



Department  
for Environment  
Food & Rural Affairs

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## **Process Guidance Note 6/19(13)**

### **Statutory guidance for fish meal and fish oil processes and installations**

**December 2013**



Llywodraeth Cymru  
Welsh Government



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# Revision of the guidance

The electronic version of this publication is updated from time to time with new or amended guidance. **Table 0.1** is an index to the latest changes (minor amendments are generally not listed).

Table 0.1 - Revision of the guidance		

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# 1. Introduction

## Legal basis

- 1.1 This note applies to the whole of the UK. It is issued by the Secretary of State, the Welsh Government, the Scottish Government and the Department of the Environment in Northern Ireland (DoE NI) to give guidance on the conditions appropriate for the control of emissions into the air from fish meal and fish oil processes and installations. It is published only in electronic form and can be found on the [Defra](#) website. It supersedes PG6/19(05) and NIPG 6/19(05).
- 1.2 This guidance document is compliant with the [Code of Practice on Guidance on Regulation](#) page 6 of which contains the "golden rules of good guidance". If you feel this guidance breaches the code or you notice any inaccuracies within the guidance, please [contact us](#).
- 1.3 This is one of a series of statutory notes giving guidance on the Best Available Techniques (BAT). The notes are all aimed at providing a strong framework for consistent and transparent regulation of installations regulated under the statutory Local Air Pollution Prevention and Control (LAPPC) regime in [England and Wales](#), [Scotland](#) and [Northern Ireland](#). The note will be treated as one of the material considerations when determining any appeals against a decision made under this legislation. Further guidance on the meaning of BAT can be found for [England and Wales](#), [Scotland](#), and [Northern Ireland](#).
- 1.4 In general terms, what are BAT for one installation in a sector are likely to be BAT for a comparable installation. Consistency is important where circumstances are the same. However, in each case it is, in practice, for regulators (subject to appeal) to decide what are BAT for each individual installation, taking into account variable factors such as the configuration, size and other individual characteristics of the installation, as well as the locality (e.g. proximity to particularly sensitive receptors).
- 1.5 The note also, where appropriate, gives details of any mandatory requirements affecting air emissions which are in force at the time of publication, such as those contained in Regulations or in Directions from the Government. In the case of this note, at the time of publication there were no such mandatory requirements.

- 1.6 Most of the activities covered by this note will have essentially the same characteristics and it is expected that the model permit and application form in **Appendices 1 and 2** will normally be used in order to simplify for business the process of applying for a permit and to simplify for regulators the process of issuing a permit. (See also the relevant LAPPC charging scheme for reduced application and subsistence charges for simplified permits).

If there are good reasons to consider diverging from normal use of the model permit, the starting point for drafting any additional conditions should be the arrowed bullets in the main body of this note.

## Who is the guidance for?

- 1.7 This guidance is for:

### Regulators

- local authorities in England and Wales, who must have regard to the guidance when determining applications for permits and reviewing extant permits;
- the Scottish Environment Protection Agency (SEPA) in Scotland, and district councils or the Northern Ireland Environment Agency (NIEA), in Northern Ireland;

**Operators** who are best advised also to have regard to it when making applications and in the subsequent operation of their installation;

**Members of the public** who may be interested to know what the Government considers, in accordance with the legislation, amounts to appropriate conditions for controlling air emissions for the generality of installations in this particular industry sector.

## Updating the guidance

- 1.8 The guidance is based on the state of knowledge and understanding, at the time of writing, of what constitute BAT for this sector. The note may be amended from time to time to keep up with developments in BAT, including improvements in techniques, changes to the economic parameters, and new understanding of environmental impacts and risks. The updated version will replace the previous version on the [Defra](#) website and will include an index to the amendments.



- 1.9 Reasonable steps will be taken to keep the guidance up-to-date to ensure that those who need to know about changes to the guidance are informed of any published revisions. However, because there can be rapid changes to matters referred to in the guidance – for example to legislation – it should not be assumed that the most recent version of this note reflects the very latest legal requirements; these requirements apply.

## **Consultation**

- 1.10 This note has been produced in consultation with relevant trade bodies, representatives of regulators including members of the Industrial Pollution Liaison Committee and other potentially-interested organisations.

## **Policy and procedures**

- 1.11 General guidance explaining LAPPC and setting out the policy and procedures is contained in separate documents for [England and Wales](#), [Scotland](#) and [Northern Ireland](#).

## 2. Timetable for compliance and reviews

### Existing processes or activities

- 2.1 This note contains all the provisions from previous editions which have not been removed. Some have been amended. For installations in operation at the date this note is published, the regulator should have already issued or varied the permit having regard to the previous editions. If they have not done so, this should now be done.
- 2.2 The new provisions of this note and the dates by which compliance with these provisions is expected are listed in **Table 2.1**, together with the paragraph number where the provision is to be found. Compliance with the new provisions should normally be achieved by the dates shown. Permits should be varied as necessary, having regard to the changes and the timetable.

**Table 2.1 - Compliance timetable**

<b>Guidance</b>	<b>Relevant paragraph/row in this note</b>	<b>Compliance date</b>
A simple permit and application form have been added in <b>Appendix 1</b> and <b>Appendix 2</b> .		
There are no new provisions in this note likely of themselves to result in a need to vary existing permit conditions. For a full list of changes made by this note, excluding very minor ones, see <b>Table 6.1</b> . See <b>paragraph 2.4</b> .		

- 2.3 Replacement plant should normally be designed to meet the appropriate standards specified for new installations/activities.
- 2.4 Where provisions in the preceding guidance note have been deleted or relaxed, permits should be varied as necessary as soon as reasonably practicable. It is expected that local authorities will aim to vary existing permits so as to convert them into the model permit format in **Appendix 1** within 12 months of the publication of this note.
- 2.5 For new activities, the permit should have regard to the full standards of this guidance from the first day of operation.
- 2.6 For substantially changed activities, the permit should normally have regard to the full standards of this guidance with respect to the parts of the activity that have been substantially changed and any part of the activity affected by the change, from the first day of operation.

## Permit reviews

- 2.7 Under LAPPC, the legislation requires permits to be reviewed periodically but does not specify a frequency. It is considered for this sector that a frequency of once every eight years ought normally to be sufficient for the purposes of the appropriate Regulations. Further guidance on permit reviews is contained in the appropriate Guidance Manual for [England and Wales](#) chapter 26, [Scotland, Practical guide](#) section 10, Northern Ireland [Part B Guidance](#) page 9, Northern Ireland [Part C Guidance](#) chapter 17. Regulators should use any opportunities to determine the variations to permits necessitated by paragraph 2.2 above in conjunction with these reviews.
- 2.8 Conditions should also be reviewed where complaint is attributable to the operation of the process and is, in the opinion of the regulator, justified.

## 3. Activity description

### Regulations

- 3.1 This note applies to LAPPC installations for fish meal and fish oil processes and installations. The activities for regulation are listed in **Table 3.1**.

Table 3.1 - Regulations listing activities			
LAPPC Activity	England and Wales	Scotland	Northern Ireland
	EPR Schedule 1 reference	PPC Schedule 1 reference	PPC Schedule 1 reference
Part B	<a href="#">Section 6.8 Part B</a>	<a href="#">Section 6.8, Part B</a>	n/a
Part C	n/a	n/a	<a href="#">Section 6.8 Part C</a>

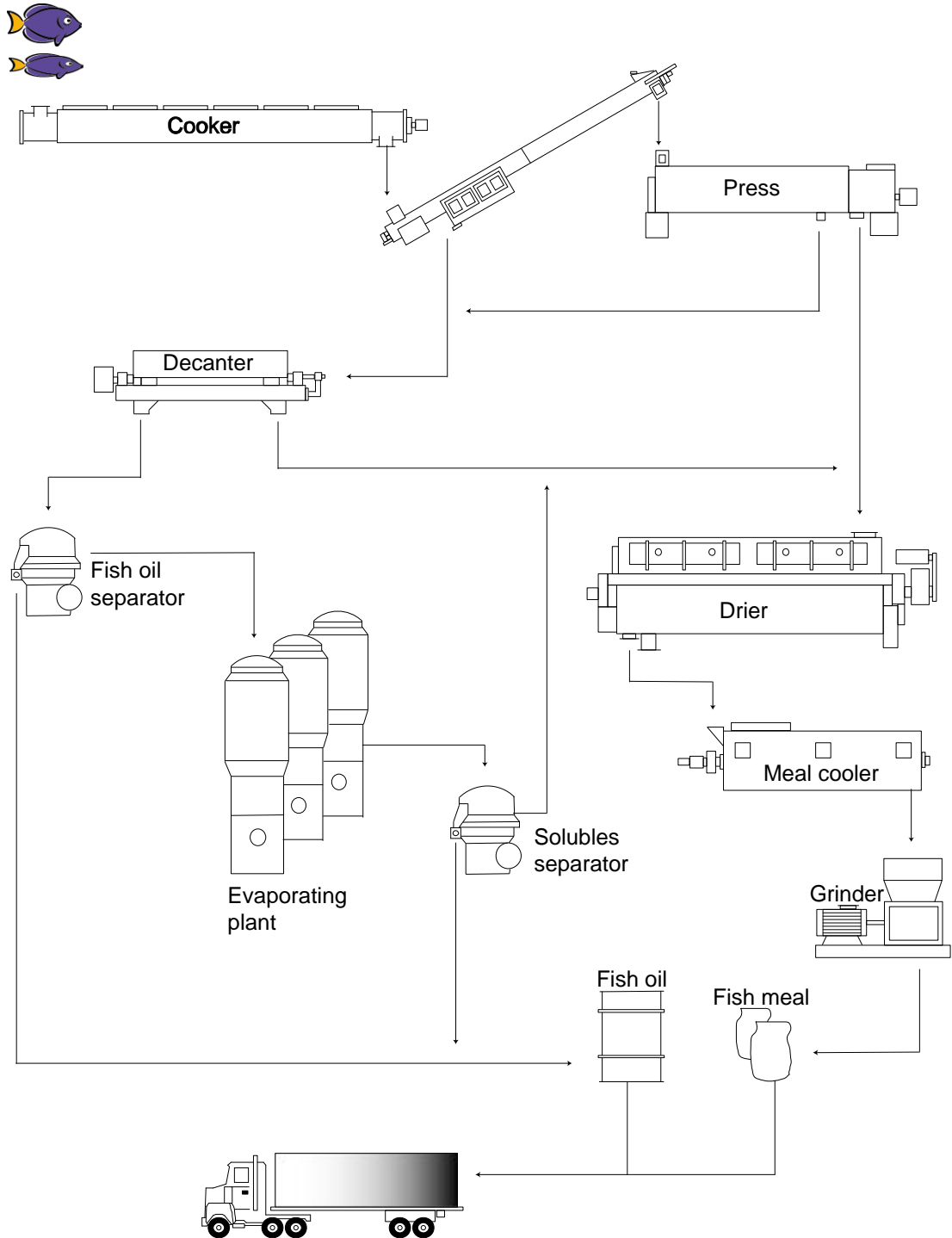
The links are to the original version of the Regulations. A consolidated version is not available on [www.legislation.gov.uk](http://www.legislation.gov.uk)

For England and Wales, an [unofficial consolidated version](#) is available but read the first page of that document in order to understand its status and content.

