Conclusions on BAT from the Slaughterhouses and Animal By-product Industries BAT Reference Document

READ ME:

The '*Conclusions on BAT from the Slaughterhouses and Animal By-product Industries BAT Reference Document*' is a vertical BREF that addresses activities for the slaughter of animals and activities for the disposal or recycling of animal carcases and animal waste. These include rendering, fishmeal and fish-oil production, bone processing and blood processing.

For each BAT, in the following table, state whether it is applicable to your installation and describe how each BAT applies or not to your installation and provide information on your compliance with the requirement.

It may be useful to first identify all the **'Not Applicable'** BATs and provide your reasoning in the **'Applicability Assessment'** box as to why you consider this BAT is not applicable at/to your entire installation having regard to the scope/ definitions, general considerations, and the information on applicability. (You may need to refer to relevant processes/activities or individual emission points to provide a comprehensive response).

Please use the '**Scope**' box to describe the relevant activities/processes that come within the scope of this BREF.

For each applicable BAT, in the following table, state the status; **'Yes'** or **'Will be'** as appropriate in the '**State whether it is in place or state schedule for implementation**' box. The use of each of these terms is described below.

Information on compliance in the '**Applicability Assessment**' box should include, where applicable, the following:

(i) Identification of the relevant process/ activity or individual emission points that the BAT requirement applies to at your installation.

(ii) Where BAT is to use one or a combination of listed techniques, specify the technique(s) implemented/proposed at your installation to achieve the BAT; and

(iii) A comment on how the requirements is being met or will be met, e.g., a description of the technology/operational controls/management proposed to meet the requirements.

Use of terms: (a) '**Yes**' – To be entered where the installation is currently complaint with this BAT requirement.

(b) '**Will be**' – To be entered where a further technique is required to be installed to achieve compliance with the BAT requirement. In this case you must also specify the date by which the installation will comply with the BAT Conclusion requirement.

Please refer to the EPA BAT Guidance Note relevant to the sector for BAT associated emission levels. EPA BAT Guidance Notes are the reference for setting emission limit values (without prejudice to the requirements of environmental quality standards).

BAT Guidance Notes are available on the EPA website. Some Guidance Notes are hyperlinked below:

BAT Guidance Note on Best Available Techniques for the Animal Slaughtering Sector

BAT Guidance Note for Disposal or Recycling of Animal Carcasses & Animal Waste Sector.

BAT Guidance Note on Best Available Technique for the Manufacturing of Fish Meal and Fish Oil.

Conclusion on BAT from the Slaughterhouse and Animal By-products industries

The full and complete Slaughterhouse and Animal By-products industries BAT reference document (May 2005) is available at the EIPPC Bureau website: https://eippcb.jrc.ec.europa.eu/reference/

Conclusions on BAT	**Applicability Assessment (describe how the technique applies or not to your installation)**	**State whether it is in place or state schedule for implementation**
5.1 Slaughterhouse and animal by-products installations		
5.1.1 General Processes and operations **For all slaughterhouses and animal by-products installation, BAT is to do all the following:**		
BAT 1. BAT is to use an environmental management system (Section 4.1.1 and 5.1.1.1).	Undertaken. ISO:14001 certified Environmental Management System is in place.	In Place
BAT 2. BAT is to provide training (See Section 4.1.2).	Undertaken. ISO:14001/ ISO:50001	In Place
BAT 3. BAT is to use a planned maintenance programme (see Section 4.1.3).	Undertaken. EMS includes procedures which include: • Preventative maintenance • Cleaning around the facility	In Place

