Foyle – Gloucester

Environmental Permit Application

EPR Ref: UP3700PX/A001

How To Comply: The Food and Drink Sector (EPR 6.10)

Document Ref: Attachment B.3.7

HOW TO COMPLY – THE FOOD AND DRINK SECTOR

In *"Getting the basics right – how to comply with your environmental permit"* (GTBR) the Environmental Agency describes the standards and measures that they expect businesses to take in order to control the risk of pollution from the most frequent situations in the waste management and process industries.

The IPPC Directive requires that the Best Available Techniques (BAT) is used. When making an application, you should explain how will comply with each of the indicative BATs in this sector guidance note. Where indicative BAT is not included, where you propose to use an alternative measure or where there is a choice of options you should explain your choice on the basis of costs and benefits. Part 2 of Horizontal Guidance Note H1 Environmental Risk Assessment gives a formal method of assessing options which you should use where major decisions are to be made.

Environment Agency Technical Guidance Note: *How to Comply with your Environmental Permit: Food & Drink Sector (EPR 6.10)*

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
1. MANAGING YOUR ACTIVITIES		
1.1 Accident Management		
1. Use automatic process controls backed-up by manual supervision, both to minimise the frequency of emergency situations and to maintain control during emergency situations. Instrumentation will include, where appropriate, microprocessor control, trips and process interlocks, coupled with independent level, temperature, flow and pressure metering and high or low alarms.	Level probe in effluent plant inlet sump, which regulates pump flow from this sump. Level probe in balancing, regulating flow to DAF unit. All chemical storage areas are secured. Interceptor is alarmed. Regular environmental check-sheet in place. Continuous flow and pH measurement of final effluent discharge.	
2. Use techniques and procedures to prevent overfilling of tanks - liquid or powder- (*eg*. level measurement displayed both locally and at the central control point, independent high-level alarms, high-level cut-off, and batch metering).	Bulk cleaning chemicals are bunded within a secure chemical store. No other bulk delivery of chemicals. Sludge tank emptied daily under supervision. OP08 Receipt of Bulk Liquids Procedure in place.	
3. Use measures to detect variation in effluent composition *eg* in-line TOC measurement (see monitoring section)	Daily measurements of effluent discharge COD, Suspended Solids, ammonia and pH by on-site personnel. Daily visual and operational checks on effluent plant.	Continue to calibrate Hach meter annually. Continue to calibrate pH meter weekly.
4. Ensure that gross fat, oil and grease (FOG) does not block drains.	Drainage pipes are cleaned annually by external contractor.	
5. Identify the major risks associated with the effluent treatment plant (ETP) and have procedures in place to minimise them.	1. Effluent discharge non-compliance. 2. Transport of sludge - spillage	Daily operation and maintenance of ETP.

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6. Provide adequate effluent buffer storage so that you can stop spills reaching the ETP or controlled water, especially those spills with high organic strength.	Raw effluent enters inlet sump for coarse solids removal and is then pumped to the balancing tank. Balancing tank in place, with 24-hour retention time. Spill kits located throughout site. Spillage Response procedures in place.	Train all relevant personnel on the spillage containment procedure, EMS OP12
7. Protect against spillages and leaks of refrigerants, especially ammonia.	Quarterly refrigeration plant maintenance contract in place. Spillage Response procedure is in place. Ammonia is not used on-site.	Implement bunding recommendations as per attachment D.5 of this application.
1.2 Energy Efficiency		
1. Recover heat from, for example, ovens, dryers, fryers, evaporators, pasteurisers and sterilisers, where a plate heat exchanger has a regeneration capacity up to 94%.	Not carried out on-site.	
2. For in-tunnel and tray ovens, fit heat exchangers to the exhaust flues to remove heat from exhaust gases and to heat inlet air.	Not carried out on-site.	
3. Recover heat from condensed steam, for example, blanching and steam peeling.	Not carried out on-site.	
4. Multi-effect evaporators in large scale evaporator applications	Not carried out on-site.	
5. Minimise water use and use recirculating water systems	OP02 Monitoring Water Usage Procedure in place.	

