FOOD DRINK AND MILK INDUSTRIES BEST AVAILABLE TECHNIQUES REFERENCE (FDM BREF)

GUIDANCE FOR COMPLETING THE BAT GAP ANALYSIS RESPONSE TOOL

Contents

Section 1: Introduction

To assist operators in completing the BAT gap analysis response tool required to initiate the FDM BRef sector permit review.

The aim is to ensure that the required information is provided using the BAT gap analysis response tool.

This guidance should be read in conjunction with the FDM BAT conclusions, UK Sector Specific Interpretational Guidance on the Food, Drink and Milk Industries and the instructions in the BAT gap analysis response tool.

For each relevant BAT conclusion (BATc) we are seeking confirmation that you are either currently compliant or will be compliant by the four year implementation date of the 4 December 2023 for existing installations. Completion dates should be included for any identified improvements.

Section 2: Explanation of BAT conclusions

There are three categories of BAT conclusion in the FDM BRef. You will be asked for your current performance against each type of BATc.

1) BAT-Associated Emission Levels (BAT-AELs).

   These apply to releases of pollutants to the environment i.e. to air and for **direct** emissions to a water body (water bodies include sea outfalls). They do not apply to sewer discharges.

   You must comply with the relevant BAT-AELs by 4 December 2023 unless a formal request for derogation has been approved.

2) BAT-Associated Emission Performance Levels (BAT-AEPLs).

   These are indicative environmental performance levels and it is expected that you will comply with the relevant sector specific benchmarks for energy consumption and/or water consumption/wastewater discharge.

   You may be able to justify deviation from these benchmarks based on site specific factors e.g. your product range. A formal derogation is not required for this but a robust justification should be included in the BAT gap analysis response tool.

3) Narrative (descriptive) BAT.

   These are descriptive techniques without any associated numerical values. They are neither prescriptive nor exhaustive and you may propose alternative techniques provided they offer equivalent level of environmental protection. Detail should be included in the BAT gap analysis response tool for each alternative technique.

Section 3: FDM General BAT Conclusions

BAT concusions 1-15 are cross sector and it is expected that they will apply to most, if not all activities covered by the FDM BRef.

There are some exceptions such as BATcs 4 (monitoring of emissions to water) and 12 (emissions to water) which relate to monitoring and treatment of wastewater. They do not apply to sectors which are essentially dry processes such as grain milling or compound feed which are essentially dry processes. Similarly BAT 9 on refrigerant use only applies to sectors where cooling/chilling or freezing is carried out.

A brief explanation should be included where you believe any particular General BATc does not apply.

Space is provided in the BAT gap analysis response tool (column E on each relevant tab) for detail on how you comply with each relevant BAT conclusion and for explanation on why it is not applicable to the installation. You should provide sufficient evidence to demonstrate

compliance for example, a descrition of the techniques employed, monitoring or a table or graph of emissions.

Where necessary to include separate attachments such as monitoring reports, the additional file (and section) is appropriately cross referenced with the Permit identification reference and detail provided in the BAT gap analysis response tool.

The following table provides guidance to assist your response for each general BATc:

Additional guidance for General BAT conclusions 1-15		
BAT Ref No.	**Topic**	**Guidance for completion**
BAT 1	**Environmental Management Systems (EMS)**	Although not compulsory, an externally accredited EMS such as ISO 140001 ought to contain the required level of information to demonstrate compliance with this BATc. If you have such an EMS, provide written confirmation that it addresses all the requirements listed including Noise Management Plan, Odour Management Plan, Inventory of raw materials and an Energy efficiency plan together with evidence of accreditation. If your EMS is not externally accredited, consider each individual feature listed and briefly summarise how it has been addressed in your EMS or otherwise propose a timescale for inclusion. You are not expected to reproduce entire sections of your EMS for this response.
BAT 2	**Raw materials and emissions inventory**	You should provide confirmation that the Requirements I to VI described in this BATc are all addressed within your EMS or otherwise propose a timescale for inclusion.

