



**A GUIDANCE NOTE ON THE
BEST PRACTICABLE MEANS**

FOR

RENDERING WORKS

(FISH MEAL FACTORY)

BPM 28/4 (95)

Environmental Protection Department
Air Policy Group

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1. INTRODUCTION

- 1.1 This Note is one of a series issued by the Environmental Protection Department to provide guidance on air pollution management for processes specified under Part IV of the Air Pollution Control Ordinance (the Ordinance). It also serves as a guide for the assessment of an application for Specified Process licence under the Ordinance.
- 1.2 It should be understood that this Note sets out the basic requirements for the applicant to provide and maintain the best practicable means for the prevention of emission of air pollutants. The applicant should recognize that whether a licence is granted or refused, and on what conditions, will depend on all the circumstances of an individual application besides the requirements set out in this Note. The Authority may devise specific requirements for individual facility carrying out the specified process.
- 1.3 This Note covers the fish meal manufacturing process in a factory, which comes within the specified process "Rendering Works" described in Schedule 1 to the Ordinance as:

"Works in which the processing capacity exceeds 250 kg per hour (expressed as the raw material) and in which rendering or reduction or drying through application of heat, or curing by smoking, of animal matter (including feather, blood, bone, hoof, skin, offal, whole fish, and fish heads and guts and like parts, and organic manures but not including milk or milk products) is carried out.

2. EMISSION LIMITS

- 2.1 All emissions to air, other than steam or water vapour, shall be colourless, free from persistent mist or fume, and free from droplets.
- 2.2 Smoke emission from any chimney or fuel combustion process shall not appear to be as dark as or darker than Shade 1 on the Ringelmann Chart when compared in the appropriate manner with the Ringelmann Chart or an approved device.
- 2.3 All odorous emissions have to meet appropriate emission limits (*in terms of odour units*) to be approved by the Authority so as to prevent odour nuisance or imposing unacceptable constraint on land use.

(Note: An odour unit is the measuring unit of odour level and analogous to pollutant concentration. In this context, the odour level is defined as the ratio of the volume which the sample would occupy when diluted with air to the odour threshold, to the volume of the sample. In other words, one odour unit is the concentration of the odorant which just induces an odour sensation.)

3. FUEL RESTRICTION

- 3.1 All fuels to be used shall comply with the Air Pollution Control (Fuel Restriction) Regulations in force.

4. CONTROL OF EMISSIONS

- 4.1 Emission of air pollutants shall be minimised and controlled to prevent:

- (a) harm to the environment, or adverse effects to human health;
- (b) threatening the attainment or maintenance of the relevant air quality objectives;
- (c) giving rise to an objectionable odour noticeable outside the premises where the process is carried on; and
- (d) imposing undue constraint on the existing and future development or land use.

- 4.2 Clean energy sources and fuels with proven benefits to air pollution reduction shall be used whenever possible in the relevant specified process and associated operations. The use of electricity or gaseous fuel for process heating or production of goods is always recommended.

4.3 Design of chimney

Chimney includes vents, structures and openings of any kind from or through which air pollutants (including odorous gas) may be emitted.

4.4 Dispersion

- (a) The applicant will need to demonstrate that the proposed chimney will provide sufficient dispersion of air pollutants in determining the adequacy of its height.
- (b) A chimney shall be at least 3 metres above the roof of any building to which it attaches, and the roof of any adjacent or attached buildings.
- (c) Releases to air from chimneys shall be directed vertically upwards and not restricted or deflected by the use of, for example, plates or caps.
- (d) Chimney shall normally be designed for an efflux velocity of not less than 15 m/s at full load condition. If the chimney is coned to obtain the minimum velocity, care is needed to avoid generating excessive positive pressure zones within the chimney unless the chimney wall is impervious or lined. The cones should be well maintained.

- (e) For combustion process, the flue gas exit temperature shall not be less than the acid dew point.
- (f) Where practicable, hot releases should take place from the minimum number of vents in order to obtain maximum advantage from thermal buoyancy and multiplicity of discharge points should be avoided.

5. FUGITIVE EMISSION CONTROL

- 5.1 The control of the fugitive emissions of air pollutants shall be agreed with the Authority. As a general guideline, the loading, unloading, handling and storage of fuel, raw materials, products, wastes or by-products should be carried out in a manner acceptable to the Authority so as to prevent the release of the objectionable odour and other air pollutants.
- 5.2 The plant surfaces, floor, yards and equipment liable to come into contact with the raw materials, semi-processed or processed materials shall be of impervious construction, capable of being readily cleaned and should be kept clean.
- 5.3 A good housekeeping shall be maintained. Suitable methods should be provided for the effective cleaning of the plant.
- 5.4 Without prejudice to the above general requirements, the following control measures should be implemented:

Materials handling and processing

- (a) Raw materials shall be transported from the point of production to the processing plant as quickly as practicable. The design of containers should be such as to minimize the emission of any offensive odour or spillage of any liquid or solid matter.
- (b) Empty containers shall be kept clean.
- (c) Raw materials shall be processed as soon as practicable. Having regard to the age and type of raw materials involved, refrigeration for the storage and transport of materials may be required if necessary.
- (d) Raw materials shall not be left unattended in any place other than designated storing areas and shall be kept dry and cool, and in a fully enclosed container or buildings. The integrity of these areas shall be maintained to prevent the uncontrolled escape of odours from the building. The odorous emission, if any, shall be vented to suitable odour control equipment before discharge where necessary.
- (e) Containers and any other equipment used for the collection, transfer and handling of raw materials and waste shall all be readily cleanable, impervious and kept clean.

- (f) Exhaust gas generated from the cooking or drying process shall be ducted to an effective odour control equipment before discharging to the atmosphere.

6. OPERATION AND MAINTENANCE

- 6.1 Best practicable means requirements include not only the provision of the appliances, but the proper operation and maintenance of equipment, its supervision when in use, and the training and supervision of properly qualified staff.
- 6.2 In general, equipment should be repaired as soon as possible. Specific operation and maintenance requirements may be specified for individual equipment.
- 6.3 Malfunction, breakdown or failure of any process or air pollution control equipment that may result in abnormal emission of air pollutants shall be reported to the Authority within 3 working days after the incident.

7. MONITORING REQUIREMENTS

- 7.1 Parameters and sampling frequency will be determined by the Authority. In general, visual and olfactory assessment of emissions should be made frequently and at least once a day.

8. COMMISSIONING

- 8.1 Commissioning trials (to be witnessed by the Authority whenever appropriate) shall be conducted to demonstrate the performance and capability of the air pollution control measures. A report of the commissioning trial should be submitted to the Authority within 1 month after completion of the trial.