BAT 4. BAT is applied dedicated metering of water consumption (See Section 4.1.4).	Undertaken. Water abstraction is metered on site.	In Place
BAT 5. BAT is to separate process and non-process wastewater (see Section 4.1.5).	Undertaken. Yes, as per site drainage all water expects from roofs, roads and building services all other water will be treated at the WWTP at ABP Waterford.	In Place
BAT 6. BAT is to remove all running water hoses and repair dripping taps and toilets (see Section 4.1.7).	Undertaken. Maintenance team is on site for ongoing repairing when required. Ongoing sufficient cleaning systems are in place.	In Place
BAT 7. BAT is to fit and use drains with screens and/or traps to prevent solid materials from entering the wastewater (see Section 4.1.11).	Undertaken. All working areas of the site have a concrete hardstand and wastewater is screened prior to treatment.	In Place
BAT 8. Dry clean installations and transport by-products dry (Section 4.1.12), followed by pressure cleaning (Section 4.1.10) using hoses fitted with hand-operated triggers (Section 4.1.9) and where necessary hot water supplied from thermostatically controlled steam and water valves (Section 4.1.23).	Undertaken. Collection of floor waste using dry methods and by utilising a pressure-controlled dedicated water valves supply for wet cleaning. Thermostatically controlled water valves supply hoses with hand operated triggers and hot water.	In Place
BAT 9. Apply overfilling protection on bulk storage tanks (Section 4.1.13).	Undertaken. Continuous level sensors are high-level alarms are installed on storage tallow tanks.	In Place

BAT 10. BAT is to provide and use bunds for bulk storage tanks (Section 4.1.14).	Undertaken. Bunds are in place on storage tanks and a bund register is in place. Integrity testing is carried out as per required EPA Licence.	In Place
BAT 11. Double skin protection of bulk storage tanks, E.g., containing blood or tallow (Section 4.1.15).	Undertaken.	In Place
Bat 12. BAT is to implement energy management systems (Sections 4.1.16 & 4.1.17).	Undertaken. Site has an ISO:50001 Energy Efficiency audits are carried out to monitor the plants efficiency.	In Place
BAT 13. BAT is to implement refrigeration management system (Section 4.1.18).	Not Applicable.	N/A
BAT 14. BAT is to operate controls over refrigeration plant running times (Section 4.1.19) and use of binary ice as a colling fluid (Section 4.1.20).	Not Applicable.	N/A
BAT 15. BAT is to fit and operate chill room door for closing switches (Section 4.3.21).	Not Applicable. No chills on site. Process doors fitted with self-closing hinges.	N/A
BAT 16. BAT is to recuperate heat from refrigeration plants (Section 4.1.22).	Not applicable.	N/A

BAT 17. BAT is to use thermostatically controlled steam and water blending valves (Section 4.1.23).	Not applicable.	N/A
BAT 18. BAT is to rationalise and insulate steam and water pipework (Section 4.1.24).	Undertaken. All steam pipes are insulated onsite with design in place for minimal pipework.	In place
BAT 19. BAT is to isolate steam and water services (Section 4.1.25).	Undertaken. Steam and water isolation is in place.	In place
BAT 20. BAT is to implement light management systems (Section 4.1.26).	Undertaken. A light management system has been installed to ensure that site illumination does not become a nuisance to the public or the surrounding communities.	In place
BAT 21. BAT on short and possibly cold storage of animal by-products (Section 4.1.27).	Undertaken. Site policy is in place to ensure process of animal by-products within 24 hours of arrival on site.	In place
BAT 22. BAT is to audit odour (Section 4.1.28).	Undertaken. SOP 10.4 Assessment of Odour impact is in place to assess, record any potential odours from the site.	In place
BAT 23. BAT is enclosed animal by-products during transport, loading/unloading and storage (Section 4.1.29).	Undertaken. All lorries for Animal by-products are sealed and covered in leak-proof containers and offloaded within the negative pressure zone of the raw material building into the intake hoppers.	In place