		We will require specific information in your response regarding the characterisation of your wastewater streams and waste gas streams as set out in Requirements lll and lV. Where applicable, this information should be provided in the emissions to water and emissions to air worksheets in the response tool. In particular, we want to know whether your effluent contains the substances listed in BAT 4. This includes: • Where present in your raw materials e.g. total phosphorus in milk. • Where used in your production process e.g. chlorides arising from brining in cheese production. • Where present in ancillary chemicals e.g. total phosphorus in cleaning chemicals, ferric chloride in effluent treatment or nutrients added to biological treatment systems. You should include details of pollutants to air even if there is no current permit limit or monitoring requirements. *Note: that you are not expected to carry out monitoring to obtain the above information if it is not already available.* You can demonstrate compliance with the raw materials consumption/waste minimisation aspects in Requirements V and VI if you currently participate in the (WRAP) Target Measure Act Programme available via Zero Waste Scotland. If this is applicable, provide evidence of participation.

		Your response to the Requirement of V should state whether sub-metering is provided for the principal units consuming energy and water.
BAT 3	**Monitoring of process parameters for waste water**	This applies to wastewater discharges to watercourses and to sewer, including discharges from on-site effluent treatment plants (ETPs) and untreated discharges. Its purpose is to ensure that you have appropriate monitoring of process parameters in place for effective management of ETPs and direct discharges. Monitoring requirements for process parameters will be dependent on the nature of treatment provided and should be specified by competent personnel (e.g. ETP supplier, contractor or consultant etc). For untreated discharges to sewer, there may be minimal monitoring, however you should still outline the extent of what you do. The BAT conclusion cites flow, pH and temperature monitoring as examples, however there may be other key parameters e.g. COD loading, dissolved oxygen, sludge microscopy etc. You should identify your key process parameters and the rationale for their selection. Describe your monitoring programme for all key process parameters for each stage of effluent treatment (preliminary, primary, secondary etc) or for the untreated discharge if there is no ETP. Describe how you use this monitoring data for effective management of plant performance eg trend analysis.
BAT 4	**Monitoring of emissions to water**	For each relevant substance:

		I. Confirm if you currently carry out monitoring and specify frequency. II. Provide details of the sampling method e.g. flow proportional composite sampler or spot sampling etc. III. Provide details of the monitoring standard you use.
BAT 5	**Monitoring of emissions to air**	If your sector is listed in BAT 5 of the FDM conclusions document you must provide the following for each relevant substance: I. Confirm if you currently carry out monitoring and specify frequency. II. Provide details of the monitoring method e.g. CEMS or spot sampling. III. Provide details of the monitoring standard you use.
BAT 6	**Energy efficiency**	Although not compulsory, certification of an energy management accreditation or standard will be accepted as evidence that you comply with this BATc. Where applicable, provide a brief summary of your Energy Management Plan and the relevant techniques applied.
BAT 7	**Water consumption**	Provide a brief summary of how you implement each relevant water minimisation technique and/or any other techniques not described. For BAT technique (h) you should state whether a CIP system optimisation check has been carried out, including assessment of rinse times and minimisation of product losses, to ensure efficient use of water, avoidance of “over-cleaning” and minimisation of effluent loading.

BAT 8	**Harmful substance in cleaning/disinfection**	Provide a summary of your procedure to assess chemicals used in the installation and identify potential alternatives less harmful to the environment. If you have no such procedure then propose a timescale for implementation. BAT technique a: This applies mainly to Priority Hazardous Substances/Specific Pollutants as identified in the Water Framework Directive (2000/60/EC of the European Parliament and of the Council). For example Triclosan is a Specific Pollutant which is used as an anti-bacterial agent in some hand cleaners. It is not readily degradable and so may persist through wastewater treatment processes. Confirm if any such substances are used on-site and describe the procedures in place to eliminate or reduce use e.g. substitution with suitable alternatives. BAT technique b: Describe how you have optimised your CIP system, including chemical dosing and recovery, to ensure efficient use of cleaning chemicals.
BAT 9	**Refigerations and Ozone Depleting Substances and susbtances with high Global Warming Potential (F-gases)**	Provide details (type and system capacity) of any refrigerants containing ozone depleting substances or F-Gases used in the permitted installation. If R22 is used then you should propose a timescale for replacement. For F-Gases you should consider both short and longer term improvement opportunities in your response: I. Where appropriate, identify options for drop-in replacement.

