The hazardous waste collection industry is made up of a number of private enterprises who collect hazardous waste under contract and transport it to recovery and disposal facilities in Ireland and abroad. This service is commercially successful but the major bottleneck associated with it (with notable exceptions) is that it is not generally availed of by generators of small quantities of hazardous waste. This is due to a number of possible causes: (a) the relatively high unit cost involved, (b) a lack of knowledge on the part of hazardous waste generators of, for example, the need for segregation or (c) an unwillingness to take steps towards the management of hazardous waste.

5.1 Problem identification

Collection of hazardous waste is problematic when small quantities are involved. Costs for dedicated collection services are relatively high and many generators lack the expertise to find outlets for their hazardous waste. An estimated 70,228 tonnes in 1996 and 55,311 tonnes in 1998 of unreported hazardous waste, excluding sheep dip, were not separately collected. As a proportion of total arisings (excluding sheep dip) of hazardous waste, this fraction of hazardous waste represents a significant challenge towards achieving full compliance with legislation which requires the segregation and separate collection of hazardous waste.

Another indication of potentially unsegregated hazardous waste is that only 500 or so industrial companies are utilising available collection services. The potential scale of the problem of unreported waste is illustrated by the fact that Irish industry consists of about 5,000 companies. In addition, there are a few thousand companies in the service sector, such as garages and photographic shops, which generate hazardous waste. The majority of generators outside of the ‘500’ are likely to be small scale generators and these are not availing of the existing collection systems.

Photo 3 Small scale hazardous waste collection vehicle. (The waste types listed on the vehicle include batteries, photochemicals, oils, poisons, flammables, weedkiller, acids and medicines.)
5.2 Options to improve collection rates

A review of the situation in Denmark, Belgium, the UK, Germany and the Netherlands shows that all of these countries have established systems to collect hazardous waste from SME's and from households. Systems that have potential to deal with SME and household hazardous waste are described below.

SME's and other industry

For small scale industrial generators, the options that merit consideration include:

- the use of civic amenity sites and depots;
- the return of waste to suppliers (producer responsibility obligations);
- collection on demand by commercial providers; and
- a mobile collection service with scheduled stops at farms, shops, offices and small companies.

Household hazardous waste

For households, available systems include:

- household hazardous waste depots at civic amenity sites and bring banks;
- mobile collection services which make quarterly or biannual visits to neighbourhoods;
- door to door collection services; and
- bring systems using shops and other outlets to provide take back services.

Mobile or door to door collection services are frequently accompanied by the provision of storage boxes for hazardous waste. Given that collection frequency may be as low as twice per year, safe childproof storage is necessary.

Section 33 of the Act requires local authorities to arrange for the provision of waste collection services to households. Hazardous waste collection services, where established, should not be restricted to householders.

Other municipal hazardous waste

Experience in other countries has shown that collection by commercial providers is not economical for waste quantities less than 50 to 100kg. A significant quantity of hazardous waste arises from small scale generators each year and extension of the collection system to small generators not currently availing of a collection service is required. As stated above, local authority hazardous waste collection services should be available to small scale non-domestic generators. Alternatively, the provision of such a service by other service providers could be made attractive by use of subsidies or product and/or waste collection charges.

Storage and sorting of collected waste

Storage, sorting or transfer facilities may be required for the handling of segregated or unsegregated hazardous waste collected by local authorities or other service providers. Consideration for such facilities should be taken into account at the early stage of planning for collection systems.

Collection costs

Typical costs of the above options, based on international experience, are listed in Table 5.1. The number of units used in calculating the collection costs are based on typical requirements if local authorities were to implement the
recommendations made in this Plan. Costs of take back or return schemes and collection on demand services have not been included for the following reasons: (a) the cost of take back schemes will be variable and in some cases may be relatively inexpensive, on the condition that taking back goods complements the existing logistics of product delivery and (b) the cost of collection on demand is a function of the quantity of waste collected and its subsequent treatment. Actual costs under Irish operating conditions will only be established once systems are operating.

Recovery and disposal costs
The costs in Table 5.1 are for collection only. The estimated costs of recovering or disposing of unreported hazardous waste are set out in Table 5.2. They are calculated on the basis of a collection cost of £60 per tonne plus a treatment cost of £270 per tonne.

5.3 Improving the collection of hazardous waste
The collection service is at present availed of mainly by the largest generators of hazardous waste; this is due principally to the unit cost for collection. On the other hand, there are companies who do not manage their hazardous waste in an environmentally sound manner. Two priorities will therefore be set – (a) the enforcement of hazardous waste management on industrial and commercial generators and (b) the provision of a hazardous waste collection service to small scale generators.

Provision of a service for industry
There are a number of legislative and other options that could be used to ensure that industry uses authorised outlets for hazardous waste. The ever decreasing willingness of landfill operators to accept industrial hazardous waste is likely to be one such driving force (see chapter 6 for further detail on hazardous waste landfill). It is not considered unreasonable to assume that a large proportion of unreported industrial solid hazardous waste is disposed of to landfill. Landfill capacity in many parts of Ireland is expected to be at a premium in the short term. In addition, local authorities are generally not making provision for the acceptance of hazardous waste at existing facilities (most of which are unlined).