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6. Ensure efficient operation of the refrigeration system – consider heat recovery from refrigeration system, reducing heat load, efficient operation on part load and fast closing doors/alarms on chilled storage areas.	Not carried out on-site.	
7. Use spent cooling water (which is raised in temperature) in order to recover the heat	Not carried out on-site.	
8. Optimise efficiency measures for combustion plant, e.g. air/feedwater pre-heating, and use of excess air.	Not carried out on-site.	
1.3 Efficient Use Of Raw Materials And Water		
1. Identify and evaluate opportunities for the recycling or reuse of water, taking into consideration hygiene issues and practical constraints. An optimal scheme is likely to include a combination of:	Targets outlined as part of the Register of Aspects. BREF Guidance. ISO 14001 continuous improvement.	
• sequential reuse (water stream used for two or more processes or operations before disposal)	Not carried out on-site.	
• counter-flow reuse, in which the water flows counter-current to the product so that the final product only comes into contact with clean water	Not carried out on-site.	
• recycling within a unit process or group of processes without treatment. Recirculating systems should be used to recycle water. (Once through cooling systems should not be used.)	Not carried out on-site.	
• the recycling of condensate as boiler feed water (where it is of suitable quality). Contaminated condensate should be used for lower grade cleaning activities e.g. yard washing	Not carried out on-site.	
• recycling following treatment - this may include tertiary treatment such as membrane technology.	Not required as final effluent complies with COD and suspended solids parameters. Effluent is discharged to sewer under licence.	

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
2. Assess the potential environmental impact of raw materials and make substitutions where appropriate. Consider their degradation products when choosing cleaning materials. If caustic is used low mercury sodium hydroxide should be selected. Supercritical carbon dioxide is a suitable alternative to organic solvent usage for extraction of caffeine.	All cleaning chemicals used are standard within the food industry.	
1.4 Avoidance, Recovery And Disposal Of Wastes		
1. Demonstrate that the chosen routes for recovery or disposal represent the best environmental option considering, but not limited to, the following:	Licensed contractors recycle all cardboard, plastic packaging, metals, plastic drums and pallets. No waste from the site goes to landfill. All ETP sludge is sent for land spreading. CAT3 and Blood is sent for further processing.	
• all avenues for recycling back into the process or reworking for another process	All suitable timber, pallets, dolavs and hand-trays are re-used within the process.	
• composting	All waste product and effluent plant screenings sent off-site for rendering.	
• animal feed	CAT3 and Blood is sent for further processing.	
• other commercial uses, as tabulated in table 2 below	None	
• landspreading, but only under the following circumstances	Effluent sludge/Lairage material removed off-site for landspreading by permitted contractor (EPR-BB3205KS).	
A. you can demonstrate that it represents a genuine agricultural benefit or ecological improvement	Sludge parameters are tested by the contractor in a Field Application Report.	
B. you have identified all the pollutants likely to be present. These may substances from the process, from the materials of which your	Sludge parameters are tested by the contractor in a Field Application Report. Sludge is generated from the food industry and is	

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
plant is constructed (e.g. reaching the waste by corrosion/erosion mechanisms), from materials related to maintenance (e.g. detergent). You should consider all these possibilities, for both normal and abnormal operation of the plant. You should validate your conclusions by chemical analysis of the waste.	all organic in nature.	
C. You have identified the ultimate fate of the substances in soil.	Soil parameters are tested every 3 – 4 years. Sludge is spread in accordance with a Field Application Report.	
2. Schedule production to minimise product changeovers and clean downs.	This is an active part of production planning and is in place for some time. Due to the many products and short shelf-life, this is continuously being assessed.	
3. Consider whether your packing line efficiency can be improved	This has all been assessed as part of the Lean efficiency programme in place at the site, with relevant changes made to the production lines to increase efficiency.	