- 3.2 This note refers to fish meal and fish oil processes. There is separate guidance for animal rendering processes (PG6/1 and SG8), pet food manufacturing (PG6/24), animal feed compounding processes and edible oil refining (PG6/26). This note is also applicable to the storage and handling of fish meal.
- 3.3 In the context of this note, "process" or "activity" comprises the whole process from receipt of raw materials via production of intermediates to dispatch of finished products, including the treating, handling and storage of all materials and wastes relating to the process.
- 3.4 The fish meal process involves two main sources of fish material as follows:
- offcuts, trimmings and offal from fish processing facilities;
  - industrial whole fish caught specifically for fish meal processing (these may be pelagic fish or white fish).
- 3.5 The process involves the heating, pressing, separation and drying of the fish to extract oil and dry the residual meal. The operation typically yields 5% of wet weight in oil and 20% of wet weight in meal. The meal is used primarily for animal feed (aquaculture, chicken and pigs) whilst the oil may be used for direct animal feed, human consumption or in the manufacture of hardened oils.

- 3.6 The attached flow sheet in **Figure 1.1** outlines a typical process. The raw materials arrive (for the whole fish this may be by ship) and are deposited into silos for storage until processing. It is usual for samples to be taken of the incoming raw materials to determine the quality of the material. The commonly applied characteristic for rating 'freshness' of material is the total volatile nitrogen (TVN). The TVN increases as fish material begins to degrade and this degradation is accompanied by increasing emissions of other pollutants (such as amines, ammonia, volatile organic sulphur compounds and hydrogen sulphide). If the raw material is processed whilst fresh, emissions will be reduced.
- 3.7 The silos generally are sized to allow storage capacity for one day and the aim is to process all material within 24-hours of arrival at the site. Where materials arrive which are of lower quality or where processing may be delayed, it is possible to reduce the decomposition rate of the material by reduced storage temperature or addition of chemicals (such as acetic acid) to help preserve the fish. The process is energy intensive and involves the use of a considerable quantity of water (typically seawater) for cleaning, cooling of air and products and steam production. The material is then conveyed to an indirect steam cooker where the fish materials are heated to around 90°C resulting in coagulation of protein. The cooking process assists in the separation of oil from the fish.
- 3.8 The material from the cooker is discharged to a screw press to produce a liquid phase (press water) and a press cake (solid phase). The liquid may be further processed in a centrifuge or decanter to separate water from the solid phase (grax), press water is always centrifuged to produce fish oil and another liquid phase with solids (stick water).
- 3.9 The stick water is evaporated (typically in a liquid phase evaporator and/or a waste heat evaporator which uses drying exhaust gases for the heat source) to produce a liquid known as the solubles which is around 40% dry matter which is often further separated to remove fish oil. The oil is generally stored in bulk tanks.
- 3.10 The press cake, grax and solubles are mixed and then dried in the main dryer at 80°C - 95°C. The dryer is typically heated by the use of indirect steam. Fish meal (which is the press cake, decanter sludge and solubles) is cooled (often a 2-stage cooling process) and then size reduced in a grinder before either storage, packaging or bulk dispatch.

Figure 1.1: A Typical process flow diagram of a fish meal production



## 4. Emission limits, monitoring and other provisions

- 4.1 Emissions of the substances listed **Table 4.1** should be controlled.
- 4.2 The emission limit values and provisions described in this section are achievable using the best available techniques described in **Section 5**. Monitoring of emissions should be carried out according to the method specified in this section or by an equivalent method agreed by the regulator. Where reference is made to a British, European, or International standard (BS, CEN or ISO) in this section, the standards referred to are correct at the date of publication. (Users of this note should bear in mind that the standards are periodically amended, updated or replaced.) The latest information regarding the monitoring standards applicable can be found at the [Source Testing Association website](#). Further information on monitoring can be found in Environment Agency publications, [M1 and M2](#).
- 4.3 All activities should comply with the emission limits and provisions with regard to releases in **Table 4.1**.

The reference conditions for limits in **Section 4** are: 273.1K, 101.3kPa, without correction for water vapour content, unless stated otherwise.

**Table 4.1** should be considered in conjunction with the monitoring paragraphs found later in this section.

**Table 4.1 - Emission limits, monitoring and other provisions**

Row	Substance	Source	Emission limits/provisions	Type of monitoring	Monitoring frequency
1	Odour	Odour emissions from contained and fugitive sources	Free from offensive odour at any location at or beyond the site boundary (subject to the provisions of paragraph 4.2)	Determination by process assessment	Daily
2	Particulate matter	Emissions from product coolers and grinders used for meal processing (except where the final discharge of the arrestment plant is within buildings)	20 mg/m <sup>3</sup>	Indicative monitoring plus annual extractive test to BS ISO 9096: 2003	Continuous



#### 4.4 The following should be applied in relation to odour:

Permits should include specific technical conditions in accordance with this guidance to prevent or generally reduce the escape of offensive odour across the site boundary. As discussed below, whether the emphasis should be on prevention or on reduction depends on the type of process (and thus the type of odour) under consideration.

Subject to what is said below, in the case of fish meal/oil processing - which gives rise to odours that are particularly offensive - conditions should be imposed preventing (rather than just reducing) the escape of offensive odour beyond the site boundary. In these cases the specific technical conditions imposed to prevent such escapes should be supplemented, as a back-up measure, with a general condition (an odour boundary condition) requiring emissions to be free from offensive odour outside the site boundary.

When imposing an odour boundary condition local authorities should take account of the fact that there may be circumstances where offensively odorous emissions are released for reasons which are beyond the direct control of the installation operator, for example, where there is a total breakdown of arrestment plant through no fault of the operator. Allowance should be made for such occurrences by providing in the permit that it will not be a breach of the condition in a particular case if the operator can show that he or she took all reasonable steps and exercised all due diligence to prevent the release of offensive odour.

Local authorities will need to investigate incidents where offensive odour escapes across the site boundary to establish whether there has been a breach of any odour boundary condition. The Secretary of State would expect that if a fish meal/oil process is properly managed, with the operator taking all reasonable steps and exercising all due diligence, there should be very few escapes of offensive odour beyond the site boundary. Certainly he would expect local authorities to investigate very carefully whether an operator was taking all reasonable steps and exercising all due diligence if there were more than two such occurrences in any 12-month period. In the event of any occurrence the operator should immediately take remedial action to prevent any further escape of offensive odour and he would expect this to be effective within at most two hours. Again, the Secretary of State would expect local authorities to investigate with particular care the management of a fish meal/oil processing activity where remedial action had not been effective within 2 hours.)

There may be cases of fish meal/oil processing where the escape of offensive odours beyond the site boundary would be unlikely to cause any harm (for example, because the area potentially affected by the release of any offensive odour is uninhabited countryside). In such cases it would not be appropriate to require an operator to ensure that no such odours cross the site boundary and no odour boundary condition should be imposed.

In all cases, the assessment of offensiveness should be as perceived by the local authority regulator and should take into account the nature of the odour.

## Odours - principles of BAT in this note

4.5 The approach promulgated in this note to reflect BAT includes:

- an emission standard for odour and a performance standard for odour arrestment plant;
- containment of odours;
- daily inspections of odour arrestment plant;
- indicative tests for odour arrestment plant in the case of offensive odours being detected or complaints being received;
- the preparation of an odour response plan which will include an assessment of all emission sources, control methods, odour impacts, abnormal operations and measures to mitigate effects in the case of abnormal conditions.

### Existing odour arrestment plant

4.6 In the case of existing processes where odour arrestment plant has been installed to meet the requirements of the previous guidance notes, the regulator should consider permitting the use of the existing plant until the end of its reasonable operational life provided that emissions from the plant meet the odour provisions within this note. The regulator should still require that the available plant is optimised for odour removal and should establish an odour arrestment efficiency based upon operating data

- In determining the 'reasonable operational life' of odour arrestment plant, the operator would be expected to continue to maintain and repair the plant to prolong its operational life. The regulator should consider the physical condition of the arrestment plant (potential for leaks, unavailability of spares, increased frequency of malfunction or failure) and the odour arrestment efficiency (the arrestment plant no longer capable of achieving the interim odour arrestment efficiency determined as above) as key indicators of plant reaching the end of its operational life.

## Indicative tests for odour arrestment plant

4.7 If offensive odours are detected beyond the process boundary or complaints received but there is no obvious cause of odour release it may be necessary to check the odour arrestment plant performance. Depending upon the type of arrestment plant used, the following are examples of suitable indicative testing:

- In the case of thermal oxidisers or combustion equipment, the combustion efficiency is a good indication of performance.
- In the case of biofilters or scrubbers, emissions may be tested for ammonia or amines/amides or mercaptans/hydrogen sulphide.
- The table below provides indicative guide values which if exceeded indicate that the odour destruction efficiency of the arrestment plant is reduced and the plant should be further investigated to identify reasons for the reduced performance.

Table 4.2 - Indicative Guide Values		
Row	Odour indicators	Indicative guide values
1	Ammonia	1 ppm v/v
2	Amines and amides	1 ppm v/v
3	Organic and inorganic sulphides including mercaptans and hydrogen sulphide (as total sulphur)	1 ppm v/v
4	Emissions of carbon monoxide from thermal oxidisers or combustion plant.	100 mg/m <sup>3</sup> expressed as a 30-minute mean at 273K and 101.3kPa.

## Odorous emissions - monitoring installation performance

4.8 The operator should monitor the performance of the installation to ensure that emissions which may result in offensive odours beyond the boundary of the site are not released. This assessment should include inspections of the process, buildings and plant to check that emissions are being contained and treated to meet the standards of this note.

In addition to the continuous indicative monitoring outlined in paragraph 4.9, the odour arrestment plant should be inspected at least once a day to verify correct operation and to identify any malfunctions. Depending upon the type of arrestment plant used, this inspection should include:

- Identification of any leaks in air handling equipment and ductwork
- In the case of scrubbing equipment, thermal oxidisers and other combustion equipment, the inspection should include verification of the operation of the continuous monitoring equipment, any blockages and also identification of any leaks of either odorous air or liquid.
- In the case of biofilters, the surface should be inspected to identify any cracking of the surface or voids in the bed, leaks around the edge of the filter or air handling equipment, review of the moisture content (considering both flooding and drying out) and looking for signs of compaction or uneven flow.
- In the specific case of soil biofilters, the growth of plants and weeds should be inspected as any excessive flow or odour escape is often indicated by scorching of the earth or plant growth dying off.

## Monitoring, investigating and reporting

4.9 The operator should monitor emissions, make tests and inspections of the activity. The need for and scope of testing, (including the frequency and time of sampling), will depend on local circumstances.

- The operator should keep records of inspections, tests and monitoring, including all non-continuous monitoring, inspections and visual assessments. Records should be:
  - kept on site;
  - kept by the operator for at least two years; **and**
  - made available for the regulator to examine.
- If any records are kept off-site they should be made available for inspection within one working week of any request by the regulator.

## Information required by the regulator

4.10 The regulator needs to be informed of monitoring to be carried out and the results. The results should include process conditions at the time of monitoring.

- A summary of the data from continuous monitoring of the performance of the odour arrestment plant and the particulate matter arrestment plant should be submitted to the regulator at least every 6 months, identifying the times, dates and duration of alarm events.

- The operator should notify the regulator at least 7 days before any periodic monitoring exercise to determine compliance with emission limit values. The operator should state the provisional time and date of monitoring, pollutants to be tested and the methods to be used.
- The results of non-continuous emission testing should be forwarded to the regulator within 8 weeks of completion of the sampling.
- Adverse results from any monitoring activity (both continuous and non-continuous) should be investigated by the operator as soon as the monitoring data has been obtained. The operator should:
  - identify the cause and take corrective action;
  - clearly record as much detail as possible regarding the cause and extent of the problem, and the remedial action taken;
  - re-test to demonstrate compliance as soon as possible; **and** inform the regulator of the steps taken and the re-test results.

