

SPECIAL WASTE REGULATIONS 1996 SPECIAL WASTE ADVISORY NOTE

FLUORESCENT TUBES/GAS DISCHARGE LAMPS

Ref: SWAN/01

Background

This guidance note considers fluorescent tubes¹ and other gas discharge lamps containing sodium and/or mercury. These exist in many forms from large strip lights to small low energy bulbs. They arise from both domestic use and other public or commercial / industrial applications such as sodium street lights. The hazardous components may also contain lead, cadmium and other heavy metals. Reference in this note to 'special waste' also means hazardous waste.

Fluorescent tubes and lamps are always special waste, unless they have been treated to remove the hazardous components.

Waste Classification

1. Fluorescent tubes removed for collection or disposal

Where fluorescent tubes are separately collected in bulk, e.g. as part of a maintenance activity, they are an absolute entry:

20 01 21* Fluorescent tubes and other mercury containing waste (A)

Tubes discarded into commercial or industrial waste are identified by the code below, alongside the code for the general waste they are consigned in (e.g. **20 03 01** – mixed municipal waste):

16 02 13* Discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12 (M)

The producer must take into account the hazardous properties for Duty of Care and authorised disposal/recovery. This may require a check on any data sheets supplied by the manufacturer of the tubes (if they have been retained). Many tubes contain mercury and the description on special waste consignment notes must include the hazard codes **H6** and **H14**².

'High pressure' lamps contain both mercury *and* sodium. The sodium may present further hazardous properties³. The most likely hazards are **H3A(v)**, **H6** and **H14** from both the mercury and sodium³.

'Low pressure lamps' contain sodium only. The hazardous properties of low pressure sodium lamps will be **H3A(v)** and possibly **H8**³. H3 and H8 wastes are banned from being landfilled.

Further information on hazards arising from disposal and handling is given in the footnotes⁴.

2. Fluorescent tubes that have been put to authorised waste treatment

Lamps that are treated, for example to recover the mercury will be classified under Chapter 19 of the EWC.

The hazardous components of fluorescent tubes include the 'ballasts' or starting capacitors which contain the mercury and, in older lamps polychlorinated biphenyls (PCBs). When completely removed these are classified by a separate entry:

16 02 15* Hazardous components removed from discarded (electrical and electronic) equipment (A).

Additional hazards may arise from disposal or recovery and should be considered⁴.

Notes

¹ Fluorescent light is produced when the phosphor coating in the lamp tube converts UV light into visible, after a gas discharge from ionised mercury vapour is created in the tube

² Mercury is classified as a dangerous substance in the ASL (which provides simple information for the labelling of products with chemicals that could be dangerous to human health or the environment) with a risk phrase of 'toxic by inhalation' (R23) and 'very toxic to aquatic organisms and may cause long term effects in the aquatic environment' (R50-53). These risks relate to the hazards **H6 - toxic** and **H14 - ecotoxic**.

³ The lamps have components that contain metallic sodium. Sodium is a dangerous substance and is listed in the ASL with a risk phrase 'reacts violently with water, liberating extremely flammable gas' (R14/15) and 'causes burns' (R34). These identify the waste as hazardous (special) by the properties **H3A (v) - highly flammable** and **H8 - corrosive**.

⁴ There may be other hazards that require caution in the handling and disposal / recovery of fluorescent tubes. Sodium metal reacts with water to evolve heat. Crushed or broken tubes in contact with water or damp air may evolve highly flammable hydrogen gas as well as corrosive sodium hydroxide. Further assessment may be required to determine if the waste is handled in a form likely to give rise to such hazards. For instance, one low pressure lamp/tube (which typically contains 0.1%, or about 400mg of metallic sodium compared to high pressure lamps/tubes with 0.005% or 20mg per lamp) is capable of producing over 50ml of a 1% solution of sodium hydroxide and almost 150 cubic cm of hydrogen. This gives rise to **H13 (substances and preparations capable after disposal of yielding dangerous substances which have the potential to display any hazard H1-H12)**.

Mercury metal produces a vapour at ambient temperature. Broken or crushed tubes/lamps could therefore release mercury vapour and mercury liquid albeit in very small quantities. It might be possible for mercury to be converted into methyl mercury (a very toxic substance) after disposal in a landfill but methyl mercury has not yet been detected in landfill leachate. Therefore an assessment under H13 for mercury alone would not classify lamps / tubes as hazardous although, as described previously, other hazard codes would lead to this classification. Mercury is typically present in a fluorescent lamp (weighing about 400g) at less than 30mg.