BAT 24. BAT to design and construct vehicles, equipment, and premises to ensure that they are easy to clean (Section 4.1.30).	Undertaken. SOP 12.24 Cleaning/Washing procedures for the factory ensure that the premises are constantly kept clean and tidy, and that all trucks leaving the site are washed.	In place
BAT 25. BAT is to clean materials storage areas frequently – odour prevention (Section 4.1.31).	Undertaken. SOP 4.1/4.2/4.3/4.4/4.5: Procedures for bunds inspection on all bunds/storage areas are checked on a weekly basis and emptied if required. Daily operational control ensures storage areas are emptied as required.	In place
BAT 26. BAT for Transport blood in insulated containers (Section 4.1.32).	Not applicable.	N/A
BAT 27. BAT for Biofilters (Section 4.1.33).	Undertaken. SOP 10.6: Visually monitor the filter daily for any evidence of compaction, effluent gas channelling, water erosion, and leaks or damage to the retaining walls are checked. Emission from biofilter is monitored as required by the IE licence.	In Place
BAT 28. BAT for odour control using activated carbon filters (Section 4.1.34) and dilution of odours by capture into one or more chimneys (Section 4.1.35).	Not applicable.	N/A

BAT 29. BAT is to implement a noise management system (Section 4.1.36).	Undertaken. SOP 10.1: Procedure to measure noise is in place. A noise survey is carried out by an independent consultant annually to ensure there is no nuisance noise to the surrounding dwelling/landscape. Noise monitoring is carried out as per existing condition of the license.	In Place
BAT 30. BAT is to reduce noise at e.g., roof extract fans, balance lagoon blowers and refrigeration plants (Sections 4.1.3, 4.1.37, 4.1.38, 4.1.39).	Undertaken. All machines capable of producing loud noise are indoors or sheltered.	In place
BAT 31. BAT is to replace the use of fuel oil with natural gas, where a natural gas supply is available (Section 4.1.40).	Undertaken. Natural gas used on site. Plans in place to move away from natural gas as part of decarbonisation in the company.	In Place
BAT 32. BAT for replacement of boiler fuel with tallow (Section 4.1.41).	Undertaken.	In Place
5.1.1.1 BAT for environmental management		
BAT 33. BAT is to implement and adhere to an Environmental Management System (EMS) that incorporates, as appropriate to individual circumstances, the following features: (Chapter 4) • Definition of an environmental policy for the installation by top management (commitment of the top management is regarded as a precondition for a successful application of other features of the EMS)	Undertaken. ISO:14001. Environmental Management System in place which is subject to external auditing.	In place.

• Planning and establishing the necessary procedures • Implementation of the procedures, paying particular attention to; structure and responsibility, training, awareness and competence, communication, employee involvement, documentation, efficient process control, maintenance programme, emergency preparedness and response, safeguarding compliance with environmental legislation. • Checking performance and taking corrective action, paying particular attention to monitoring and measurement (*see also the Reference document on Monitoring of Emissions*) corrective and preventive action, maintenance of records, independent (where practicable) internal auditing to determine whether the environmental management system conforms to planned arrangement and has been properly implemented and maintained. • Review by top management.		
5.1.2 Integration of same site activities		
BAT 34. For slaughterhouses and/or animal by-products installations, operating on the same site, BAT is to do the following: 1. Re-use heat/power produced in one activity in other activities (Sections 4.4.1, 4.4.2, and 4.4.3). 2. Share abatement techniques, where these are required, e.g., WWTPs. For rendering and incineration on the same site, BAT is to do the following: burn	Undertaken. Effluent is sent to WWTP at neighbouring site for treatment.	In Place