## Visible emissions

- 4.11 The aim should be to prevent any visible airborne emission from any part of the process. This aim includes all sites regardless of location. Monitoring to identify the origin of a visible emission should be undertaken and a variety of indicative techniques are available.
- where ambient monitoring is carried out it may also be appropriate for the regulator to specify recording of wind direction and strength;
  - where combustion units are in use for dryers then the combustion process should be controlled and equipment maintained as appropriate.
- 4.12 Emissions from combustion processes in normal operation should be free from visible smoke. During start up and shut down the emissions should not exceed the equivalent of Ringelmann Shade 1 as described in British Standard BS 2742.
- All other releases to air, other than condensed water vapour, should be free from persistent visible emissions.
  - All emissions to air should be free from droplets.

Where there are problems that, in the opinion of the regulator, may be attributable to the installation, such as local complaints of visual emissions or where dust from the installation is being detected beyond the site boundary, the operator should investigate in order to find out which part of their operation(s) is the cause.

If this inspection does not lead to correction of the problem then the operator should inform the regulator who will determine whether ambient air monitoring is necessary. Ambient monitoring may either be by a British Standard method or by a method agreed with the regulator.

Whilst problems are ongoing, a visual check should also be made at least once per day/shift, by the operator, when an installation is being operated. The time, location and result of these checks, along with weather conditions such as indicative wind direction and strength, should be recorded. Once the source of the emission is known, corrective action should be taken without delay and where appropriate the regulator may want to vary the permit in order to add a condition requiring the particular measure(s) to be undertaken.

## Emissions of odour

- 4.13 The overall aim should be that all emissions are free from offensive odour outside the site boundary, as perceived by the regulator. However, the location of the installation will influence the assessment of the potential for odour impact as local meteorological conditions may lead to poor dispersion conditions. Where the site has a low odour impact due to its remoteness from sensitive receptors, the escape of offensive odour beyond the installation would be unlikely to cause harm.
- 4.14 Where there are problems that, in the opinion of the regulator, may be attributable to the installation, such as local complaints of odour or where odour from the installation is being detected beyond the site boundary, the operator should investigate in order to find out which part of their operation(s) is the cause.
- 4.15 Whilst problems are ongoing, a boundary check should also be made at least once per day/shift, by the operator, when an installation is being operated. The time, location and result of these checks, along with weather conditions such as indicative wind direction and strength, should be recorded. Once the source of the emission is known, corrective action should be taken without delay and where appropriate the regulator may want to vary the permit in order to add a condition requiring the particular measure(s) to be undertaken.
- 4.16 Where it is installed any odour arrestment equipment should be inspected at least once a day to verify correct operation and to identify any malfunctions. Depending upon the type of any arrestment plant used this inspection should include:
- identification of any leaks in air handling equipment and ductwork
  - in the case of scrubbing equipment, thermal oxidisers and other combustion equipment, the inspection should include verification of the operation of any continuous monitoring equipment, the presence of any blockages and also identification of any leaks of either odorous air or liquid.

- in the case of biofilters, the surface should be inspected to identify any cracking of the surface or voids in the bed, leaks around the edge of the filter or air handling equipment, review of the moisture content (considering both flooding and drying out) and looking for signs of compaction or uneven flow.
- In the specific case of soil biofilters, the growth of plants and weeds should be inspected as any excessive flow or odour escape is often indicated by scorching of the earth or plant growth dying off.

## Abnormal events

4.17 The operator should respond to problems which may have an adverse effect on emissions to air.

- In the case of abnormal emissions, malfunction or breakdown leading to abnormal emissions the operator should:
  - investigate and undertake remedial action immediately;
  - adjust the process or activity to minimise those emissions; **and**
  - promptly record the events and actions taken.
- The regulator should be informed without delay, whether or not there is related monitoring showing an adverse result:
  - if there is an emission that is likely to have an effect on the local community; **or**
  - in the event of the failure of key arrestment plant, for example, bag filtration plant or scrubber units.
- The operator should provide a list of key arrestment plant and should have a written procedure for dealing with its failure, in order to minimise any adverse effects.

## Start up and shutdown

4.18 Higher emissions may occur during start-up and shut-down of a process. These emissions can be reduced, by minimising, where possible, the number of start-ups and shut-downs and having adequate procedures in place for start-up, shut-down and emergency shut-downs.

- The number of start-ups and shut downs should be kept to the minimum that is reasonably practicable.
- All appropriate precautions must be taken to minimise emissions during start-up and shutdown.

## Continuous monitoring

4.19 Continuous monitoring can be either “quantitative” or “indicative”. With quantitative monitoring the discharge of the pollutant(s) of concern is measured and recorded numerically. For pollution control this measurement is normally expressed in milligrams per cubic metre of air, ( $\text{mg}/\text{m}^3$ ). Where discharge of the pollutant concerned is controlled by measuring an alternative parameter, (the “surrogate” measurement), this surrogate is also expressed numerically.

Continuous indicative monitoring is where a permanent device is fitted, for example, to detect leaks in a bag filter, but the output, whether expressed numerically or not, does not show the true value of the discharge. When connected to a continuous recorder it will show that emissions are gradually (or rapidly) increasing, and therefore maintenance is required. Alternatively it can trigger an alarm when there is a sudden increase in emissions, such as when arrestment plant has failed.

4.20 Where continuous indicative monitoring has been specified, the information provided should be used as a management tool. Where used, the monitor should be set up to provide a baseline output when the plant is known to be operating under the best possible conditions and emissions are complying with the requirements of the permit. Where used to trigger alarms, the instrument manufacturer should be able to set an output level which corresponds to around 75% of the emission limit. Thus the alarms are activated in response to this significant increase in pollutant loading above the baseline, so that warning of the changed state is given before an unacceptable emission occurs. The regulator may wish to agree the alarm trigger level.

4.21 Where continuous monitoring is required, it should be carried out as follows:

- All continuous monitoring readings should be on display to appropriately trained operating staff.
- Instruments should be fitted with audible and visual alarms, situated appropriately to warn the operator of arrestment plant failure or malfunction.
- The activation of alarms should be automatically recorded.
- All continuous monitors should be operated, maintained and calibrated (or referenced, in the case of indicative monitors) in accordance with the manufacturers’ instructions, which should be made available for inspection by the regulator.
- The relevant maintenance and calibration (or referencing, in the case of indicative monitors) should be recorded.



- Emission concentrations may be reported as zero when the plant is off and there is no flow from the stack. If required a competent person should confirm that zero is more appropriate than the measured stack concentration if there is no flow.
- Any continuous monitor used should provide reliable data >95% of the operating time, (i.e. availability >95%). A manual or automatic procedure should be in place to detect instrument malfunction and to monitor instrument availability.

4.22 Whilst there are no reliable continuous emission monitoring options for odours, where thermal oxidation or combustion equipment is used for odour control, continuous monitoring of carbon monoxide is an option. Where continuous monitoring is required it should be carried out as follows:

- The activation of alarms should be automatically recorded.
- All continuous monitors should be operated, maintained and calibrated (or referenced) in accordance with the manufacturers' instructions, which should be made available for inspection by the regulator. The relevant maintenance and calibration (or referencing) should be recorded.
- All continuous monitoring readings should be on display to appropriately trained staff.
- Instruments should be fitted with audible and visual alarms, situated appropriately to warn the operator of abatement plant failure or malfunction.
- Purchasers of new or replacement monitoring equipment should specify the requirement for less than 5% downtime over any 3-month period, on ordering.

## Continuous monitoring - odour arrestment plant

4.23 Where odour arrestment plant is used, continuous monitoring is required, depending upon the type of plant used, as follows:

- In the case of thermal oxidisers or combustion plant, emissions should be continuously monitored and continuously recorded for carbon monoxide, or the operating temperature may be used as a surrogate measurement. The monitor should be fitted with an audible and visual alarm to activate if the operating temperature falls below the agreed operating level.
- In the case of scrubbing equipment, pH or Redox of the liquor and liquor flow should be continuously monitored. All liquid scrubbers should be fitted with an audible and visual alarm to activate if the liquor circulation fails or if the pH or Redox falls outside the operating range established during commissioning testing.

- If a bioscrubber is used, in addition to flow and pH or Redox monitoring, the pressure drop across the scrubber packing should be continuously monitored. The monitor should be fitted with an audible and visual alarm to activate if the pressure drop falls outside the operating range established during commissioning testing.
- If a biofilter is used the pressure drop across the biofilter should be continuously monitored. This can be achieved by measuring the delivery pressure on the main fan. The monitor should be fitted with an audible and visual alarm to activate if the pressure drop falls outside the operating range established during commissioning testing. If the process has more than one fan for different process areas and these fans are not operated when the areas are not in use (for example during the winter period when production levels are low) the value used for alarming may need to be variable depending upon the volume of air being treated and process conditions. In this case, where the alarm level is varied, the set point of the alarm should be recorded.
- The operating levels of the pH, Redox and pressure drop where monitored should be recorded daily.
- The cooling liquid flow of all direct or indirect condensers used for pre-treatment of emissions (including spray tower scrubbers) should be continuously monitored.

## **Continuous monitoring - particulate arrestment plant**

4.24 Continuous indicative monitoring can be used as a management tool. In conjunction with continuous recording it identifies any trends in emissions; for example, that emissions are gradually increasing, which may indicate a need for maintenance. It can also be used with or without continuous recording to trigger an alarm when there is a sudden increase in emissions; for example if arrestment plant fails. For a given concentration of particulate, the output level varies with the instrument. It should be noted that not all monitors provide a linear response to an increase in particulate matter. The monitor should be set up to provide a baseline output when the plant is known to be operating under the best possible conditions; i.e. such that emissions are fully compliant with the authorisation/permit. The instrument manufacturer should be able to set an output level which corresponds to around 75% of the emission limit, to trigger alarms. Thus the alarms are activated in response to this significant increase in particulate loading above the baseline, so that warning of the changed state is given before an unacceptable emission occurs. The regulator may wish to agree the alarm trigger level.

- Emissions from particulate arrestment plant (except where the final discharge of the arrestment plant is within buildings) where the exhaust airflow exceeds 100 m<sup>3</sup>/min should be continuously indicatively monitored for particulate matter. (By continuous indicative monitoring is meant monitoring to indicate the relative performance and/or process variation. Such monitoring does not provide data to demonstrate compliance with a numerical emission limit.) The indicative monitor should be fitted with a visual and audible alarm which activates at a reference level agreed with the regulator.
- The above continuous monitoring requirement does not apply to wet emissions, for example from scrubbers, and in these circumstance emissions should be tested for particulate matter at least once a year.
- Where the particulate matter arrestment plant includes a rotary valve, the rotation of the valve should be continuously monitored.

## Calibration and compliance monitoring

4.25 Calibration and compliance monitoring should meet the following provisions as appropriate depending upon the type of arrestment plant used:

- There should be no offensive odour across the process boundary, as perceived by the regulator.
- Compliance monitoring can be carried out either by use of a continuous emissions monitor (CEM), or by a specific extractive test carried out at a frequency agreed with the regulator.