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
2. OPERATIONS		
2.1 Operating Techniques		
1. Temperature measurement	Non-invasive temperature monitoring of final product in place, monitoring of temperatures through-out process.	
2. Pressure measurement	Not applicable to production process.	
3. Level measurement	Not applicable to production process.	
4. Flow measurement	Not applicable to production process.	
5. Flow control	Not applicable to production process	
2.2 Process Control		
1. Assess your product loss against the benchmarks	Production KPI's in place, demonstrating yields on a daily basis.	All associated animal waste is unavoidable, ie hides, offal, paunch. Production KPI's in place include average weight/animal and finished product yield.
2. Set up effluent monitoring to provide baseline information on wastewater loadings (kg COD and volume).	Final effluent discharge floe and pH monitored continually. COD, SS, ammonia and pH measured daily by the site.	.
3. Investigate high loss areas. Using the baseline information you should set improvement targets - this could be a reduction in daily kg COD or volume, or any other specific objective.	As above, relate COD and SS measurements back to the production areas.	Relate COD and SS measurements back to the production areas.
4. Continue monitoring and review your performance regularly.	As above.	
5. Carry out any appropriate measurements	As above.	
2.3 Raw Materials Preparation		
1. When choosing a peeling technique or when replacing peeling plant, show that your selection has taken into account water efficiency, energy efficiency and product	No peeling carried out on-site.	

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
loss.		
2.4 Heat Processing Using Steam Or Water		
Blanching & Evaporation		
1. Reduce energy consumption by re-using heat contained in vapours by, for example: • vapour recompression • using the vapour to pre-heat incoming feedstock or condensed vapour which is then used to raise steam in a boiler.	No blanching or evaporation carried out on-site.	
2. Install a condensate re-use system (as above – see efficient use of raw materials and water).	Not applicable.	
Pasteurisation, Sterilisation, UHT		
1. Use recirculating systems to recycle water. (Once through cooling systems should not be used.)	No pasteurisation or sterilisation carried out on-site.	
2. Use energy efficiency techniques including regenerative heat exchangers	Not applicable.	
Cooling, Chilling, Freezing Or Freeze-Drying		
1. Consider the following energy efficiency measures: • use of exhaust air to pre-heat inlet air • use of direct flame heating by natural gas • two stage drying • pre-concentrating liquid foods using multiple effect evaporation.	Targets outlined as part of the Register of Aspects. BMPA CCA Scheme must reduce energy usage. ISO 14001 continuous improvement. ESOS compliance.	
2. Use low NOx burners	On-site boilers have low NOx emissions and are natural gas fuelled.	

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
3. Ensure extraction to efficient abatement plant	No abatement plant on-site.	
2.5 Cooling, Chilling, Freezing And Freeze-Drying		
1. Use recirculating systems to recycle water. (Once through cooling systems should not be used.)	Chilled water cannot be re-used due to food hygiene reasons.	
2. Use detailed drainage plans to ensure that ammonia leaks cannot be discharged to surface waters.	No ammonia on-site.	
3. Energy efficient techniques should be applied (see energy efficiency section above).	-	
2.6 Separation And Concentration Of Food Components – Extraction		
The objective of extraction is to recover valuable soluble components from a raw material by dissolving them in a liquid solvent. Solvents commonly used are: • water • organic solvents like hexane, dichloromethane, ethyl acetate and ethanol (alcohol) • supercritical carbon dioxide. The main control issues are fugitive emissions to air (refrigerants), water use and energy efficiency.	Not applicable.	
2.7 Cleaning And Sanitation		
1. Wherever possible, raw materials and product should be kept out of the wastewater system.	Dry cleaning and purging in place, ensuring all food waste is diverted from drains, where possible.	
2. Equipment Design		
• when ordering new equipment consider ease of cleaning	As part of the purchase agreement with suppliers, all equipment is assessed for waste, water usage, energy efficiency and noise emissions.	Review purchase agreement document to ensure its adequacy.
• wherever practicable, process lines and operations that cause excessive spillage of material onto the floor should be modified to eliminate or reduce the	This is an on-going exercise. The H&S system requires a clean and dry floor where practical.	This is part of the department EHE audits.