		II. Make initial proposals for end of life replacement of high GWP systems. Examples of drop-in replacement include using R448A or R449A instead of R404A. For end of life system replacement, describe how you will select refrigerants with the lowest practical GWP. Overall energy efficiency should be taken into account when considering alternative refrigerants as the indirect carbon dioxide emissions from energy consumption are much greater than direct emissions associated with refrigerant losses.
BAT 10	**Resource efficiency**	The recommended approach to address this BAT conclusion is to describe how you implement the waste hierarchy for the food and drink sector for your process related waste streams. For further information refer to: Food waste - Managing waste - gov.scot (www.gov.scot)
BAT 11	**Uncontrolled emissions to water**	This BATc applies to both discharges to water and sewer. Describe the measures in place to a) detect uncontrolled releases into drainage systems from spills etc and b) prevent their discharge off site. Examples include in-line monitoring, emergency storage tanks, slam-shut valves etc. Provide a summary of any risk assessment carried out.
BAT 12	**Wastewater treatment techniques**	Information on wastewater treatment techniques should be provided for discharges to water and to sewer. Briefly explain why you consider your technique or combination of techniques to be appropriate.

		Justification is required where no on-site treatment is provided, taking into account the nature of the wastewater and any subsequent off-site treatment.
	Emissions to water BAT-AELs	These BAT-AELs apply to all direct emissions to water. This includes discharges to surface water sewers which discharge into the environment with no additional treatment. They do not apply to discharges to sewer with off-site downstream treatment. When assessing compliance with the stated BAT-AELs, you should include a summary of monitoring data which is both recent and representative. Typically this would be for a minimum of 12 months where the effluent composition is consistent with frequent monitoring or 3 years, where the effluent composition is variable e.g. with seasonal/campaign production or where monitoring is infrequent. Please include the range of values, mean and number of samples the assessment is based on. Some sectors may benefit from a higher upper end of the BAT-AEL range, subject to the pollutant removal rate. For example in the dairy sector the COD upper limit may be increased from 100 mg/l to 125 mg/l if the removal rate is ≥ 95 %. If you believe this could apply to you then you must provide an assessment of the pollutant removal rate. This should be calculated on a flow weighted basis over a minimum of 12 months. A BAT-AEL for either COD or TOC will be included. If you prefer TOC then you should

		provide an assessment of the relationship between COD and TOC for your effluent.
BAT 13	**Noise Management Plan (NMP)**	A response is only needed where you are required under your permit to implement and maintain a Noise Management Plan. Please provide a copy of the NMP document and confirm its status (approved, under assessment etc).
BAT 14	**Noise reduction techniques**	If you are already required to implement a NMP then this ought to be addressed in that document. If you are already required to implement a NMP, provide a brief summary of the relevant techniques you use to ensure that noise problems do not arise.
BAT 15	**Odour Management Plan (OMP)**	A response is only needed where you are required under your permit to implement and maintain an Odour Management Plan. Please provide a copy of the OMP document and confirm its status (approved, under assessment etc). Detailed information is required where odour abatement plant is installed as BAT requires that odorous emissions from the regulated activity are contained and treated by a properly designed odour abatement system, meeting appropriate emission levels (in terms of odour units OU/OUE) so as to prevent odour nuisance. You should be able to demonstrate that you have effective controls in place to monitor and maintain your site abatement system to achieve continual optimum conditions. You should describe these controls which may include the following operating parameters (depending upon the abatement system used):

		• gas flow or loading rate- to ensure flow rates allow for sufficient residence time • bacterial viability (applicable to bio-oxidisation treatment systems) • gas temperature • Odour removal efficiency - by sampling the inlet and the outlet of system gas stream to be monitored for Odour concentration (OUe/m3). • pH & redox potential – (applicable for chemical scrubbing and bio-oxidisation systems) • Gas humidity or moisture content (for the inlet gas stream of carbon filter) • back-pressure • Ammonia and hydrogen sulphide (in both input and exhaust gas streams) • Energy requirements for providing adequate and continuous airflow You should also specify the target emission levels which your abatement system is designed to achieve, either in odour units or concentrations of specific substances.

Section 4: FDM Specific BAT conclusions

These apply to the sectors specifically listed in Section 2 of the FDM BATcs document and on the individual worksheets in the BAT gap analysis response tool.