4.26 Where a CEM is used for compliance purposes it must be periodically checked, (calibrated), to ensure the readings being reported are correct. This calibration is normally done by carrying out a parallel stand-alone extractive test and comparing the results with those provided by the CEM.

4.27 Exhaust flow rates should be consistent with efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.

- The introduction of dilution air to achieve emission concentration limits should not be permitted.

Dilution air may be added for waste gas cooling or improved dispersion where this is shown to be necessary because of the operational requirements of the plant, but this additional air should be discounted when determining the mass concentration of the pollutant in the waste gases.

## Varying of monitoring frequency

- 4.28 Where non-continuous quantitative monitoring is required, the frequency may be varied. Where there is consistent compliance with emission limits, regulators may consider reducing the frequency. However, any significant process changes that might have affected the monitored emission should be taken into account in making the decision.
- 4.29 When determining “consistent compliance” the following are cases which might not qualify for a reduction in monitoring:
- a) variability of results: cases where monitoring results vary widely and include results in the range 30-45mg/m<sup>3</sup> (when the emission limit is 50mg/m<sup>3</sup>).
  - b) the margin between the results and the emission limit: cases where results over a period are 45mg/m<sup>3</sup> or more (when the emission limit is 50mg/m<sup>3</sup>).

Consistent compliance should be demonstrated using the results from at least;

- three or more consecutive annual monitoring campaigns; **or**
- two or more consecutive annual monitoring campaigns supported by continuous monitoring.

Where a new or substantially changed process is being commissioned, or where emission levels are near to or approach the emission concentration limits, regulators should consider increasing the frequency of testing.

- 4.30 A reduction in monitoring frequency should not be permitted where continuous quantitative or indicative monitoring is required. These types of monitoring are needed to demonstrate at all times when the plant is operating, that either the emission limits are being complied with or that the abatement equipment is functioning correctly.

## Monitoring of unabated releases

- 4.31 Where emission limit values are consistently met without the use of abatement equipment, the monitoring requirement for those pollutants should be dispensed with subject to the “Varying of monitoring frequency” paragraphs above.

Where monitoring is not in accordance with the main procedural requirements of the relevant standard, deviations should be reported as well as an estimation of any error invoked.

## Representative sampling

- 4.32 Whether sampling on a continuous or non-continuous basis, care is needed in the design and location of sampling systems, in order to obtain representative samples for all release points.
- Sampling points on new plant should be designed to comply with the British or equivalent standards, (see paragraph 4.2).
  - The operator should ensure that relevant stacks or ducts are fitted with facilities for sampling which allow compliance with the sampling standards.

## Emissions from silos

- 4.33 Where silos are used for meal storage the following measures relating to arrestment plant on silos and other silo management techniques are only applicable where the silo vents to the external environment or where silo emissions may escape from inside a building into the external environment.
- All new or replacement silo filtration plant should be designed to operate to an emission standard of less than 10 mg/m<sup>3</sup> for particulate matter.
- 4.34 Silo systems require appropriate inspections and assessments to minimise potential for emissions during the filling process. The following measures relating to arrestment plant on silos and other silo management techniques are only applicable where the silo vents to the external environment or where silo emissions may escape from inside a building into the external environment.
- Operators should have a procedure in place to ensure that visual assessment of emissions from silo inlet connections and the silo arrestment plant are undertaken throughout the duration of all bulk deliveries. The start and finish times of all deliveries should be recorded.

## 5. Control techniques

### Summary of best available techniques

5.1 **Table 5.1** provides a summary of the best available techniques that can be used to control the process in order to meet the emission limits and provisions in **Section 4**. Provided that it is demonstrated to the satisfaction of the regulator that an equivalent level of control will be achieved, then other techniques may be used.

**Table 5.1 - Summary of control techniques**

Substance	Sources of odour	Control techniques
Odour	Raw materials, effluent and waste storage	Control of raw material quality Within buildings under negative pressure and vented to odour arrestment plant. Within enclosed silos or stored under negative pressure and vented to odour arrestment plant. Preservation of fish raw materials unless used within 12 hours of arrival at site Spillage management including tank level management
Odour	Loading and unloading processes	Within buildings Enclosed vehicles and containers
Odour	Cooking process	Within equipment under negative pressure and vented to odour arrestment plant Spillage management Appropriate construction <ul style="list-style-type: none"> <li>• impervious and easy to clean surfaces</li> </ul>
Odour	Vehicles	Washing of vehicle surfaces (material contact) within buildings as above
Odour	Ventilated air (from both wet and dry process operations)	Vent to suitable arrestment plant: <ul style="list-style-type: none"> <li>• biofilters;</li> <li>• thermal oxidisers/combustion plant;</li> <li>• scrubbers;</li> <li>• located to take account of sensitive receptors.</li> </ul>
Particulate matter	Meal storage	Potentially dusty materials should be stored in buildings, silos or appropriate containers
Particulate matter	Cooling and grinding processes	Process control Spillage management Dust arrestment: <ul style="list-style-type: none"> <li>• bag/cartridge filters</li> </ul>
Odour Sulphur oxides Carbon monoxide	Waste gas from odour arrestment plant	Odour - Final dispersion to ensure no offensive odour at sensitive receptors. Sulphur oxides - Limit sulphur in fuel. Carbon monoxide - Good combustion

## Techniques to control emissions from contained sources

- 5.2 Emissions from the process operations covered by this note comprise odours of mixed chemical species. The main principles for preventing odour emissions are containment of the odours in the process equipment, raw material handling operations (as detailed below) and final treatment by arrestment of odour emissions to ensure they do not result in offensive odours beyond the process boundary. This containment is achieved by ensuring that all operations with potential releases are carried out within enclosed equipment under a slight negative pressure and other fugitive odours are controlled by building extract ventilation.
- 5.3 Ventilation should be provided to maintain an adequate negative pressure within the process equipment (including tanks and vessels for holding dryer/cooker condensate and process buffer tanks) to contain process releases within the equipment during operation. The required ventilation rate will depend upon many factors (such as environmental conditions, dryer design, raw material quality, effectiveness of process containment). Containment of emissions within the process equipment should prevent fugitive releases from presses, centrifuges, dryers and the transfer of processed or semi-processed. The ventilation equipment should be vented to odour arrestment plant to meet the requirements of **Table 4.1**.
- 5.4 Suitable odour arrestment plant should be provided and operated at all times, to meet the requirements of **Table 4.1** of this note. Examples of the type of arrestment plant which are suitable include biofilters, high efficiency biological scrubbers, multi-stage chemical scrubbers, thermal incinerators and other forms of combustion plant.
- 5.5 The process may produce emissions of differing odour intensity (building air and cooking/drying odours) and it may be more effective to separate the odour streams and divert to different odour arrestment plant. High odour intensity emissions and those incondensable gases (such as cooking/drying emissions) should be diverted to thermal oxidation/combustion or multi-stage scrubbers, whilst those of lesser odour intensity may be treated in single stage scrubbers or biofilters.

- 5.6 The presence of water vapour in the emissions from cooking, drying and preliminary cooling processes can adversely affect the operation of the odour arrestment plant. The water vapour will significantly increase emission volumes and is likely to condense within odour arrestment plant and this can lead to corrosion of materials of construction. Also in the case of scrubbing equipment, the condensation of significant volumes of water vapour will result in continuous liquid overflow and dilution of the scrubbing liquor. Where scrubbing systems are used for odour control the emissions from cooking, drying and preliminary cooling operations should be condensed (for example by the use of a direct condenser such as a spray tower or quench scrubber or an indirect condenser) prior to odour treatment of the non-condensable gases. Pre-treatment of process gases by condensation should also be considered for thermal oxidation and combustion systems as the removal of condensable gases will reduce the odour load for treatment in the combustion system.
- 5.7 The wet process should be carried out in enclosed process equipment under a slight negative pressure to ensure containment of odours within the plant. This should ensure that other odour sources associated with the wet processing are of low odour intensity as the containment of high intensity odours is the key to effective control. In addition good equipment design, materials handling and spillage prevention can greatly reduce the volumes of air necessary for odour containment by avoiding odour release into the building.
- 5.8 The following are examples of relevant odour control techniques:
- containment of odours within process buildings by good design and extract ventilation;
  - good housekeeping and raw material handling practices;
  - containment of odours within process equipment by maintaining material handling and storage facilities leakproof and spillproof as far as possible;
  - control and minimisation of odours from residual materials, effluent and waste.
- 5.9 Containment of strong odour sources and treatment in odour control equipment.



5.10 Where odour arrestment plant is required it needs to be optimised to meet the requirements of **Table 4.1**. This optimisation will include the following:

- In the case of thermal oxidisers or combustion equipment the operating temperature of the system will need to be maintained above the agreed operating temperature. In the case of boilers, care is needed in their use for odour arrestment as the operating temperature and residence time may not have been designed for odour arrestment and there is the potential for quenching in the boiler. In addition, it may be necessary to establish a minimum firing rate for the boiler to ensure that the boiler conditions are always optimised for odour removal. The measurement of odour arrestment efficiency of the boiler under a range of operating conditions can be used to demonstrate the operating parameters of the boiler necessary to meet the requirements of **Table 4.1**.
- In the case of scrubbing equipment, it is likely that multi-stage scrubbing will be necessary to meet the requirements of **Table 4.1**. In order to optimise the performance of the scrubber, it is important to ensure that it is well designed (adequate gas/liquid contact), well maintained, that the odours are sufficiently reactive with the scrubbing liquor to remove the odour and also that the reaction products do not themselves produce a volatile odour. In addition, additives to the liquor need to be automatically dosed with control by pH/Redox (over- dosing can lead to secondary odours from the scrubber associated with the chemical reagent). The scrubber will require regular inspection to identify possible blockage by salts.
- Mist eliminators should be fitted where droplet emissions occur and, in relation to new or replacement scrubbing plant, where there is a potential for such occurrence.
- If a bioscrubber is used, it is important to ensure that it is well designed (adequate gas/liquid contact), well maintained and that potential odours from scrubbing liquor are well managed. The scrubber will require regular inspection to identify possible blockage by biomass.
- Biofiltration can be undertaken using packaged, enclosed biofilters or open biomass (such as peat/heather). If a peat and heather biofilter is used, it is essential to control the pH of the biomass as the microbial activity will be adversely affected by high alkalinity (which is a potential problem with the high levels of ammonia). In this case it may be necessary to pre-treat the emissions, for example by water scrubbing (this will also have the beneficial effect of humidifying the air). In order to optimise the performance of the biofilter, the biomass must be maintained below 30°C, must be kept moist, must have a gas flow at all times and leakage through edges and fissures must be avoided. Biofilters will require regular treatment to overcome consolidation - this may be regular surface turning or deconsolidation by digging- out the bed.
- The required residence time for biofilters will depend upon many design conditions and will have to be sufficient to meet the requirements of **Table 4.1**. However the recommended residence time for peat and heather filters is a minimum of 60 seconds for lower intensity odours.

- 5.11 It may be appropriate to provide a number of smaller biofilters rather than one large bed to achieve more even gas flows throughout the filter. This will also provide standby facilities in case of breakdown or failure of one bed if the biofilter capacity is designed for this purpose.
- 5.12 The use of odour masking agents and counteractants should not be permitted.
- 5.13 Emissions of particulate matter from product coolers and grinding operations should be contained, extracted and arrested if necessary to meet the visible emission requirements or the limits described in **Table 4.1** for particulate matter. In the case of emissions which are both odorous and contain particulate matter, it may be necessary to treat the releases from the particulate matter arrestment plant to remove the odour before final dispersion of residual odour.
- 5.14 The methods of removal of collected particulate matter from arrestment plant should be undertaken carefully to avoid re-entrainment of dust. The removal of collected particulate matter from the filter housing should preferably be an automated operation into an enclosed container for disposal. Where the particulate matter arrestment plant includes a rotary valve, the rotation of the valve should be continuously monitored and alarmed.