non-condensable gases produced during rendering in a same site incinerator (Section 4.4.2 and 4.4.3).		
5.1.3 Collaboration with upstream and downstream activities		
BAT 35. BAT is to seek collaboration with upstream and downstream partners, to create a chain of environmental responsibility to minimise pollution and to protect the environment (Sections 4.1.27, 4.2.2.1.1, 4.2.2.1.2, 4.3.1.4, 4.3.4.1, 4.3.8.7, and 4.2.2.9.10).	Undertaken. Raw material sourced from ABP as much as possible and from Department of Agriculture. ABP endeavours to foster a chain of environmental responsibility and minimise environmental impacts, with their customers and suppliers.	In Place
5.1.4 Installation and equipment cleaning		
BAT 36. BAT for installation and equipment cleaning (Section 4.1.42) which includes management of quantities of water and detergents consumed (Section 4.1.42.1), selection of those detergents which cause the minimum impact on the environment (section 4.1.42.2), avoid and reduce the use of cleaning and disinfection agents containing active chlorine (Section 4.1.42.3).	Undertaken. SOP 12.21 Cleaning/Washing Procedure for the facility – staff are trained to minimise water usage where possible during washing and cleaning practices. The site is part of European water Stewardship programme.	In place.
5.1.5 Treatment of Wastewater		
BAT 37. For the treatment of wastewater from slaughterhouses and animal by-products installations, BAT is to do the following: 1. prevent wastewater stagnation (see Section 4.1.43.3)	Undertaken. 1. Wastewater is continually recirculated around in the offsite WWTP	In Place

2. apply an initial screening of solids using sieves (see Section 4.1.43.4) at the slaughterhouse or animal by-products installation 3. remove fat from wastewater, using a fat trap (see Section 4.1.43.9) 4. use a flotation plant, possibly combined with the use of flocculants, to remove additional solids (see Section 4.1.43.10) 5. use a wastewater equalisation tank (see Section 4.1.43.11) 6. provide a wastewater holding capacity in excess of routine requirements (see Section 4.1.43.1) 7. prevent liquid seepage and odour emissions from wastewater treatment tanks, by sealing their sides and bases and either covering them or aerating them (see Sections 4.1.43.12 and 4.1.43.13) 8. subject the effluent to a biological treatment process. Aerobic and anaerobic treatments which are applied to wastewater from slaughterhouses and animal byproducts installations are described in Sections 2.3.1.2, 2.3.2.1.3, 4.1.43.14, 4.1.43.15, 4.2.6.2, 4.2.6.3 and 4.3.3.15 9. remove nitrogen and phosphorus. Some information is given in Section 2.3.1.2 10. remove the sludges produced and subject them to further animal by-product uses. These routes and their conditions of application are regulated by ABP Regulation 1774/2002/EC 11. use CH4 gas produced during anaerobic treatment for the production of heat and/or power	2. Wastewater passes through a rotary screen to remove any solids. 3. Traps in place. 4. DAF unit is installed in the WWTP with the use of flocculation to remove additional solids. 5. A balance tank is installed to provide a slow steady feed of wastewater to treatment at WWTP. 6. Tanks available to store excess wastewater at WWTP. 7. Any leaks are directed to the underground sump which feeds back to the plant by separate drainage system in WWTP. Balance tank is covered, whereas others aren't for aeration. 8. Aerobic and anoxic tanks are installed with activated biological to treat wastewater. 9. Microbes within activated sludge remove the nitrogen in the form of ammonia and	