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
problem		
• dry clean-up procedures should remove as much residual material as possible from vessels and equipment before they are washed	Dry cleaning and purging in place for all vessels where this is practical and safe.	
• drains should be equipped with catchpots	All process floor drains have screens.	This is part of the department EHE audits.
• catchpots should be in place during cleaning (for example by installing lockable catchpots)	All process floor drains have screens.	
• you should optimise water pressure at jets, nozzles and orifices	Appropriate triggers and lances in place on all hoses.	This is part of the department EHE audits.
• trigger operated spray guns or hoses should have an automatic water supply shut off.	Appropriate triggers and lances in place on all hoses.	This is part of the department EHE audits.
3. Good housekeeping		
• you should install trays to collect waste to prevent it falling to the floor	Dry cleaning and purging in place, ensuring all food waste is diverted from drains.	
• spilt material should be swept, shovelled or vacuumed rather than hosed down the drain	Dry cleaning and purging in place, ensuring all food waste is diverted from drains	
• you should make sure that suitable dry clean-up equipment is always readily available	Dry cleaning and purging in place, ensuring all food waste is diverted from drains	
• you should provide convenient, secure receptacles for the collected waste	Waste bins in place.	Waste bin numbers and locations should be reviewed on the production floor.
• cleaning schedules should be optimised	Suitable cleaning takes place on a nightly basis.	
• cleaning cycle durations should be matched to the vessel size	Suitable cleaning takes place on a nightly basis.	
• you should schedule product manufacture to minimise numbers of product changes and subsequent cleaning between products	No production change over occurs, the same finish product is continually produced.	

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
4. Manual cleaning		
• procedures should ensure that hoses are only used after dry clean-up	Hoses are only used after dry clean-up	This should be incorporated into operating procedures.
• trigger controls should be used on hand-held hoses and water lances to minimise the use of washdown water	Triggers and lances in place on all hoses.	This is part of the department EHE audits.
• high-pressure/low-volume systems should be used wherever practicable	High-pressure wash system not possible due to food hygiene reasons.	
5. Cleaning chemicals usage		
• you should ensure that staff (and contract cleaners) are trained in the handling, making up and application of working solutions. In particular, the correct concentration of chemical agent should be used. Overuse of chemicals should be avoided, particularly where manual dosing is used.	All relevant staff have been trained.	Training requirements for all relevant staff should be continuously assessed.
6. Cleaning-in-place (CIP)		
• dry product should be removed before the start of the wash cycle by gravity draining, pigging or air blowdown	No CIP systems in place – not relevant	
• pre-rinsing should be used to enable remaining product to be recovered for re-use or disposal		
• the use of turbidity detector to maximise product recovery		
• optimal CIP programme for the size of plant/vessel and type of soiling		
• optimising frequency and duration of rinses to reduce water use		
• automatic dosing of chemicals at correct concentrations		
• internal recycling of water and chemicals		

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
• recycle control on conductivity rather than time	Not carried out on-site.	
• continuous cleaning of recirculated solutions	Not carried out on-site.	
• water-efficient spray devices	Assess spray devices for efficient spraying.	Assess spray devices for efficient spraying.
7. Use dry clean-up techniques where practicable to reduce wastewater strength	Dry clean-up techniques are in place for all production areas.	
8. Sanitisation		
• you should justify the use of organohalogen-based oxidising biocides over the alternatives (e.g. ozone and UV light).	Process water received from public supply, which is already treated. Water softening takes place prior to use.	
• recycling of water and recovery of cleaning chemicals	Not considered practical for this site, due to type of product used.	