## Silos

- 5.15 The silo management system includes the high level alarms, arrestment plant and pressure relief device where pneumatic systems are in use. If best practice is being applied then any failure of the silo management system leads to full investigation of the operation of the plant and equipment. Continuous high level monitoring systems are currently available for use in storage silos. They may be used telemetrically to monitor stock within the silo. They may also be used to automatically stop delivery of material to the silo. It is expected that such systems will become more widely used in the future.
- 5.16 Careful delivery by trained personnel will avoid materials being blown into silos at a rate which is likely to result in pressurisation of the silo, especially towards the end of the delivery when the quantity of material entering the ducting is reduced. If deliveries are accepted from tankers without on board relief valve and filtration systems, particular care to avoid pressurisation of silos when venting air through the silo at the end of the delivery is needed.

- 5.17 The following measures relating to arrestment plant on silos and other silo management techniques are only applicable where the silo vents to the external environment or where silo emissions may escape from inside a building into the external environment. The regulator might accept sight glasses on the silo as an alternative to alarms where it can be established for each delivery that sufficient capacity remains in the silos to contain the volume of material being delivered, and that the delivery is continually attended.
- 5.18 When delivery to a silo or bulk storage tank takes place, displaced air should either be vented to suitable arrestment plant (for example cartridge/bag filters) or back vented to the delivery tanker, in order to minimise emissions. Arrestment plant fitted to silos should be of sufficient size (and kept clean) to avoid pressurisation during delivery.
- 5.19 Bulk storage tanks and silos containing dry materials should be equipped with audible and/ or visual high level alarms, or volume indicators, to warn of overfilling. The correct operation of such alarms should be checked in accordance with manufacturers' instructions. If manufacturer's instructions do not specify, then the check should be weekly or before a delivery takes place, whichever is the longer interval.
- 5.20 Emissions from bulk storage containers or silos should be vented to suitable arrestment plant where necessary to meet the requirements of **Table 4.1**.
- 5.21 If emissions of particulate matter are visible from ducting, pipework, the pressure relief device or dust arrestment plant during silo filling, the operation should cease; the cause of the problem should be rectified prior to further deliveries taking place.
- 5.22 The fitting of pressure relief valves will help to minimise damage to arrestment plant if the silo becomes pressurised due to the blinding of filters. Seating of pressure relief valves, where fitted to silos, should be checked at least once a week. Immediately it appears that the valve may have become unseated the valve should be examined and reseated if necessary.
- 5.23 Deliveries to silos from road vehicles should only be made using tankers with an on-board (truck mounted) relief valve and filtration system. This means that venting air from the tanker at the end of a delivery will not take place through the silo. Use of alternative techniques may be acceptable provided that they achieve an equivalent level of control with regard to potential for emissions to air.
- 5.24 Care should be taken to avoid delivering materials to silos at a rate which is likely to result in pressurisation of the silo. If compressed air is being used to blow powder into a silo then particular care is required towards the end of the delivery when the quantity of material entering the ducting is reduced and hence the air flow is increased.

- 5.25 All new silos should be fitted with an automatic system to cut off delivery in the event of pressurisation or overfilling. Use of alternative techniques may be acceptable provided that they achieve an equivalent level of control with regard to potential for emissions to air.

## Techniques to control fugitive emissions

### Materials handling

- 5.26 Ensuring that raw materials are processed before significant deterioration occurs can reduce odour generation throughout the process. The emission of odours from raw material handling and storage operations can be effectively managed by control of the time that raw materials are held at ambient temperature, control of storage temperature or by the use of chemical additions such as acetic acid to reduce material deterioration.
- 5.27 All fish matter should be transported from the source of arising to the processing site as quickly as necessary to avoid material deterioration. Where delivery cannot be affected within this timescale, consideration should be given to freezing or cooling material at source or a detailed review of the materials and measures to delay decomposition should be undertaken as outlined in paragraph 5.26.
- 5.28 The delay between raw material arriving at the site and processing should be minimised. As a guide, the aim should be to process raw materials within 24 hours of arrival at site. However, other methods of odour reduction in raw material storage and handling can be used depending upon raw material quality. An assessment of each load should be undertaken to assess quality. The issues which should be considered are:
- temperature, appearance and freshness on delivery;
  - proposed method of temperature control in storage;
  - any chemical treatment already undertaken on the raw material **or** proposed by the operator;
  - how quickly the material will be processed.
- 5.29 The review of raw materials should include assessment of the material quality and any steps needed to delay decomposition and minimise odours such as addition of cooling water or ice or chemical treatment. The assessment may involve the measurement of total volatile nitrogen (TVN) which is a good indicator of the potential for the short-term release of decomposition products such as ammonia, hydrogen sulphide and mercaptans. As an indicative value TVN values of below 80mgN/100g of raw material are acceptable, above 80mgN/100g but below 120mgN/100g may require further chemical treatment and above 120mgN/100g of raw material should lead to rejection of the material for processing.

- 5.30 Raw materials should be received and stored prior to processing in defined designated enclosed tanks, silos or buildings. The integrity of these areas should be maintained to prevent the uncontrolled escape of odours or should be equipped with extraction to suitable arrestment plant. All storage facilities for raw materials should be sited to prevent any heating by direct sunlight.
- 5.31 All tanks for material storage should be fitted with level indicators or high level alarms to warn of potential overfilling. All such tanks should be vented to odour arrestment plant where necessary to meet the requirements of **Table 4.1**.
- 5.32 Where odour emissions occur during tanker loading, displaced air should be vented to suitable odour arrestment plant or back-vented to the storage tank in order to meet the requirements of **Table 4.1**.
- 5.33 The design and use of vehicles and containers should be such as to prevent the emission of any offensive odour. Totally enclosed containers or vehicles should be used for the collection of fish matter.
- 5.34 All vehicles, containers, trailers, tarpaulins and equipment used for the collection, transfer and handling of the aforementioned raw materials and for holding waste should be readily cleansable, impervious and kept clean.
- 5.35 Empty vehicles and containers should be thoroughly cleaned as soon as possible after delivery of raw materials in a designated area.
- 5.36 Adequate provision should be made for the containment of liquid and solid spillages. All spillages should be cleared as soon as possible and in the case of solid materials this should be achieved by the use of vacuum cleaning, wet methods, or other appropriate techniques. Dry sweeping of dusty spillages should not be permitted in circumstances where it may lead to the deposition of dust outside the site boundary:

## Building construction

- 5.37 All internal surfaces of buildings where raw materials are received, transferred or processed and all surfaces and equipment liable to come into contact with raw or processed material should be impervious, capable of being readily cleansed and should be kept clean.
- 5.38 All floors of fish material reception, storage and processing areas, yards and designated vehicle or container cleaning areas should be of impervious construction laid to fall to trapped drainage inlets. Drains should be provided where necessary, with sedimentation tanks and interceptors to prevent the transmission of material likely to impair the free flow of any receiving sewerage system.

- 5.39 Buildings should be constructed of suitable materials (for example brick or concrete walls and sealed metal sheet roofing) and the integrity of the buildings should be regularly inspected and maintained to prevent the uncontrolled escape of air from the raw material receipt, processing and storage areas. All doors for personnel access and egress should be self-closing and doors for vehicle access should only be opened to allow vehicles to enter or exit.
- 5.40 Areas of the building into which vehicles enter should be of sufficient size to accommodate the whole vehicle, including lowered tailgates, and to allow doors to close once the vehicle is inside the building. Where this cannot be achieved, consideration should be given to the installation of an airlock or additional localised ventilation should be provided to ensure that offensive odours beyond the process boundary do not occur during the vehicle access.
- 5.41 Doors may be kept open during the delivery of raw materials to a hopper or storage area subject to the provision of adequate exhaust ventilation to odour arrestment plant to meet the requirements of **Table 4.1**.
- 5.42 Where vehicle access doors are automatically operated, an audible alarm should sound when the door is open to warn of the potential for odour escape.

## Process operations

- 5.43 Process operations should be carried out to minimise releases of odour.
- 5.44 Where possible submersible pumps should be used to minimise the potential for odour escape.
- 5.45 Process tanks and vessels should be enclosed to minimise emissions.
- 5.46 Where possible submersible pumps should be used to minimise the potential for odour escape.
- 5.47 Provision should be made for effective and rapid cleaning of any area of spillage. High pressure jetting, steam cleaning or mechanical cleaning with foaming chemical systems are effective methods of cleaning and, where used, sufficient hosing points should be made available. Spillages should be contained and cleared as soon as reasonably practicable.
- 5.48 The transfer of fish material to the processing equipment and during processing should be undertaken in such a manner as to prevent spillage and minimise disturbance of material, and such areas should be enclosed. All points of transfer should be designed to be leak-proof with suitable means for cleaning.

- 5.49 The bulk transfer of dry raw materials should be by suitable mechanical handling systems, for example, screw feeder, gravity or pneumatic means. All internal transport of dusty materials should be carried out to prevent, or where prevention is not practicable, minimise airborne dust emissions. Where conveyors are used they should be of sufficient capacity to handle maximum loads. Conveyor discharges should be arranged to minimise free fall at all times. Where necessary, in order to minimise emissions of dust, extraction should be provided from transfer points to arrestment plant, for example a bag filter.
- 5.50 All dusty, or potentially dusty, materials should be stored in covered containers, sealed bags or purpose built sheds or silos.
- 5.51 Where the packing of meal into bags necessitates the installation of local exhaust ventilation for dust control, the extracted air should be vented to suitable arrestment plant, for example bag filters.
- 5.52 Good housekeeping should be practised at all times. The adoption of good cleaning and working practices as a routine will reduce process odour emissions and consequently lead to higher nominal arrestment plant efficiency.
- 5.53 A proper cleaning programme should be instituted. This should cover all structures, equipment and internal surfaces and containers used for fish matter processing and collection and waste storage.
- 5.54 The cleaning and disinfecting of all drainage areas and collecting tanks, yards and roads should be undertaken regularly and at least once a week.
- 5.55 The cleaning of pumped and other fully enclosed systems, when used with unprocessed fish materials, should be carried out as soon as possible after pumping has finished or the vessel has been emptied, and should usually be undertaken within three hours of the completion of pumping or vessel emptying.
- 5.56 A senior manager who recognises the importance of controlling the odours produced by the fish oil and fish meal process should be designated to be specifically responsible for all aspects of liaison with the regulator and where applicable with members of the general public.

## **Effluent and waste**

- 5.57 The effluent produced has the potential to generate a significant odour. All effluent should therefore be carefully handled and treatment should be carried out in a manner which will minimise the emission of offensive odours and will render any emission inoffensive and harmless.

