage system, to prevent any spillage entering the storage systems or escaping off-site. The design should prevent the contamination of clean surface water.
6. Waste is stored under appropriate conditions in a designated area to manage putrefaction, odour generation, the attraction of vermin and any other nuisance or objectionable condition. Storage time is controlled and minimised to avoid putrefaction, leaching, odour generation, the attraction of vermin and any other nuisance or objectionable condition.
7. When enclosed buildings are used, fast acting doors are provided for access and egress by delivery and other vehicles. Buildings should be sized so offloading can be carried out within the building with the doors shut.
 | Applicable to all biological treatments |

1. **Traceability – waste in, output out**

In order to ensure that there is a mechanism in place to track any waste coming in and any output exiting the plant and ensure good operational control, BAT is to use the techniques given below.

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| Techniques | Description | Applicability |
|  | Waste tracking system | 1. Records relating to pre-acceptance should be maintained at the facility for cross-reference and verification at the waste acceptance stage.
2. Records pertaining to waste delivered to the facility should be subjected to document control and kept for a minimum of three years or longer if required by the installation permit.
3. The auditing system should operate as a waste inventory/stock control system and include the following elements for waste coming in:
* date and time of arrival on-site
* quantity delivered
* name and address of the carrier
* waste designation and input code
* information of the producer or the previous holder (unique reference number)
* the outcome of the pre-acceptance and acceptance assessments, if available
* date of refusal, reason for refusal and intended treatment/disposal route for any waste unsuitable for biological treatment or arising on the facility
* a site plan
* identification of operators who recorded the relevant information
1. The auditing system should operate as a waste inventory/stock control system and include the following elements for outputs leaving the site:
* date and time of dispatch from the site
* quantity leaving the site
* name and address of the carrier
* waste designation and code (if the material is regarded as waste)
* information of the output destination.
 | Applicable to all biological treatments |

1. **Environmental quality management systems**

In order to ensure that all appropriate process control, management techniques, maintenance, incident planning and pollution prevention procedures are delivered reliably and on an integrated basis, BAT is to use the techniques given below.

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| Techniques | Description | Applicability |
|  | Environmental management systems | 1. An effective, risk based and auditable management system should be in place.
2. The management system should be auditable.
3. Certified environmental management systems (EMSs) as well as non-certified systems should be accepted. The level of information and control should be proportionate to the scale of the operations and the risk each activity may have on process control and to the environment and human health. Certification of EMS’s may include certification to a national standard, to the ISO 14001 standard or registration under EMAS (EC Eco Management and Audit Scheme)
4. The management system should include information about the condition of the land before operations are started and how the land has been protected during the commissioning, operational life of the permit and site closure. When the installation permit is surrendered, the operator should be able to show that they have taken the necessary measures to avoid pollution risk resulting from their activities and the site has been returned to a satisfactory state.

Training and technical competence:1. Operators holding a permit for installations should be competent to deal with the environmental risks associated with their activities throughout the life of the installation permit. The installation should be operated by suitable technically competent management.
2. Operators should ensure that staff are suitably trained and qualified for the management and operation of biological treatment facilities.
3. Training systems, covering the following items, should be in place for all relevant staff:
* Awareness of the regulatory implications of the installation permit and how this impacts on their work responsibilities and activities;
* Awareness of all potential environmental effects from operation under normal and abnormal or extreme circumstances (e.g. extreme weather, plant failure, emergency);
* Prevention of accidental emissions and action to be taken when accidental emissions occur;
* Able to deal with incidents effectively;
* Process and risk management procedures;
* Training for emergencies, including practice drills covering the different types of environmental incidents/accidents that may occur, to be prepared for proper course of action;
* Reporting and accountability procedures within the management structure of the facility.
* The skills and competencies necessary for key positions should be documented and records of training needs and training received for these positions maintained.
* The key positions in the organisation are responsible for contracting potential suppliers of waste inputs and purchasing machines, equipment and other materials. The people working within these positions should have adequate knowledge based on practical experience and proper training/ education.
* The potential environmental risks posed by the work of contractors should be assessed and instructions provided to contractors about protecting the environment and risk procedures while working on site.
* Where regulatory or industry standards or codes of practice for training exist they should be complied with.

Operations and maintenance:1. Effective operational and maintenance systems should be in use for all aspects of the process especially where failure could impact on the environment, in particular there should be:
* Documented procedures to control operations that may have an adverse impact on the environment;
* A defined procedure for identifying, reviewing and prioritising items of plant for which a preventative maintenance regime and/or periodic calibration or verification is necessary;
* Documented procedures for monitoring emissions or impacts, or to control and optimise the process so impacts are minimised;
* A preventative maintenance programme covering the whole plant, where failure of that plant could lead to impact on the environment, including regular inspection of major ‘non-productive’ items such as tanks, pipe work, retaining walls, bunds, ducts and filters;
* Essential equipment should be identified and spare items should be stocked when possible in order to allow operation to continue while the equipment is being repaired. Alternatively, specific arrangements with equipment suppliers or engineering companies could be made to ensure immediate response and equipment repair.

Accidents-/incidents/non-conformance1. There should be an incident management plan which:
* identifies the likelihood and consequence of accidents and emergency;
* identifies actions to prevent accidents and mitigate any consequences;
* includes a continuous improvement process.
* The incident management plan should consider and have procedures for dealing with events which effect the day to day operation of the facility e.g. risks and impact of flooding and fires;
* There should be written procedures for handling, environmental non- compliances and / or complaints and implementation of appropriate actions;
* There should be written procedures for investigating abnormal operational situations, including identifying suitable corrective action and follow up procedures;
* Clear strategy for diverting waste and contingency for any down time or failure.
 | Applicable to all biological treatments |
|  | Quality management systems | 1. The operator may wish to develop and implement a system for planning, achieving and demonstrating effective control of operations and associated quality management activities necessary to achieve production of quality outputs.
 | Applicable to all biological treatments |
|  | HAZOP and HACCP | 1. Principles of HAZOP (Hazard and Operability Study) may be used to identify and evaluate problems that may represent risks to equipment, or prevent efficient operation. Principles of HACCP (Hazard Analysis and Critical Control Point) may be used to identify specific hazards and measures for their control to ensure the safety of products.
 | Applicable to all biological treatments |
|  | Energy Management Plans  | 1. The operator may wish to undertake an energy management plan, which is an internal assessment of the energy and raw material consumption. Energy management plans consist of a procedure aimed at identifying the main energy requirements of an operation and ways to make the process more energy efficient or less energy consuming.
 | Applicable to all biological treatments |