

# LIF Technical Statement No. 10

## The Handling and Disposal of Lamps

Control of Substances Hazardous to Health (COSHH) Regulations 1994 (SI No 3246) (As amended) Health and Safety at Work Act 1974.

Management of Health & Safety at Work Regulations 1992

Personal Protection Equipment at Work Regulations 1992

Control of Pollution (Amendment) Act 1989

Environmental Protection Act 1990 (duty of Care) incl COPA 1989 Carrier Regs.

Special Waste Regulations 1996 (SI No. 972) (As amended)

Water Resources Act 1991 wrt to List 1 (Mercury) substances

The Control of Substances Hazardous to Health (COSHH) Regulations 1994 place duties on employers to protect employees and other persons who may be exposed to substances hazardous to health, for example: to solids, liquids or gases that may be toxic, harmful, corrosive or irritant. Safety standards, for example, exposure limits of hazardous substances in air, are separately prescribed by the Health and Safety Executive.

Specialists from the main lamp and lighting companies have studied the applicability of the COSHH regulations to their products and this statement sets out their conclusions. Guidance is given on the handling and disposal of lamps containing mercury and/or sodium lamps. Products are considered in both the intact and broken state.

### Intact Products

Lamps are finished assemblies without free substances and they comply with separate regulatory requirements that products shall be safe. No special lamp handling precautions under the above regulations are required during storage, installation or use.

### Broken Products

Hazardous substances can be released when some lamp types are broken and the following general recommendations are made for dealing with broken lamps. No problems are foreseen with other lighting products.

#### *Accidental breakage of a lamp*

In the event of an accidental breakage of a lamp normal good housekeeping is required, care being necessary to prevent injury from broken glass. For fluorescent lamps the generation and inhalation of airborne dust should be avoided when cleaning up; for low-pressure sodium lamps avoid skin and eye contamination with debris and prevent exposure to moisture.

#### *Controlled lamp breakage*

When lamps have been removed from service the principal physical hazard is broken glass. Placing them in the packaging provided with the new lamps is one way of protecting them from accidental mechanical breakage or scratching, which could lead to glass fracture and possible flying fragments. Where it is necessary to break lamps to reduce bulk, good house-keeping practice should be followed and protective clothing including gloves and eye protectors should be worn. It is preferably that the breaking operation is performed in a well-ventilated area or outdoors. The breaking of quantities of lamps should only be carried out under controlled and approved conditions which have been approved after carrying out a full risk assessment under the Management of Health and Safety at Work Regulations 1992.

Many lamps are filled to pressure above or below atmospheric pressure and therefore care must be exercised in fracturing the lamp envelope. Whenever glass is broken it is a requirement of the Personal Protective Equipment at Work Regulations 1992 that eye protection must be worn.

### **Disposal of Lamps at End of Life**

Discarded lamps may be disposed of through:-

- ◆ Recycling (preferred method) at suitably licensed and contained sites/for fluorescent and other mercury containing lamps, the sites must be registered for acceptance of hazardous waste, or
- ◆ Landfill at suitably licensed and contained sites/for fluorescent and other mercury containing lamps, the sites must be registered for acceptance of hazardous waste, or
- ◆ Recovery of some or all of the components
- ◆ Incineration is not a recommended disposal route

Crushing of lamps to reduce bulk or allow materials recovery may be undertaken by the producer or subsequent manager of the waste, although uncontrolled breakage or crushing should be avoided whenever possible.

### ***Low pressure sodium lamps***

Low-pressure sodium lamps contain sodium metal, which reacts with water. Hazards to be considered are the potentially corrosive sodium hydroxide solution and the extremely flammable and explosive hydrogen gas, which result from reacting sodium with water. These lamps should be broken and reacted with water under controlled conditions prior to disposal as follows:-

Working in a dry atmosphere not more than 20 lamps should be carefully broken into a large dry container.

When the container is not more than one quarter full of lamp debris, the operator should fill it with water from a distance, i.e. by the use of a hose. The water will react with the sodium and may be disposed of as weak caustic soda solution and the glass debris as a normal controlled waste. These instructions are supplied with each individual lamp. Again the breaking of lamps should only be carried out under controlled and approved conditions after carrying out a full risk assessment.

### ***Cautionary Note***

If a proprietary crusher is to be used to break lamps containing sodium, caution is needed and manufacturer guidance should be sought regarding safe feeding rate.

### ***Linear fluorescent lamps***

Some lamps, especially fluorescent lamps, may release powders when broken. The powder may be contaminated with mercury and the inhalation of any dust must be avoided. A suitable facemask can provide protection, if necessary, and a disposable filtered face piece respirator type FFPI is recommended for this purpose.