There is no statutory obligation on local authorities or other public bodies to provide collection services for hazardous waste to other than households. If

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Number of units</th>
<th>Investment Cost</th>
<th>Annual Operational Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic amenity sites</td>
<td>36</td>
<td>£1,800,000</td>
<td>£2,700,000</td>
</tr>
<tr>
<td>Take back systems in shops for households</td>
<td>20,000</td>
<td>£250,000</td>
<td>£500,000</td>
</tr>
<tr>
<td>Mobile collection services</td>
<td>32</td>
<td>£1,280,000</td>
<td>£2,800,000</td>
</tr>
<tr>
<td>Storage boxes</td>
<td>500,000</td>
<td>£2,000,000</td>
<td>£150,000</td>
</tr>
<tr>
<td>Take back systems for non-IPC licensed industry</td>
<td>-</td>
<td>not available</td>
<td>not available</td>
</tr>
<tr>
<td>Collection on demand</td>
<td>-</td>
<td>not available</td>
<td>not available</td>
</tr>
</tbody>
</table>

Table 5.1 Estimated cost of hazardous waste collection systems

<table>
<thead>
<tr>
<th>Estimated unit cost</th>
<th>Total annual cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment of 98,228 tonnes of unreported hazardous waste collected (at £330 per tonne) - 1996 data</td>
<td>£32,415,240</td>
</tr>
<tr>
<td>Treatment of 74,311 tonnes of unreported hazardous waste collected (at £330 per tonne) - 1998 data</td>
<td>£24,522,630</td>
</tr>
</tbody>
</table>
the segregation and separate collection of hazardous waste from other sources is to be ensured, enforcement will be required from a different direction. Economic instruments are discussed in chapter 4.7 and are the option most likely to be supported by waste management policy (see chapter 2.3). Experience in other countries dictates that economic instruments will require legislative backup.

Many waste generators may be unaware that they have responsibility for ensuring the proper management of waste (Section 32(1) of the Act). This illustrates the need for information to be provided to all commercial generators. The information should include waste management options as well as informing them of any other obligations that may exist. There may be a need for technical or financial assistance to the waste recovery industry and/or waste generators in order to ensure that each are in a position to promote their service and avail of the service respectively.

In preparing waste management plans, local authorities should identify the generators of hazardous waste within their functional areas. With detailed local knowledge, local authorities are in the best position to ensure that generators of hazardous waste in their functional areas, for whom they have responsibility, are provided with the information and support which will allow them to manage their hazardous waste in a manner that will not cause environmental pollution.

In summary, industry will be required to segregate and make use of authorised hazardous waste recovery and disposal routes by a mixture of drivers including the unavailability of landfill, the availability of recovery alternatives, economic instruments and the strict enforcement of legislation.

Provision of a service to small scale generators

The Waste Management (Planning) Regulations, S.I. No. 137 of 1997, require that local authority waste management plans specify arrangements for the segregation and separate collection of certain hazardous waste streams. It is assumed in making this Plan that the hazardous waste directive will be amended and that Member States will be required

Photo 5 Bin used for the storage, pending collection, of waste oil filters.
to organise collection services for all household hazardous waste. Waste management plans are required to have regard to anticipated developments which may affect the operation of a waste management system. It is recommended that local authorities make provision for the collection of household hazardous waste.

At a minimum, each local authority should make provision for the establishment of receptacles for the collection of hazardous waste at bring banks and civic amenity sites. The fact that such facilities are being provided at many locations is encouraging and users of civic amenity facilities should be able to dispose of hazardous waste. Such depots should serve both households and small businesses.

A method of increasing the number of collection points, and hence hazardous waste quantities collected, is to use shops, wholesalers and other retailers to provide receptacles for certain hazardous waste types. This method should be suitable for a number of discrete product wastes such as batteries, fluorescent lamps, waste oils and oil filters. Take back systems may be used and could be supplemented by producer responsibility obligations (such as deposit and refund schemes) to further encourage collection (see chapter 4.7.2). Retailer collection services may be supplemented and serviced by local authority controlled collection. The estimated cost of shop take back systems is shown in Table 5.1. This system depends on the co-operation of the shops involved.

Participation on a voluntary basis would be preferable although legislation imposing producer responsibility obligations may be required to ensure that producers and retailers make provision for the return of certain products.

If collection from small generators is to be maximised, a mobile collection system that calls to neighbourhoods in urban areas and, if feasible, local community centres in rural areas should be established. Storage boxes should be distributed to ensure safe storage of hazardous waste between collections.

In conclusion, presented above are some of the options available for hazardous waste collection from householders and other small scale generators. Provision should be made by local authorities for the collection of household hazardous waste. Any such service should be available to small commercial generators, in addition to householders, who may not have alternative affordable means of managing hazardous waste.