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the voice of the recycling industry

Issues and challenges facing the resource recovery sector

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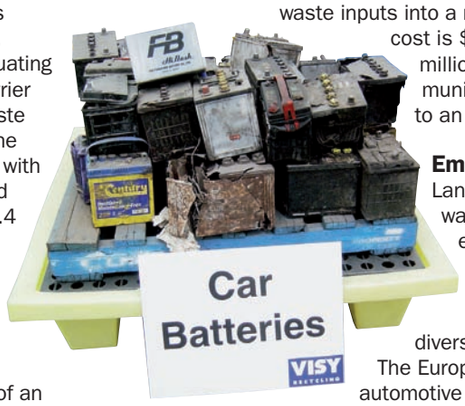
EPR rationale for lead acid batteries

Each year 500,000 to 1 million used lead acid batteries (ULAB) are landfilled – contributing to toxic leachate – or sent to recycling plants. One battery can contaminate an entire 25 tonne batch of compost.

The Total Environment Centre questions the Australian Battery Industry Association's (ABIA) claim of a 96% recovery rate for used batteries. It is most likely only 80%, largely due to the lack of a deposit-based return system for the DIY market. The remaining 20% are a significant problem.

Up to 15,000 batteries turn up annually in the feedstock of Global Renewables' (GRL) compost operations at its Eastern Creek UR-3R Facility. GRL produces compost by processing 175,000 tonnes of municipal waste yearly; however, the 145,500kgs of lead entering its waste recovery systems comprise its operations.

Each lead acid battery costs recyclers $62.50 in additional labour, equipment, maintenance and opportunity costs, equating to a potential $31 million additional barrier to resource recovery from municipal waste across Australia. However, the cost of the greenhouse emissions is much greater, with a social cost of $814 for every lead acid battery that prevents the reduction of 7.4 tonnes of greenhouse emissions. By 2010, if the amount of ULAB in MSW remains constant, they could represent potential greenhouse impact of 3.7 million tonnes of CO_2e.



These impacts provide a compelling case for policy intervention in the form of an extended producer responsibility (EPR) scheme. Many countries already have EPR laws whereby a significant deposit is charged for every battery sold, which extracts a far higher number of DIY lead acid batteries from kerbside municipal waste streams.

The replacement market for automotive batteries in Australia is estimated to be 4.5 million units per year. Each battery contains on average 9.7kgs of lead, equivalent to a total of 43,650 tonnes of lead in the replacement market. Most replacement batteries are sold through service outlets, however the DIY sector is estimated to comprise at least one-third of the national market.

Battery industry claims

While ABIA estimates nearly 96% of car batteries are recovered for recycling, it's likely this estimate is inflated. A US Geological Survey study found lead acid battery consumption has been under reported by 24%, reducing the claimed recycling rate in the US to approximately 80%. Such an error in Australia would decrease the current estimated recycling rate from 96% to 77%, suggesting only 3.5 million car batteries are recycled, with 1 million landfilled.

GRL finds up to 80 ULAB in its municipal waste feedstock daily. Using the GRL concentration rate of 0.08 batteries per tonne of municipal waste gives an estimate of 496,000 ULABs disposed through kerbside waste collection alone throughout Australia.

This gives a figure of 89% recovery of ULABs. Taking the conservative mid-point between these two recovery rates produces a recovery rate of 83%, leaving 765,000 ULABs annually.

Compost, contamination and costs

About 50% of the organic portion of municipal waste can be processed to produce a usable compost product. However, lead contamination can severely limit this. Lead is a heavy metal toxic to humans, animals, plants and micro-organisms at low exposure levels due to its bio-accumulating properties.

The estimated concentration of lead in municipal waste is 1,050mg/kg (dry weight basis). A lead concentration greater than 150mg/kg means the compost cannot be used on home lawns and gardens, and is restricted for use in agriculture and forestry.

The financial impact of ULAB in municipal waste is significant. The additional cost for equipment, maintenance and labour to remove the batteries is approximately $10 per tonne of compost. In addition, the lost opportunity of selling Grade C compost product instead of Grade A (unrestricted use) is in the order of $10 per tonne. The combined financial impact of batteries in municipal waste is therefore potentially $20 per tonne of compost.

Assuming compost outputs account for 25% of the municipal waste inputs into a resource recovery technology, the additional cost is $5 per tonne of input, or a potential $31 million additional barrier to the recovery of municipal waste across Australia. This translates to an impact of $62.50 per municipal waste.

Emissions and global action

Landfill gas contains methane which has a global warming potential 23 times that of CO_2e and every tonne of municipal waste landfilled equals 1.25 tonnes of CO_2e. By 2010, ULABs could have a potential greenhouse impact of 3.7 million tonnes of CO_2e by reducing waste diversion opportunities.

The European Union requires the collection of used automotive batteries and accumulators from end-users or from accessible collection points. EU countries have implemented this requirement in different ways. Germany, for example, requires battery distributors to accept any used batteries from customers and levy a deposit of 7.50 ($12) if the purchaser fails to return a used battery when purchasing a new unit.

In the US, Arizona, Arkansas, Connecticut, Idaho, Maine, Minnesota, New York, South Carolina and Washington all require consumers to pay a deposit of between US$5-10 if they purchase a new battery without returning a used battery.

Prince Edward Island, Canada, requires a C$5 levy to be charged if a used battery is not presented when purchasing a new battery or within 30 days of purchase. Since 1998, recovery rates have grown from 65% to 107% in 2000.

Local lack of incentive

Australia offers no systematic incentive for consumers to bring their batteries back to retailers or distributors for recycling. Many service stations, battery retailers and some waste transfer stations will accept batteries for recycling, but this is insufficient to stop half to one million ULAB ending up in recycling operations and landfills.

In NSW, batteries were identified as a priority waste in the NSW Extended Producer Responsibility Priority Statement for 2005/06. The NSW Minister for the Environment has requested the Australia Battery Industry Association outline actions to engage suppliers of the DIY markets and householders to ensure improved recovery.

ACOR is calling for the introduction of a high deposit on all lead acid batteries sold where there is no trade-in of another battery is recommended. This would directly target the DIY section of the lead acid battery market where leakage is likely, without the need for implementing a deposit on all batteries.

This briefing paper was prepared by Total Environment Centre based on a report prepared by Warnken ISE.

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