### ***High intensity discharge lamps***

Only the outer envelopes of high-pressure discharge lamps should be broken. The inner arc tubes are strong and should be left intact as a container of the lamp constituents, e.g. small quantities of mercury, sodium and other metals.

### ***Disposal of significant quantities of lamps***

If there are significant numbers of lamps to be broken, machines are available which break the glass while at the same time spraying the debris with water to prevent powder flying and to react with any sodium if this type of lamp is being crushed. Water resulting from this process (i.e. breaking and spraying/reacting with water) may be corrosive/irritant as a result of its sodium hydroxide content from sodium lamps and toxic/harmful as a result of its mercury content from lamps containing mercury. The water containing sodium hydroxide may require treatment to adjust the pH to within consent limits prior to discharging as trade effluent to the foul sewer. If the water is contaminated with mercury, special care must be taken in its safe disposal (the requirements of the Trade Effluent Regulations 1989 (SI No 1156) must be observed). Resultant sludges and contaminated water from lamp crushers may be designated as special waste and require appropriate consignment and disposal/treatment.

### ***Disposal of intact lamps***

As an alternative, lamps may be kept intact and use made of specialist companies who will remove intact lamps from premises for recovery or disposal to landfill.

## **General Legislation Requirements for Lamp Disposal**

### ***Sodium Containing Lamps***

The Environment Agency has concluded in Special Waste Explanatory note SWEN 047A, dated 1<sup>st</sup> March 1999, that separately collected lamps containing sodium would normally not be consigned as special waste.

## **Proposed EU Legislation on the Recycling of Gas Discharge Lamps**

The EU Commission has proposed legislation within the management of Waste Electrical and Electronic Equipment (WEEE) directive proposal that would require all gas discharge lamps to be recycled at end of life. The existing proposal would require that all gas discharge lamps be treated to remove mercury (if present) and recycling undertaken to enable a high percentage of the materials of construction to be reused. It is possible that such legislative requirements could be in place by 2005/6.

To meet the need for the increasing demand for approved lamp recycling services, LIF has introduced an accreditation scheme for companies providing services for the collection and recycling of end of life lamps. A list of recommended service providers is attached. (See also the WEEE Statement from SustainaLite, which follows).

## **IMPLEMENTATION OF THE EU LANDFILL DIRECTIVE IN THE UK – FULFILLING YOUR ‘DUTY OF CARE’ WHEN DISPOSING OF FLUORESCENT AND OTHER MERCURY CONTAINING LAMPS.**

The Landfill Directive has been implemented into UK law. As a consequence of the implementation of the EU Landfill Directive into UK law it will be illegal from 16 July 2004 to accept hazardous and non-hazardous waste for disposal in the same landfill site. After this date, where hazardous waste has been previously mixed with a non-hazardous waste, this must now be separated to ensure that the hazardous fraction is only disposed in a hazardous landfill site. Where it is not possible to separate the mixed waste, the whole consignment is deemed hazardous waste and must only be disposed of in a hazardous waste landfill. Furthermore, from this date, any hazardous waste that is to be landfilled must also be treated prior to landfill.

This legislation has implications to those disposing of fluorescent and other mercury containing lamps at the end of their operational life. Fluorescent lamps are not considered special waste under the UK Special Waste Regulations (1996) but the implementation of the Landfill Directive also requires the adoption of the European Waste Catalogue (EWC) into UK law. The EWC defines fluorescent lamps and other mercury containing wastes as hazardous waste and hence from 16<sup>th</sup> July 2004 mercury containing lamps can only be disposed of by landfill at those sites registered for the acceptance of hazardous waste.

Even when these lamps are mixed with other waste the total waste will have to be disposed at a hazardous landfill unless the hazardous component is separated out. The inability to co-dispose of hazardous and non-hazardous waste will result in a major reduction in the number of landfill sites available for the disposal of mercury containing lamps. The Environment Agency estimates that there will be less than 10 hazardous waste landfill sites available for lamp disposal in the country. The cost of landfill disposal of mercury containing lamps will increase significantly even if available.

The Environment Agency is advocating that fluorescent and other mercury containing lamps should be sent for recycling as this promotes best practice in waste management. The Lighting Industry Federation Ltd supports this point of view and has set up an organisation called SustainaLite, in co-operation with the waste management industry, to promote and audit the responsible management of end of life mercury containing lamps.

Every user of fluorescent or other mercury containing lamps has a ‘Duty of Care’ under legislation to dispose of them correctly. It is suggested that contact is made with a lamp recycling company or a waste contractor to seek advice on the recycling or the correct disposal to hazardous landfill of the lamps.

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