<table>
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<td>12. subject the resulting effluent to tertiary treatment and
13. regularly conduct laboratory analyses of the effluent composition and maintain records (see Section 4.1.43.2). Further information on monitoring techniques is available in the current “Common Wastewater and Waste Gas Treatment/Management Systems in the Chemical Sector” BREF [341, EC, 2002]. Note the emission levels given in Table 5.1 are generally considered to be appropriate for protecting the water environment and are indicative of the emission levels that would be achieved with those techniques generally considered to represent BAT. They do not necessarily represent levels currently achieved within the industry but are based on the expert judgment of the TWG.
<table>
<tr><td>Parameter</td><td>COD</td><td>BOD</td><td>SS</td><td>Nitrogen (total)</td><td>Phosphorus (total)</td><td>FOG</td></tr>
<tr><td>Achievable emission level (mg/l)</td><td>25 – 125</td><td>10 – 40</td><td>5 – 60</td><td>15 – 40</td><td>2 – 5</td><td>2.5 – 15</td></tr>
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Table 5.1: Emissions levels associated with BAT for minimising wastewater emissions from slaughterhouses and animal by-products installations.</td>
<td>phosphorus during the treatment process. Denitrification occurs at offsite WWTP.
10. No sludge occurs due to animal treatment arising from the site.
11. Not Applicable
12. Not Applicable
13. Lab analysis of raw wastewater is carried out as required.</td>
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<td>5.2 Additional BAT for Slaughterhouses</td>
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<td>BAT 38.
In addition to general measures in Section 5.1, for all slaughterhouses BAT is to do all the following:
1. Dry scrape delivery vehicles (Section 4.2.11)</td>
<td>Not Applicable as this is a rendering plant and only take processed waste.
1. Not Applicable</td>
<td>1. N/A</td>
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2. Avoid carcase washing and where this is not possible to minimise it, combined with clean slaughter techniques (Section 4.2.1.4)	2. Not Applicable	2. N/A
3. Continuously collect by-products dry and segregated from each other, along the length of the slaughter-line (Section 4.2.1.6), combined with optimising bleeding and the collection of blood (Section 4.2.2.2.1) and segregation the storage and handling of different kinds of by-products (Section 4.2.5.1)	3. Not Applicable	3. N/A
4. Operate a double drain from the bleed hall (Section 4.2.1.7)	4. Not Applicable	4. N/A
5. Collect floor waste dry (Section 4.2.1.9)	5. Not Applicable	5. N/A
6. Remove all unnecessary taps from the slaughter-line (Section 4.2.1.13)	6. Not Applicable	6. N/A
7. Insulate and cover knife sterilisers (Section 4.2.1.14), combined with sterilising knives using low-pressure steam (Section 4.2.1.17)	7. Not Applicable	7. N/A
8. Operate hand and apron cleaning cubicles, with a “water off” default (Section 4.2.1.18)	8. Not Applicable	8. N/A
9. Manage and monitor compressed air use (Section 4.2.1.19)	9. Not Applicable	9. N/A
10. Manage and monitor ventilation use (Section 4.2.1.20)	10. Not Applicable	10. N/A
11. Use backward bowed centrifugal fans in ventilation and refrigeration systems (Section 4.2.1.21)	11. Not Applicable	11. N/A
12. Manage and monitor the use of hot water (Section 4.2.1.22)	12. Not Applicable	12. N/A
13. Trim all hide/skin materials not destined for tanning immediately after removal from the animals, expect if there is no outlet for the use/valorisation of the trimmings (Section 4.2.2.9.10)	13. Not Applicable	13. N/A

5.2.1 Additional BAT for the Slaughter of Large Animals		
BAT 39. In addition to the general measures in Section 5.1 and 5.2, for all large animals' slaughterhouse, BAT is to all the following: 1. Stop feeding animals 12 hours prior to slaughter (Section 4.2.2.1.1), combined with minimising the animals' time in the slaughterhouse to reduce manure production (Section 4.2.2.1.2) 2. Apply demand-controlled drinking water (Section 4.2.2.1.4) 3. Dry clean the lairage floor and to periodically clean it with water (Section 4.2.2.1.6). 4. Use a squeegee for the initial cleaning of the blood collection trough (Section 4.2.2.2.2) 5. Sterilise chest-opening saws in a cabinet with automated hot water nozzles (Section 4.2.2.7.1) 6. Regulate and minimise the water used for moving intestines (Section 4.2.2.7.2) 7. Collect the contents of small intestines dry (Section 4.2.2.9.3) whether they are intended to be used for casings (Section 4.2.2.9.4) 8. Regulate and minimise the water consumption during small and large intestine washing (4.2.2.9.6)	Not applicable. 1. Not applicable. 2. Not applicable 3. Not applicable 4. Not applicable 5. Not applicable 6. Not applicable 7. Not applicable 8. Not Applicable	N/A

