

## Lamp and Luminaire Recycling

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### KEY POINTS:

A key element of any LED rollout project should be the planning of how the removed lamps and luminaires will be recycled by appropriately qualified service providers. Points to be aware of are that:

- Almost all lamps used in legacy public lighting before the emergence of LEDs contain mercury and therefore need to be recycled with particular care.
- Fluorocycle is a voluntary national product stewardship program which aims to boost lamp recycling and which maintains a public list of licensed lamp collectors and recyclers.
- Non-LED luminaires contain valuable copper and aluminium but, in rare cases involving particularly old luminaires, may also contain hazardous asbestos and PCBs.
- Reputable recyclers can provide reassurance of environmental compliance as well as accurate and verified reporting.

Recycling for legacy luminaires involves two primary components: lamp recycling and luminaire recycling. With LED luminaires, there are no lamps to recycle but consideration should be given in any procurement process to minimising future waste streams by seeking extended luminaire life and considering the possible advantages of componentised systems at the time of procurement (e.g., luminaires with replaceable LED modules, replaceable power supplies or other plug-and-play components that may be separately upgradable and recyclable).

### Lamp Recycling

Almost all lamps used in public lighting before the emergence of LED luminaires contain some amount of mercury. The families of lamps which contain mercury include mercury vapour, metal halide, low pressure sodium, high pressure sodium and all types of fluorescent lighting. The amount of mercury in each lamp type varies considerably from typically 4mg to 1000mg per lamp.

Mercury is a highly potent neurotoxin which is toxic to humans. Reduction or removal of mercury from the environment is a global public health priority as established by the 2013 United Nations Environmental Programme (UNEP) Minamata Convention on Mercury. Australia is a signatory of the Minamata Convention and the Australian Government is currently considering ratification.

As the Australian Government has noted, mercury-containing lamps are the single largest category of products containing mercury and a significant percentage of old lamps wind up in landfill. Ensuring the safe disposal of

lamps from public lighting is therefore a key environmental responsibility of all public lighting professionals whether replacing old lamps or removing high volumes as part of a large-scale LED rollout.

[Fluorocycle](#) is a voluntary national product stewardship program accredited by the Australian Government which aims to boost lamp recycling. Many businesses, governments and NGOs are signatories. Fluorocycle maintains a public [list](#) of licensed collectors and recyclers of lamps.



The most convenient way to recycle lamps is to use one of the many lamp collectors and recyclers available. Most lamp collectors and recyclers provide protective boxes to store lamps in until sufficient quantities are collected for transportation to the recycling facility.

More than 95% of the content of a typical lamp can be recycled. The typical content of a lamp is shown in the following breakdown:



Source: Recolight, UK

## Luminaire Recycling

Specialist luminaire recycling firms, while common in some countries, are yet to emerge in Australia. The simplest way for most public lighting owners and contractors to recycle luminaires is to work with one of the more generalist national recycling companies.

Luminaires can be broken down by recyclers into component parts as follows:

- Metals, including copper and copper windings, aluminium alloy casings and steel parts can be readily recycled once separated. Metals typically comprise 60-80% of a luminaire by weight and have reasonable value.
- Polycarbonates (Group 7 plastics) used in luminaire bowls or diffusers as well as other plastic parts are usually separate and sent to specialist recyclers. Plastics typically comprise 15-25% of a luminaire by weight.
- Toughened glass, sometimes used for bowls or diffusers, and ceramic lamp holders can be difficult to recycle and only specialist glass recyclers are able to take these components. Glass and ceramics typically comprise 2-12% of a luminaire by weight.

Particular care should be taken with very old luminaires (e.g., exceeding 30 years old) as old capacitors may contain PCB's (polychlorinated biphenyls) and asbestos parts may be found in some old luminaires.

In terms of reporting, reputable recyclers are able to provide assurances of environmental compliance as well as reporting and verification on the weights and volumes of material recycled.

### MORE READING:

1. [Fluorocycle](#) Product Stewardship scheme
2. [Disposal of mercury-containing lamps](#), Australian Department of the Environment & Energy
3. [The Minamata Convention on Mercury: What it means for Australian Street Lighting](#), Australian Department of the Environment & Energy