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3. EMISSIONS AND MONITORING		
3.1 Point Source Emissions		
Point Source Emissions to Air		
1. Meet the benchmark values for point source emissions to air listed in Annex 1 of this guidance, unless you justify alternative values and obtain our agreement to them.	No significant use of solvents on-site, therefore VOC emissions are insignificant. On-site boilers have a thermal input of 1.19MW	
2. Use heat recovery systems	Heat exchange system located to the rear of the boiler is used to heat water.	
3. Recycle exhaust gas where practicable for pre heat purposes	Not carried out on-site.	
Point Source Emissions to Water		
1. As a minimum, control all emissions to avoid a breach of water quality standards but where another technique can deliver better results at reasonable cost it will be considered BAT and should be used. Unless self-evident, you should provide calculations and/or modelling to demonstrate this as part of your application.	No modelling has been carried out for the site.	Analyse surface water annually for mineral oils.
2. Keep raw materials and product out of the wastewater system wherever possible. The following techniques should be used	-	
• dry clean-up	In place at all production areas.	
• installation of drain catchpots and screens	In place at all production areas. Coarse auger screen in place at the ETP. Drum screen in place at the Blood Tanks.	
• where gross FOG is found in wastewater, drainage systems should have grease traps and gratings to prevent sewer blockage. These must be frequently inspected, emptied and maintained	Water from the main production building passes through fat-traps before entering ETP inlet sump. DAF removes all fats prior to discharge. These are maintained on a regular basis.	
• use a balancing tank or pond (equalisation or balancing), with a hydraulic retention time of 6 – 12	Balancing tank has a capacity of 263 M^3 which is 36 hours retention time.	

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
hours, which can improve treatment in the following ways:		
A. by allowing waste streams to be combined e.g. acid and alkali streams from the regeneration of deionisers; or high BOD and low BOD waste streams. This can reduce consumption of reagents	36-hours retention allows pH correction at DAF and adequate balancing of the raw effluent prior to entering the DAF plant.	
B. by making the flow rate less variable. This can reduce the size of the treatment plant needed, as it only has to handle the average flow and not the peak flow.	The DAF plant on-site is sized to receive 20 M^3 per hour. The balancing tank allows a constant feed flow-rate to the DAF, which ensures efficient solids and COD removal	
3. Provide contingency measures to prevent accidental discharges from overloading or damaging the treatment plant. These will often include providing a diversion tank into which potentially damaging wastewater can be diverted. This should typically have a capacity of 2 – 3 hours at peak flow rate. The wastewater should be monitored upstream of the treatment plant to allow automatic diversion to the tank. The contents of the diversion tank may be gradually re-introduced into the wastewater stream, or removed for off-site disposal. If you do not provide a diversion tank, you must tell us what equivalent measures you use to protect your treatment plant.	Balancing tank is typically operated at 50% level, which provides adequate capacity if a shock-load (volume or Kgs BOD) is received into the plant. The balancing tank is considered to be adequate and it is not considered necessary to have a raw effluent diversion tank.	
3.2 Fugitive Emissions		
1. Regularly inspect pipe joints, shaft seals and gaskets in the refrigeration plant using proprietary leak detection equipment.	Quarterly maintenance contract in place. Refrigerant leak detection system, in place. Spillage response procedure is in place.	
2. Ensure that a system log book is kept which records		
• quantity of refrigerant and oil added to or removed from the system(s)	Log book in place.	

BAT GUIDELINES	FACTORY COMPLIANCE	ACTION GOING FORWARD
• leakage testing results	Log book in place.	
• location and details of specific leakage incidents	Log book in place.	
3.3 Odour		
1. Ensure that effluent treatment plant is adequately sized and maintained, and check that site waste water drains do not become blocked. Where present, aeration tanks should be kept aerated and mixed at all times except where maintenance necessitates shut-down of the aeration system. Alternative operational arrangements should be implemented during shut-down to avoid odour nuisance.	Effluent plant is adequately designed for the site's raw effluent. Balancing tank is mixed and aerated to avoid odours. Balancing tank is capped. Sludge tank is emptied on a daily basis.	
2. Design and operate abatement plant to cope with maximum loadings and volumes	No odour abatement systems on site	Odour test should be included as part of daily environmental check (ER04).
3. Design extraction from odorous activities to minimise air flows to the abatement plant	No odour abatement systems on site	