5.2.2 Additional BAT for the slaughter of Poultry		
BAT 40. In addition to the general measures in Section 5.1 and 5.2, for all poultry slaughterhouses, BAT is to all the following: 1. Apply dust abatement at bird rection, unloading and hanging stations (Section 4.2.3.1.2, 4.2.3.1.1, and 4.2.3.1.4). 2. Stun birds in their modules, using inert gases at new installations and when existing stunning equipment and bird delivery vehicles are due for renewal (Section 4.2.1.1). 3. Reduce water consumption in poultry slaughter, by removing carcase washing equipment from the line except after de-feathering and evisceration (Section 4.2.1.11). 4. Steam scald poultry (Section 4.2.3.3.1). 5. Insulate scalding tanks in those existing premises where it is not yet economically viable to change to steam scalding (Section 4.2.3.3.2) 6. Use nozzles instead of irrigation pipes to shower poultry, during de-feathering (Section 4.2.3.4.1) 7. Use recycled water, e.g., from the scalding tank, for the carriage of feathers (Section 4.2.3.4.2) 8. Use water efficient shower heads to wash poultry, during evisceration (Section 4.2.3.5.1)	Not Applicable. No poultry is slaughtered onsite.	N/A

9. Chill Poultry by immersion/spin chilling and to control, regulate and minimise the water consumption (Section 4.2.3.6.2)		
5.3.1 Additional BAT for fat melting		
BAT 41. For fat melting no additional BAT have been identified in addition to those in Section 5.1 and 5.3.	Not applicable.	N/A
5.3.2 Additional BAT for rendering		
BAT 42. In addition to the general measures in Section 5.1 and 5.3, for rendering installations, BAT is to do all the following: 1. Totally enclose the rendering line (Section 4.3.3.1). 2. Reduce the size of carcases and parts of animal's carcases before rendering (Section 4.3.3.2). 3. Remove water from blood, by steam coagulation, prior to rendering (Section 4.3.3.4). 4. For raw material throughputs less than 50,000 t/yr., to use a single effect evaporator to remove water from liquid mixtures (Section4.3.3.5). 5. For raw materials throughputs greater than, or equal to 50,000t/yr., to use a multiple-effect evaporator to remove water from liquid mixtures (Section 4.3.1.5).	1. Rendering line is enclosed. 2. The raw material is pre-crushed prior to rendering. 3. Water is removed from blood through coagulation. 4. Not applicable. 5. A multi effect evaporator is utilised.	1. In Place 2. In Place 3. In Place 4. N/A 5. In Place

When it has been impossible to use fresh raw materials and thereby to minimise the production of malodorous substances, BAT is to do either of the following: 6. Burn the non-condensable gases in an existing boiler (Section 4.3.3.11) and to pass the low intensity/high volume odours through a biofilter (Section 4.3.3.11). 7. Burn the whole vapour gases in a thermal oxidiser (Section 4.3.3.10) and to pass the low intensity/high volume odours through a biofilter.	6. Biofilter used onsite to treat odours. 7. Whole vapor gas is combusted in Thermal oxidiser with some high intensity room air.	6. In Place 7. In Place
5.3.3 Additional BAT for fishmeal and fish-oil production		
BAT 43. In addition to the general measures in Section 5.1 and 5.3 for fishmeal and fish-oil production installations, BAT is to do all the following: 1. Use fresh, (low total volatile nitrogen) feedstock (Section 4.3.4.1). 2. Use heat from the vapour evaporated during the drying of fishmeal in a falling film evaporator to concentrate stick water (Section 4.3.4.2). 3. Incinerate malodorous air, with heat recovery (Section 4.3.4.3). 4. Wash air using condensate liquid instead of using clean seawater (Section 4.3.4.4).	Not Applicable.	N/A
5.3.4 Additional BAT for blood processing		
BAT 44. In addition to the general measures in Section 5.1 and 5.3, for blood processing installations BAT is to do one of the following:	1. Not applicable 2. Not applicable	1. N/A