- 5.58 All effluent arising outside buildings that contain processing and treatment plant should be drained via interceptor traps to the normal sewerage system or to an effluent treatment plant or storage tank.
- 5.59 All effluent arising within buildings including floor washings should be drained to an effluent treatment plant or storage tank.
- 5.60 All effluent storage tanks should be vented to suitable odour arrestment plant where necessary to meet the requirements of **Table 4.1**. A minimum extracted air volume should be maintained to the tank at all times (depending upon the tank design it may be necessary to isolate the tank from the odour arrestment plant during emptying to avoid tank damage). Care should be taken in emptying the effluent tanks to minimise odour release - consideration should be given to venting the collecting tanker to the odour arrestment plant.
- 5.61 All effluent storage tanks should be emptied regularly and at least once every week.
- 5.62 All effluent tanks should be fitted with level indicators or high level alarms to warn of potential overfilling.
- 5.63 All tanks and effluent storage systems including cesspits and septic tanks should be adequately covered and effluent treatment systems should be properly maintained in accordance with the maintenance programme included in the odour response procedure
- 5.64 All effluent tanks should be protected by a bund to contain spillages and the tanker connection point should also be provided with bunding or spillage containment kerbs. Provision should be made for effective and rapid cleaning of any area of spillage. High pressure jetting or steam cleaning are effective methods of cleaning and, where used, sufficient hosing points should be made available. Spillages should be contained and cleared immediately.
- 5.65 All potentially odorous wastes should be stored within an enclosed storage area, tank or container whilst awaiting removal for either disposal or further processing.
- 5.66 The storage area should be provided with extract ventilation to suitable abatement plant where necessary to meet the requirements of **Table 4.1**.
- 5.67 All waste should be removed as soon as the waste container is full and at least once per week. High odour intensity waste should be moved more frequently where necessary to ensure compliance with **Table 4.1**.
- 5.68 Waste should not be moved from process buildings to another building or outside unless in sealed containers. (Covered skips should not be regarded as sealed containers).



## Odour response procedure

- 5.69 The operator should prepare an odour response procedure. This is a summary of the foreseeable situations which may compromise his ability to prevent and/or minimise odorous releases from the process and the actions to be taken to minimise the impact. It is intended to be used by operational staff on a day-to-day basis and should detail the person responsible for initiating the action. For more detailed help see the Environment Agency Horizontal Guidance note H4 available [here](#).
- 5.70 The odour response procedure should include a list of essential spares for the odour arrestment plant. The arrestment plant manufacturer should recommend which spares are subject to wear and foreseeable failure and are critical for the correct operation of the odour arrestment plant (such as pumps, nozzles etc.) and these should be held on site. It may be acceptable for certain spares to be available on guaranteed short delivery if the absence of a supply at the site would not lead to complete failure of the odour arrestment plant or to offensive odours beyond the site boundary.
- 5.71 The odour response procedure should include analysis of actions in the case of arrestment plant breakdown or malfunction. Immediate arrangements should be made to divert odour streams to other suitable arrestment plant. Failure to provide suitable temporary arrestment plant may lead to the suspension of the process and consequently emergency standby arrangements should be detailed in the odour response procedure. This may include:
- suspending process operations;
  - reducing the scale of high odour intensity process operations, for example stopping cooking operations or reducing throughput;
  - by-pass emissions to stand-by or alternate odour arrestment plant, for example using a boiler as an emergency odour arrestment system.

## Air quality

### Dispersion & dilution

- 5.72 Pollutants that are emitted via a stack require sufficient dispersion and dilution in the atmosphere to ensure that they ground at concentrations that are deemed harmless. This is the basis upon which stack heights are calculated using HMIP Technical Guidance Note (Dispersion) D1. The stack height so obtained is adjusted to take into account local meteorological data, local topography, nearby emissions and the influence of plant structure.

The calculation procedure of D1 is usually used to calculate the required stack height but alternative dispersion models may be used in agreement with the regulator. An operator may choose to meet tighter emission limits in order to reduce the required stack height.

- 5.73 Where an emission consists purely of air and particulate matter, (i.e. no products of combustion or any other gaseous pollutants are emitted) the above provisions relating to stack height calculation for the purpose of dispersion and dilution should not normally be applied. Revised stack height calculations should not be required as a result of publication of this revision of the PG note, unless it is considered necessary because of a breach or serious risk of breach of an EC Directive limit value or because it is clear from the detailed review and assessment work that the permitted process itself is a significant contributor to the problem.
- 5.74 Where offensive odour is likely outside the process site boundary the assessment of stack or vent height should take into account the need to render harmless residual offensive odour.

### **Ambient air quality management**

- 5.75 In areas where air quality standards or objectives are being breached or are in serious risk of breach and it is clear from the detailed review and assessment work under Local Air Quality Management that the permitted process itself is a significant contributor to the problem, it may be necessary to impose tighter emission limits or, in the case of this particular note, additional limits for pollutants not listed in table 4.1, such as NO<sub>x</sub>. If the standard that is in danger of being exceeded is not an EC Directive requirement, then industry is not expected to go beyond BAT to meet it. Decisions should be taken in the context of a local authority's Local Air Quality Management action plan. For example, where a permitted process is only responsible to a very small extent for an air quality problem, the authority should not unduly penalise the operator of the process by requiring disproportionate emissions reductions. Paragraph 59 of the [Air Quality Strategy 2007 \[Volume 1\]](#) gives the following advice:

“...In drawing up action plans, local authority environmental health/pollution teams are expected to engage local authority officers across different departments, particularly, land-use and transport planners to ensure the actions are supported by all parts of the authority. In addition, engagement with the wider panorama of relevant stakeholders, including the public, is required to ensure action plans are fit-for-purpose in addressing air quality issues. It is vital that all those organisations, groups and individuals that have an impact upon local air quality, buy-in and work towards objectives of an adopted action plan.”

## Stacks, vents and process exhausts

- 5.76 Liquid condensation on internal surfaces of stacks and exhaust ducts might lead to corrosion and ductwork failure or to droplet emission. Adequate insulation will minimise the cooling of waste gases and prevent liquid condensation by keeping the temperature of the exhaust gases above the dewpoint. A leak in a stack/vent and the associated ductwork, or a build up of material on the internal surfaces may affect dispersion:
- Flues and ductwork should be cleaned to prevent accumulation of materials, as part of the routine maintenance programme.
- 5.77 When dispersion of pollutants discharged from the stack (or vent) is necessary, the target exit velocity should be 15m/s under normal operating conditions, however, lower velocities than 15m/s are acceptable provided adequate dispersion and dilution is achieved (see also the paragraph below regarding wet plumes). In order to ensure dispersion is not impaired by either low exit velocity at the point of discharge, or deflection of the discharge, a cap, or other restriction, should not be used at the stack exit. However, a cone may sometimes be useful to increase the exit velocity to achieve greater dispersion.
- 5.78 An exception to the previous paragraph is where wet arrestment is used as the abatement. Unacceptable emissions of droplets could occur from such plant where the linear velocity in the stack exceeds 9m/s.
- 5.79 To reduce the potential of droplet emissions a mist eliminator should be used. Where a linear velocity of 9m/s is exceeded in existing plant consideration should be given to reducing this velocity as far as practicable to ensure such droplet entrainment and fall out does not happen.

## Management

### Management techniques

- 5.80 Important elements for effective control of emissions include:
- proper management, supervision and training for process operations;
  - proper use of equipment;
  - effective preventative maintenance on all plant and equipment concerned with the control of emissions to the air; **and**
  - ensuring that spares and consumables - in particular, those subject to continual wear – are held on site, or available at short notice from guaranteed local suppliers, so that plant breakdowns can be rectified rapidly. This is important with respect to arrestment plant and other necessary environmental controls. It is useful to have an audited list of essential items.

## Appropriate management systems

- 5.81 Effective management is central to environmental performance; it is an important component of BAT and of achieving compliance with permit conditions. It requires a commitment to establishing objectives, setting targets, measuring progress and revising the objectives according to results. This includes managing risks under normal operating conditions and in accidents and emergencies.

It is therefore desirable that installations put in place some form of structured environmental management approach, whether by adopting published standards (ISO 14001 or the EU Eco Management and Audit Scheme [EMAS]) or by setting up an environmental management system (EMS) tailored to the nature and size of the particular process. Operators may also find that an EMS will help identify business savings.

- 5.82 Regulators should use their discretion, in consultation with individual operators, in agreeing the appropriate level of environmental management. Simple systems which ensure that LAPPC considerations are taken account of in the day-to-day running of a process may well suffice, especially for small and medium-sized enterprises. Regulators are urged to encourage operators to have an EMS for all their activities, but it is outside the legal scope of an LAPPC permit to require an EMS for purposes other than LAPPC compliance. For further information/advice on EMS refer to the appropriate chapter of the appropriate Guidance Manual for [England and Wales](#), [Scotland](#) and [Northern Ireland](#).

## Training

- 5.83 Staff at all levels need the necessary training and instruction in their duties relating to control of the process and emissions to air. In order to minimise risk of emissions, particular emphasis should be given to control procedures during start-up, shut down and abnormal conditions. Training may often sensibly be addressed in the EMS referred to above.
- All staff whose functions could impact on air emissions from the activity should receive appropriate training on those functions. This should include:
    - awareness of their responsibilities under the permit;
    - steps that are necessary to minimise emissions during start-up and shutdown;
    - actions to take when there are abnormal conditions, or accidents or spillages that could, if not controlled, result in emissions.
  - The operator should maintain a statement of training requirements for each post with the above mentioned functions and keep a record of the training received by each person. These documents should be made available to the regulator on request.

## Maintenance

5.84 Effective preventative maintenance plays a key part in achieving compliance with emission limits and other provisions. All aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air should be properly maintained. In particular:

- The operator should have the following available for inspection by the regulator:
  - a written maintenance programme for all pollution control equipment;  
**and**
  - a record of maintenance that has been undertaken.

## 6. Summary of changes

The main changes to this note, with the reasons for the change, are summarised in **Table 6.1**. Minor changes that will not impact on the permit conditions e.g. slight alterations to the Process Description have not been recorded.

<b>Table 6.1 - Summary of changes</b>			
<b>Section/paragraph/row</b>	<b>Change</b>	<b>Reason</b>	<b>Comment</b>
Section 1	Simplification of text	Clarify Note	
All	Addition of Hyperlinks	Change to electronic format	Removes need for extensive footnotes/references.
Para 5.29	All TVN values moved up by 20 so 100mgn/100g is now 120 mgn/100mg	Matches working practice	Matches working practice

## 7. Further information

### Sustainable consumption and production (SCP)

Both business and the environment can benefit from adopting sustainable consumption and production practices. Estimates of potential business savings include:

- £6.4 billion a year UK business savings from resource efficiency measures that cost little or nothing;
- 2% of annual profit lost through inefficient management of energy, water and waste;
- 4% of turnover is spent on waste.

When making arrangement to comply with permit conditions, operators are strongly advised to use the opportunity to look into what other steps they may be able to take. Regulators may be willing to provide assistance and ideas, although cannot be expected to act as unpaid consultants.

### Health and safety

Operators of installations must protect people at work as well as the environment:

- requirements of a permit should not put at risk the health, safety or welfare of people at work or those who may be harmed by the work activity;
- equally, the permit must not contain conditions whose only purpose is to secure the health of people at work. That is the job of the health and safety enforcing authorities.

Where emission limits quoted in this guidance conflict with health and safety limits, the tighter limit should prevail because:

- emission limits under the relevant environmental legislation relate to the concentration of pollutant released into the air from prescribed activities;
- exposure limits under health and safety legislation relate to the concentration of pollutant in the air breathed by workers;
- these limits may differ since they are set according to different criteria. It will normally be quite appropriate to have different standards for the same pollutant, but in some cases they may be in conflict (for example, where air discharged from a process is breathed by workers). In such cases, the tighter limit should be applied to prevent a relaxation of control.