Depending upon the activities you carry out, you may refer to other sector specific BAT conclusions in addition to your own.

Examples:

Grain milling installations which carry out pelletising of husks etc for animal feed and should refer to the relevant animal feed sector BAT conclusions.

Whiskey producers should refer to the relevant grain milling BAT conclusions.

BAT-AEL's for emissions to air

You should clearly state in your BAT gap analysis response tool whether you currently comply with the relevant BAT-AELs or otherwise will comply by 4 December 2023.

If you cannot comply with the BAT-AELs, you should discuss any potential derogation application with your regulator as soon as possible.

Where prompted in the response tool, provide available monitoring data to support your response. Where available, this should cover a three year period or a minimum of six samples whichever is the greater.

BAT-AEPLs for specific energy consumption

You should clearly state in your BAT gap analysis response tool whether you currently comply with the relevant BAT-AEPLs or otherwise will comply by 4 December 2023.

Where prompted in the BAT gap analysis response tool, provide available consumption data to support your response.

You may be able to justify why the BAT-AEPL ranges are not applicable to your activity due to site specific factors such as the nature of your particular product range which may be more energy intensive. You are expected to provide a robust justification as to why this is the case, together with a suitable alternative BAT-AEPL.

BAT-AEPLs for specific wastewater discharge

You should clearly state in your response whether you currently comply with the relevant BAT-AEPLs or otherwise will comply by 4 December 2023.

Where prompted in the response tool, provide available consumption data to support your response.

You may be able to justify why the BAT-AEPL ranges are not applicable to your activity due to site specific factors such as the nature of your particular product range which may require a higher rate of water use for cleaning etc. You are expected to provide a robust justification as to why this is the case, together with a suitable alternative BAT-AEPL.

Section 5: Emissions to Water and Impact Assessment

Emissions to water are a key environmental issue for the Food and Drink Sector and this topic will be addressed in detail in the permit review.

In addition to implementing the FDM BAT conclusions for emissions to water, we will be taking account of the Water Framework Directive (WFD) requirements and the potential effects of other harmful chemicals e.g. pesticide residues.

This means that we will require information about your emissions to water/sewer and may also require an impact assessment to demonstrate there is no adverse effect on the environment.

In order to protect the receiving environment, we may need to set tighter Emission Limit Values (ELVs) than the BAT-AEL ranges in the FDM BRef or include ELVs for substances that don't have a BAT-AEL e.g. Biochemical Oxygen Demand.

The information required in your BAT gap analysis response tool will depend on whether you have a direct emission (to watercourse, soakaway or groundwater) or an indirect emission (to sewer for off-site treatment).

i. Direct emissions

We will need monitoring data to demonstrate your ability to comply with the FDM BAT-AELs for TN, TP, TSS, & COD (or TOC) and information on daily loading rates as well as information on BOD and NH_3 where present in your effluent.

The data you provide should be recent and representative. Typically this would be for a minimum of 12 months where the effluent composition is consistent with frequent monitoring or 3 years where the effluent composition is variable for example with seasonal/campaign production or where monitoring is infrequent.

You should assess whether hazardous chemicals or elements may be present in your effluent. Ideally this would include monitoring data as outlined above but you are not expected to carry out monitoring solely for the purpose of completing the BAT gap analysis response tool.

If hazardous chemicals or elements may be present in your effluent, you should carry out an impact assessment using the methodology set in the guidance above.

You should also provide an assessment on the likelihood of pesticide residues being present in your effluent eg from fruit and vegetable processing. Confirm whether you currently carry out monitoring for these substances and provide the data if available.

You should also consider ancillary discharges such as boiler blowdown in your response. Although the FDM BAT-AELs do not apply to this type of discharge we do still want to know these discharges and in particular, any monitoring data that is currently available or detail where they are directed.

Detail should be provided if your effluent is discharged to soakaway or groundwater. Please contact us to discuss this in nore detail.

ii. Indirect emissions

Where available, you should provide effluent quality data including daily loading rates (kg/day) for TN, TP, TSS, COD and NH3. The data you provide should be recent and representative. Typically this would be for a minimum of 12 months where the effluent composition is consistent with frequent monitoring or 3 years where the effluent composition is variable for example with seasonal/campaign production or where monitoring is infrequent.