1. Concentrate plasma, prior to spray drying, using reverse osmosis (Section 4.3.5.1). 2. Concentrate plasma, prior to spray drying, using vacuum evaporation (Section 4.3.5.2). 3. Remove water from blood, by steam coagulation, prior to spray drying (Section 4.3.3.4).	3. Water is removed from blood using coagulation. The water goes to an evaporation plant where it is concentrated before being added to a dryer.	2. N/A 3. In Place
5.3.5 Additional BAT for bone processing		
BAT 45. For bone processing no additional BAT have been identified to those in Section 5.1 and 5.3.	Not Applicable	N/A
5.3.7 Additional BAT for the incineration of animal by-products		
BAT 46. In addition to the general measures in Section 5.1 and 5.3, for the incineration of animal by-products, BAT is to do all the following: 1. Enclose building used for delivery storage, handling, and processing of animal by-products (Section 4.3.8.1) 2. Clean and disinfect delivery vehicles and equipment, after each delivery/use (Section 4.3.8.2) 3. Carry carcases (not drag them) (Section 4.3.8.4)	Not applicable	N/A

4. Reduce in size animal carcases and parts of animal carcases, before incineration (Section 4.3.8.4) 5. Restrict feedstock to exactly that tested during trials (Section 4.3.8.5) 6. Agree the fat moisture ash content of animal meal, with the renderer (Section 4.3.8.6) 7. Avoid receipt of materials for incineration in PVC packaging (Section 4.3.8.10) 8. Either auger feed or pump parts of carcases or animal meal to the incinerator (Section 4.3.8.11 and 4.3.8.12) 9. Incineration of incinerator wastewater if no WWTP on the site (Section 4.3.8.13) 10. Seal the storage, handling and charging of animal's by-products to incinerators (Section 4.3.8.14) 11. Duct air from the installation for the pre-combustion equipment to combustion chambers (Section 4.3.8.15) 12. Alarm and interlock combustion temperatures to charging mechanisms (Section 4.3.8.16) 13. Continuous incineration involves the continuous operation of an incinerator without the repeated heating and cooling associated with batch processes (Section 4.3.8.20)		

14. Operate an ash burnout chamber, where adequate combustion is not otherwise achievable e.g., immediately downstream from rotary kilns (Section 4.3.8.21) 15. Operate automated continuous de-ashing, (Section 4.3.8.22) 16. Operate a monitoring regime for emissions, including a protocol for monitoring burnout, including biohazard from TSE prion, in ash (Section 4.3.8.25) 17. to achieve emission levels as low as reasonably practicable below those shown in Table 5.2 (see Section 4.3.8.17) 18. Regularly clean and disinfect installation and equipment (Section 4.3.8.26) 19. Operate odour arrestment techniques, when the incinerator is not working, when odour prevention is not reasonably practicable (4.3.8.27) 20. Use a carbon filter for odour abatement, when incinerators are not operating and where odour prevention is not reasonably practicable (4.3.8.29) In addition to the general measures in Section 5.1, 5.3 and those listed above, for the incineration of animal's by-products, BAT is to do one of the following: 21. Incinerate animal carcases, part of carcases and animal meal in bubbling fluidised bed incinerators, with suitable flue gas treatment equipment (Section 4.3.8.17) 22. Incinerate animal carcases, parts of carcases and animal meal in circulating fluidised bed incinerators, with suitable flue gas treatment equipment or		

incinerate animal carcases, parts of carcases and animal meal in rotary kiln incinerators, with suitable flue gas treatment equipment (Section 4.3.8.18, 4.3.8.19)		
5.3.8 Additional BAT for biogas production		
BAT 47. In addition to the general measures in Section 5.1 and 5.3, for biogas production, BAT is to do the following: 1. Re-use heat during biogas production (Section 4.3.10.3)	Not Applicable.	N/A
5.3.9 Additional BAT for composting		
BAT 48. In addition to the general measures in Section 5.1 and 5.3, for composting, animals' by-products, BAT is to do the following: 1. Provide sufficient drainage capacity for a window on a hard standing constructed from concrete (Section 4.3.11.1, 4.3.11.2).	Not Applicable.	N/A