## Further advice on responding to incidents

The UK Environment Agencies have published [guidance](#) on producing an incident response plan to deal with environmental incidents. Only those aspects relating to air emissions can be subject to regulation via a Part B (Part C in NI) permit, but regulators may nonetheless wish to informally draw the attention of all appropriate operators to the guidance.

It is not envisaged that regulators will often want to include conditions, in addition to those advised in this PG note, specifying particular incident response arrangements aimed at minimising air emissions. Regulators should decide this on a case-by-case basis. In accordance with BAT, any such conditions should be proportionate to the risk, including the potential for harm from air emissions if an incident were to occur. Account should therefore be taken of matters such as the amount and type of materials held on site which might be affected by an incident, the likelihood of an incident occurring, the sensitivity of the location of the installation, and the cost of producing any plans and taking any additional measures.



# Appendix 1 - Model Permit

This Appendix contains a model permit for fish meal installations – see paragraph 1.6 of this note and paragraph 3.6 of the [General Guidance Manual on Policy and Procedures](#).

## **Notes:**

- text in the model permit written in *italics* is advice to regulators.
- text in the model permit in [square brackets] offers choice to regulators or indicates where information needs to be inserted from the application;
- text bracketed with asterisks (eg \*Alarms shall be tested at least once a week\*.) may be omitted by a regulator where the past performance of the plant gives the local authority sufficient reassurance about operator compliance – “earned recognition”;
- the model permit has been drafted for local authorities in England and Wales. Regulators in Scotland and Northern Ireland will need to amend the legal heading and, where appropriate, references to ‘Council’;
- the purpose of the activity description is to set down the main characteristics of the activity, including any directly associated activities, so it is clear to all concerned what is being authorised by the permit and therefore what changes would need further approval. Regulators are advised to include a description of any key items of abatement and monitoring equipment the operator intends to use or is using;
- it should normally be sufficient for records relating to simplified permits to be kept for no more than 24 months. Where, however, as a result of a ‘low risk’ rating, inspections are undertaken less often, regulators may want to specify a period which ensures the records are available at the next inspection.

[ ] COUNCIL  
POLLUTION PREVENTION AND CONTROL ACT 1999  
Environmental Permitting Regulations 2010 (as amended)

**Permit ref. no:**

**Name and address of person (A) authorised to operate the installation ('the operator'):**

**Registered number and office of company:** (if appropriate)

**Address of permitted installation (B)**

The installation boundary and key items of equipment mentioned in permit conditions are shown on the plans attached to this permit.

**Activity description**

## **Conditions**

The operator (A) is authorised to operate the activity<sup>1</sup> at the installation (B) subject to the following conditions.

1. The operator shall:
  - prevent offensive odour beyond the site boundary as perceived by the regulator (see condition 2);
  - contain processing operations within a building and prevent the release of uncontrolled emissions;
  - extract odorous air;
  - treat extracted air in odour abatement plant;
  - have a written odour response plan.

The following conditions also apply:

## **Emissions**

2. There shall be no offensive odour beyond the site boundary as perceived by the regulator. It shall not be a breach of this condition in a particular case if the operator can show that they took all reasonable steps and exercised all due diligence to prevent the release of offensive odour.
3. No visible particulate matter shall be emitted beyond the installation boundary.

## **Buildings, ventilation**

4. Buildings containing processing operations shall:
  - prevent the uncontrolled release of air from raw materials receipt, processing and storage.
  - [maintain a [negative pressure]/[chilled atmosphere] inside raw materials reception and storage areas of the building]; *(delete bullet point if reception and storage is not under refrigeration or negative pressure as required)*
  - [be large enough for raw material delivery vehicles to be unloaded inside closed doors]
  - Personnel doors shall be self-closing.

## **Odour abatement plant** *(delete condition if no odour abatement plant serves the activity)*

5. The operator shall ensure that:
  - collected air is discharged through a suitable odour abatement plant.
6. *Where odour arrestment equipment is installed:* The odour abatement equipment shall be inspected not less than once a day for at least the following:
  - leaks or blockages in air handling equipment, ductwork and abatement equipment;
  - continuous monitors for abatement equipment; **and**
  - surface cracking, voids, leaks, compaction, moisture content, and plant/weed growth on biofilters.

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<sup>1</sup> listed in [ ] in Part 2 of Schedule 1 to the Environmental Permitting Regulations

## **Odour response plan**

7. The operator shall have a written odour response plan.

## **Processing**

8. Process tanks and vessels shall:

- be fully enclosed and fitted with [level indicators/high level alarms] and have emissions collected; [except for *list*, for which emissions must be contained and collected]
- be loaded to minimise spillage and disturbance to materials.

## **Good hygiene for odour control**

9. To minimise emissions of odour, the operator shall ensure that:

- the buildings, equipment and containers that hold raw materials and waste raw materials can be, and are, cleaned effectively, and are kept in good condition;
- liquids drain appropriately;
- raw materials are unloaded and stored appropriately;
- waste raw materials are stored appropriately;
- vehicles and containers are cleaned appropriately;
- vehicles containing raw materials shall only be parked within the designated delivery area(s)

10. [During defrosting necessary precautions shall be taken to prevent odorous emissions]

## **Effluent and wastes**

11. Effluent storage tanks shall be adequately covered. [They and the waste storage and the collecting tanker shall be continuously vented to odour abatement plant].

## **Silos and bulk tanks where pneumatic transport is used**

12. [xxxxx] shall only be stored within the [xxxxxx] silos. Silos and bulk containers of dusty materials shall not be overfilled and there shall be an overfilling alarm. When loading [xxxx ] silos, ensure delivery is at a rate which does not pressurise the silo. [For silos, new or replacement plant since June 2005, deliveries must stop automatically where over-pressurisation or over-filling is identified]. Displaced air from pneumatic transfer shall pass through abatement plant prior to emission to air.

## **Other bulk, loose, dry material - storage and loading**

13. Dusty materials (including dusty wastes) shall only be stored in [*specify storage locations*] as detailed on the plan attached to this permit and their storage and transfer shall be subject to suppression and management techniques to minimise dust emissions. No potentially dusty materials (including wastes) or finished products shall leave the site other than by use of [*specify transport type and dust control technique*].

## **[Belt] Conveying** (*delete condition if not applicable, or adapt to type of conveyors on site*)

14. All dusty materials shall be [conveyed][transferred] using [*specify type of conveyor, level of enclosure and enclosure type*]. All transfer points shall be fitted with [*specify dust control technique*].

## **Monitoring provisions**

15. The emission requirements and methods and frequency of monitoring set out in **Table 1** shall be complied with.

[A simple wind direction indicator shall be in operation.]

16. *Use where continuous monitors are fitted to show compliance with a numerical limit in Table 1:* All continuous monitors fitted to show compliance with the permit shall be fitted with a [visible] [audible] alarm warning of arrestment failure or malfunction. They shall [activate when emissions reach [75%] of the relevant emission limit in Table 1 and] record automatically each activation. \*Alarms shall be tested at least once a week.\*
17. All plant and equipment capable of causing, or preventing, emissions and all monitoring devices shall be [calibrated and] maintained in accordance with the manufacturer's instructions. \*Records shall be kept of such maintenance.\*

## **Records and training**

18. Written or computer records of all tests and monitoring shall be kept by the operator for at least [ ] months. They [and a copy of all manufacturer's instructions referred to in this permit] shall be made available for examination by the Council. \*Records shall be kept of operator inspections, including those for odorous emissions.\*
19. Staff at all levels shall receive the necessary training and instruction to enable them to comply with the conditions of this permit. Records shall be kept of relevant training undertaken.

*The following two conditions are not needed for PPC permits which transferred automatically into the environmental permitting regime by virtue of regulation 69(6) of the 2007 Regulations and regulation 108(4) of the 2010 Regulations. Where permits are issued on or after 6 April 2008 the conditions will not automatically apply and need specific inclusion in the permit where required.*

## **Best available techniques**

20. The best available techniques shall be used to prevent or, where that is not practicable, reduce emissions from the installation in relation to any aspect of the operation of the installation which is not regulated by any other condition of this permit.

## **Process changes**

21. If the operator proposes to make a change in operation of the installation, he must, at least 14 days before making the change, notify the regulator in writing. The notification must contain a description of the proposed change in operation. It is not necessary to make such a notification if an application to vary this permit has been made and the application contains a description of the proposed change. In this condition 'change in operation' means a change in the nature or functioning, or an extension, of the installation, which may have consequences for the environment.

Permit writer to delete rows that do not apply

**Table 1 - Emission limits, monitoring and other provisions**

Row	Substance	Source	Emission limits/provisions	Type of monitoring	Monitoring frequency
[1]	Odour	[Odour emissions from contained and fugitive sources.]	[Free from offensive odour at any location at or beyond the site boundary (subject to the provisions of condition 2).]	[Olfactory assessment at site boundary] [Determination by process assessment] [ (see note a) ]	[*Daily*]  *[Daily]*
<p>Note a: when offensive odours are detected beyond the process boundary or complaints are received and there is no obvious cause of odour release then the operator shall check the odour arrestment plant performance using <b>Table 2</b> guide values and check the process operational controls. If notified by the regulator odour removal efficiencies' shall be retested.</p>					
[2]	[Sulphur dioxide]	[All activities using heavy fuel oil or other residual type/comparable <a href="#">Quality Protocol Processed Fuel Oil</a> ]	[1% wt/wt sulphur in fuel]	[Sulphur content of fuel is regulated under the Sulphur Content of Liquid Fuels Regulations]	
[3]	[Sulphur dioxide]	[All activities using gas oil /comparable <a href="#">Quality Protocol Processed Fuel Oil</a> ]	[0.1% wt/wt sulphur in fuel]	[Sulphur content of fuel is regulated under the Sulphur Content of Liquid Fuels Regulations]	
<p><i>Delete if rows 2 &amp; 3 are deleted</i> Activities burning bio-fuels should have a limit set for sulphur in fuel Activities burning waste oil not covered by the <a href="#">quality protocol processed fuel oil</a> must comply with the Waste Incineration Directive (WID).</p>					
4	Particulate matter	Emissions from product coolers and grinders used in the production of fish meal (except where the final discharge of the arrestment plant is within buildings)	20 mg/m <sup>3</sup>	Indicative monitoring plus extractive test	Continuous plus Annual
5	Particulate matter	Whole Site  Silos	No visible emission  Silos ELV design limit....	Visual observations, with particular attention to areas where dust may be generated	*On start-up and on at least two more occasions during the working day*

6	Droplets, persistent visible emissions	All emissions to air (except steam and condensed water vapour)	No droplets, no persistent visible emissions	Visual observations	*On start-up and on at least two more occasions during the working day*
7	Visible smoke	Combustion processes used for arrestment of odour should be free from visible smoke	No visible smoke	Visual observations	*on start-up and on at least two more occasions during the working day*

**Notes:**

The reference conditions for limits in Table 1 are: [273.1K, 101.3kPa], without correction for water vapour content, unless stated otherwise.

All periodic monitoring shall be representative, and shall use standard methods.

\*All periodic monitoring results shall be checked by the operator on receipt and sent to the Council within 8 weeks of the monitoring being undertaken.\*

The [ ] emission limits do not apply during start-up and shut down. All emissions shall be kept to a minimum during these periods.