You should assess whether hazardous chemicals or elements may be present in your effluent. If so, you should carry out an impact assessment.

You should also provide an assessment on the likelihood of pesticide residues or other treatment chemicals such as sprout suppressants being present in your effluent. This is particularly relevant to fruit and vegetable processing sectors. Confirm whether you currently carry out monitoring for these substances and provide the data if available.

Section 6: Emissions to Air

We will need evidence of your ability to comply with relevant BAT-AELs for emissions to air.

We will also want information about any emissions to air from your process which may contain polluting substances for which there is no BAT-AEL.

Note: you are not expected to carry out monitoring solely for the purpose of completing your BAT gap analysis response tool.

Section 7: Other than normal operating conditions (OTNOC)

BAT-AELs for emissions to air and water relate to performance under normal operating conditions (NOC) and it is possible that different performance levels may result during other than normal operating conditions (OTNOC)

Any OTNOC events should be addressed within the EMS by application of clear operating procedures. This may include:

- appropriate design of the systems considered relevant in causing OTNOC that may have an impact on emissions to air, water and/or soil;
- set-up and implementation of a specific preventive maintenance plan for these relevant systems;
- techniques to minimise the duration and frequency of the OTNOC event;
- techniques to minimise emissions during the OTNOC event;
- review and recording of emissions caused by OTNOC and associated circumstances and implementation of corrective actions if necessary;
- periodic assessment of the overall emissions during OTNOC (e.g. frequency of events, duration, emissions quantification/estimation) and implementation of corrective actions if necessary.

You should define any relevant OTNOC events for your installation, including frequency and duration, and explain how they are addressed within your EMS.

You should quantify emissions to air and/or water during an OTNOC event and provide an impact assessment to demonstrate that there are no unacceptable short term impacts.

Section 8: Site Condition Baseline Reporting

IED requires an assessment to be carried out for all hazardous substances used, produced or released within the installation. Where a risk to soil and groundwater is identified baseline conditions must be established and soil and groundwater monitoring carried out during the life of the permit.

Hazardous substances are those as detailed in SEPA IED-TG-02 available on the SEPA website.

If you haven't already done so (eg at the time of original permit application), you must complete a Stage 1 – 3 assessment pollution potential assessment for hazardous substances as detailed in SEPA IED-TG-02 which in summary is a risk assessment; as follows:

Stage 1 – identify all substances that are currently used at the installation (raw materials, products, by-products, intermediaries, wastes, auxiliaries).

Stage 2 – Identify which of the substances in Stage 1 are relevant hazardous substances (RHS).

Stage 3 – Assessment of Site Specific Pollution Risk

Section 9: Applicability of the Waste Treatment BRef

In addition to implementing the BAT conclusions of the FDM BRef, we will also implement BAT conclusions from any relevant BRef published prior to 4 December 2019.

In your response to the information notice, you should consider whether any other BRefs are relevant for your installation. The Waste Treatment BRef is the most likely to be relevant to food and drink sites. You should refer to the WT BAT conclusions, available at Waste Treatment Best Available Techniques (BAT) | Scottish Environment Protection Agency (SEPA), where you use anaerobic digestion (AD) in your FDM installation for example in effluent treatment or for treatment of solid residues.

In particular you should provide an assessment of your compliance with the following BAT conclusions which are directly relevant to AD:

BAT 15 and BAT 16 for flaring of systems.

BAT 21 emissions from accidents and incidents.

BAT 38 for monitoring of key process variables.

Section 10: Containment

In your response you should provide details of secondary and tertiary containment arrangements for above-ground effluent storage and treatment tanks, irrespective of whether the discharge is to sewer or watercourse, along with any other measures installed to reduce the risk of fugitive emissions from these tanks. You should demonstrate that provision is in accordance with guidance in the CIRIA C736 report “Containment systems for the prevention of pollution”. We will review containment provision and set an improvement condition if measures are inadequate.

For information on accessing this document in an alternative format or language please contact SEPA by emailing to equalities@sepa.org.uk

If you are a user of British Sign Language (BSL) the Contact Scotland BSL service gives you access to an online interpreter enabling you to communicate with us using sign language.

http://contactscotland-bsl.org/

www.sepa.org.uk