Abatement for mixed intensity odour should have an emission limit calculated using mass flow of odour units

Permit writer to delete rows that do not apply to the specific site

**Table 2 - Odour abatement plant - Indicative guide provisions for monitoring**

Type of Odour abatement plant	Indicative Guide Substance and Value	Type of monitoring	Monitoring frequency
Thermal oxidiser or combustion plant use as odour abatement plant	Emissions of carbon monoxide (CO) at 100 mg/m <sup>3</sup> (expressed as a 30 minute mean at 273.1K and 101.3kPa). Or 850°C	Carbon monoxide – recording, indicative monitor with visible and audible alarms Temperature - Monitor and audible and visual alarms	Continuous
Scrubbing equipment	Liquor flow	Monitor and alarms (audible and visual)	Continuous Record daily
	pH or Redox potentials established during commissioning	Monitor record and alarms (audible and visual)	Continuous Record daily
Bioscrubber additionally needs	Pressure drop across scrubber packing established during commissioning	Monitor and alarms (audible and visual)	Continuous Record daily
	pH	Control	
	Blockage	Inspect	Regularly
Biofilter	Pressure drop across biofilter established during commissioning (delivery pressure of main fan is one suitable parameter)	Monitor and alarms (audible and visual) Record trigger levels if level is varied (for example, winter/summer settings, change in number of fans in use)	Continuous Record daily
Biobed	Moisture <ul style="list-style-type: none"> <li>• even flow</li> <li>• cracking</li> <li>• steam venting – temp of day ?</li> </ul>	Visual inspections might look for: even flow, is it damp, quantity of water going in, meters installed in biobed is unlikely.	Daily
Biobed with peat/heather packing additionally needs	pH		



Condensers for pre-treatment of emissions	Cooling liquid flow	monitor	Continuous
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**Notes**

Testing of odour abatement plant should be carried out, if possible, when the process is operated at peak production

Destruction efficiency testing requires simultaneous sampling at inlet and outlet of arrestment plant

If emissions exceed this indicative guide value it is likely that the odour destruction efficiency of the odour abatement plant is reduced and the scrubber/biofilter should be further investigated to identify reasons for the reduced performance. This testing can be carried out using gas detection tubes.

## **Right to Appeal**

You have the right of appeal against this permit within 6 months of the date of the decision. The Council can tell you how to appeal [*or supply details with the permit*]. You will normally be expected to pay your own expenses during an appeal.

You will be liable for prosecution if you fail to comply with the conditions of this permit. If found guilty, the maximum penalty for each offence if prosecuted in a Magistrates Court is £50,000 and/or 6 months imprisonment. In a Crown Court it is an unlimited fine and/or 5 years imprisonment.

Our enforcement of your permit will be in accordance with the [Regulators' Compliance Code](#)

# Appendix 2 - Application form

## Application for a permit for fish meal processing

Local Authority Pollution Prevention and Control  
Pollution Prevention and Control Act, 1999  
Environmental Permitting (England and Wales) Regulations 2010

### Introduction

#### When to use this form

Use this form if you are applying for a permit to a Local Authority to operate a fish meal processing installation as defined in Schedule 1 to the Environmental Permitting Regulations.

The appropriate fee must be enclosed with the application to enable it to be processed further. When complete, send the form and the fee and any additional information to:

*[Insert local authority address]*

#### If you need help and advice

We have made the application form as straightforward as possible, but please get in touch with us at the local authority address given above if you need any advice on how to set out the information we need.

For the purposes of Section G of the form, a relevant offence is any conviction for an offence relating to the environment or environmental regulation.

#### For Local Authority use

Application reference	Officer reference	Date received

## LAPPC application form - to be completed by the operator

### A The basics

#### A1 Name and address of the installation

Postcode:	Telephone:
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#### A2 Details of any existing environmental permit or consent

*(for waste operations, include planning permission for the site, plus established use certificates, a certificate of lawful existing use, or evidence why the General Permitted Development Order applies.)*

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#### A3 Operator details

*(The 'operator' = the person who it is proposed will have control over the installation in accordance with the permit (if granted).)*

Name:
Trading name, if different:
Registered office address:
Principal office address, if different:
Company registration number:

#### A4 Any holding company?

Is the operator a subsidiary of a holding company within the meaning of section 1159 of the Companies Act 2006? If "yes" please fill in details of the ultimate holding company.

Yes  No

Name:  Trading name, if different:
Registered office address:    Principal office address, if different:
Company registration number:

#### A5 Who can we contact about your application?

*It will help to have someone who we can contact directly with any questions about your application. The person you name should have the authority to act on behalf of the operator - This can be an agent or consultant.*

Name and position: _____
Telephone: _____
Email: _____

## **B The installation**

### **B1 Are you a fish meal processor?**

Yes  No

### **B2 Why is the application being made?**

new installation

change to existing installation means it now needs a permit

### **B3 Site maps – please provide:**

#### **A location map with a red line round the boundary of the installation**

Document reference: \_\_\_\_\_

#### **A site plan or plans showing where all the relevant activities are on site:**

- a) where the processing plant will be installed
- b) the areas and buildings/structures designated for materials and waste storage and the type of storage
- c) the conveyors and transfer points
- d) any directly associated activities or waste operations.

To save applying for permit variations, you can also show where on site you might want to use for storage etc in the future.

Document reference: \_\_\_\_\_

### **B4 Are there any sites of special scientific interest (SSSIs) or European protected sites nearer than any of the following distances to the proposed installation?**

2km - for an installation which includes Part B combustion or incineration (not crematoria)

Yes  No

0.5km for all other Part B activities

Yes  No

**If 'yes', is the installation likely to have a significant effect on the special scientific interest or European protected sites?**

Yes  No

**If 'yes', please write on a separate sheet or enclose a relevant document explaining what the implications are for the purposes of the Conservation (Natural Habitats etc) Regulations 1994 (see appendix 2 of Annex XVII of the [general guidance manual](#))**

Document reference: \_\_\_\_\_

**B5 Will emissions from the activity potentially have significant environmental effects (including nuisance)?**

Yes  No

**If 'yes', please list the potential significant local environmental effects (including nuisance) of the foreseeable emissions on a separate document.**

Document reference: \_\_\_\_\_

**If 'yes', please enclose a copy of any environmental impact assessment which has been carried out for the installation under planning legislation or for any other purpose.**

Document reference: \_\_\_\_\_

## C The details

**C1 Does your installation have arrestment equipment, with external discharge points, not serving silos or dryers with an airflow of:**

- a) Over 300m<sup>3</sup>/minute:  (tick all that apply)  
b) Under 300m<sup>3</sup>/minute and over 100m<sup>3</sup>/minute:   
c) Under 100 m<sup>3</sup>/minute:

**C2 Do you have continuous monitors to show compliance with a numerical limit in Table 1 of the simple permit?**

Yes  No

**If yes, do the continuous monitors have alarms which are:**

- a) visible?  (tick all that apply)  
b) audible?   
c) alarm activation recorded automatically?   
d) is a trigger level set?  Yes  No

**If so, at what percentage of the emission limit is the value set? .....%**

**C3 Is odour arrestment equipment installed?**

Yes  No

**C4 Do you have pneumatic transfer of materials?**

Yes  No

**C5 Which of the following will bulk material be stored in:**

- a) silo  (tick all that apply)  
b) bulk storage tank   
c) in fully-enclosed containers/packaging?   
d) other - please specify: \_\_\_\_\_

**Will displaced air from pneumatic loading and unloading be:**

- a) vented to abatement plant  (tick all that apply)  
b) back-vented to the delivery tanker   
c) other - please specify \_\_\_\_\_

**Do deliveries automatically stop for:**

- a) over-filling  Yes  No  
b) over-pressurisation  Yes  No

**Does pneumatic transfer automatically stop for:**

- a) over-filling  Yes  No  
b) over-pressurisation  Yes  No



**If no, are any silos new since June 2004?**

*[informs condition 9]*

Yes  No

**Do you have alarms to warn of overfilling?**

Yes  No

**C6 Do you have belt conveyors:**

Yes  No

**If yes, which of the following facilities will be provided to convey any dusty material**

- a) deep trough ground-level conveyor  *(tick all that apply)*
- b) fully-enclosed conveyor
- c) pneumatic handling system
- d) bucket elevator
- e) wind boards
- f) other - please specify \_\_\_\_\_

**C7 Which of the following methods will be used to minimise emissions at belt conveyor transfer points, including free fall of material?**

- a) enclosed  *(tick all that apply)*
- b) enclosed and ducted to arrestment equipment
- c) fitted with a chute
- d) other - please specify \_\_\_\_\_

**C8 Do you have environmental management procedures and policy?**

Yes  No

## D Anything else?

Please tell us of anything else you would like us to take account of:

Document reference: \_\_\_\_\_

## E Application fee

You must enclose the [relevant fee](#) with your application.

If your application is successful you will also have to pay an annual subsistence charge, so please say who you want invoices to be sent to.

Name and position:

Telephone:

Email:

## **F Protection of information**

### **F1 Any confidential or national security information in your application?**

If there is any information in your application you think should be kept off the public register for confidentiality or national security reasons, please say what and why. [General guidance manual](#) chapter 8 advises on what may be excluded. *(Do not include any national security information in your application. Send it, plus the omitted information, to the Secretary of State or Welsh Ministers who will decide what, if anything, can be made public.)*

Document reference : \_\_\_\_\_

### **F2 Please note: data protection**

The information you give will be used by the Council to process your application. It will be placed on the relevant public register and used to monitor compliance with the permit conditions. We may also use and or disclose any of the information you give us in order to:

- consult with the public, public bodies and other organisations;
- carry out statistical analysis, research and development on environmental issues;
- provide public register information to enquirers;
- make sure you keep to the conditions of your permit and deal with any matters relating to your permit;
- investigate possible breaches of environmental law and take any resulting action;
- prevent breaches of environmental law;
- offer you documents or services relating to environmental matters;
- respond to requests for information under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004; (if the Data Protection Act allows)
- assess customer service satisfaction and improve our service.

We may pass on the information to agents/representatives who we ask to do any of these things on our behalf.

### **F3 Please note: it is an offence to provide false information**

It is an offence under regulation 38 of the EP Regulations, for the purpose of obtaining a permit (for yourself or anyone else), to:

- make a false statement which you know to be false or misleading in a material particular;
- recklessly make a statement which is false or misleading in a material particular;
- intentionally to make a false entry in any record required to be kept under any environmental permit condition;
- with intent to deceive, to forge or use a document issued or required for any purpose under any environmental permit condition.

If you make a false statement:

- we may prosecute you; **and**
- if you are convicted, you are liable to a fine or imprisonment (or both).

**G Declarations A and B for signing, please**

*These declarations should be signed by the person listed in answer to question A3. Where more than one person is identified as the operator, all parties should sign. Where a company or other body corporate is the operator, an authorised person should sign and provide evidence of authority from the board.*

**Declaration A:** I/We certify

**EITHER** - As evidence of my/our competence to operate this installation in accordance with the EP Regulations, no offences have been committed in the previous five years relating to the environment or environmental regulation.

**OR** - The following offences have been committed in the previous five years which may be relevant to my/our competence to operating this installation in accordance with the regulations:

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Position: \_\_\_\_\_ Date: \_\_\_\_\_

**Declaration B:**

I/We certify that the information in this application is correct. I/We apply for a permit in respect of the particulars described in this application (including the listed supporting documentation) I/we have supplied.

*(Please note that each individual operator must sign the declaration themselves, even if an agent is acting on their behalf.)*

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Position: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Position: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Position: \_\_\_\_\_ Date: \_\_\_\_\_