Report on the implementation of the NSW Extended Producer Responsibility Priority Statement 2004

EPR Expert Reference Group

September 2005

**Department of
Environment and
Conservation (NSW)**

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EPR Expert Reference Group

c/- Sustainability Programs Division, Department of Environment and Conservation (NSW)
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1 September 2005

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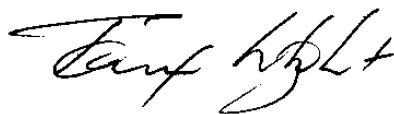Sydney   NSW 2000

Dear Minister and Director General,

I enclose a copy of the Report of the Extended Producer Responsibility (EPR) Expert
Reference Group on the NSW EPR Priority Statement, 2004.

With the assistance of the Department of Environment and Conservation, the
Reference Group has completed an assessment of EPR readiness by various
industry sectors covering the 16 waste types identified as *of concern*. The Report
contains recommendations for action to progress implementation of extended
producer responsibility in New South Wales.

On behalf of the Reference Group, I hope this Report is helpful to you and the
Government in reducing pollution impacts from these wastes and conserving
resources where appropriate.

Yours sincerely,

Members

Tony Wright	Deputy Chair, EPA Board
Tony Wilkins	Manager, News Limited Environmental Secretariat
Michael Bennett	Chief Executive, Refrigerant Reclaim Australia
Michael Hohl	Senior Content Producer – Products, Australian Consumers' Association
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Executive summary

In 2001, the NSW Government introduced an extended producer responsibility (EPR) policy, with the guiding principle that Government will not intervene where nominated industry sectors are making clear progress towards implementing programs to reduce problem wastes, but can act decisively where they are not. This policy was implemented through the *Waste Avoidance and Resource Recovery Act 2001*, in particular Part 4, which deals specifically with EPR schemes.

The Expert Reference Group (ERG) was formed by the Minister for the Environment in March 2004 to advise on identification of wastes of concern and those for priority focus; the effectiveness of existing or proposed EPR schemes to reduce waste volumes and toxicity; and the need for regulatory schemes. This document is the ERG's report to the Minister for the Environment and the Director General of the DEC.

Section 18 of the Act requires the Director General of the DEC to publish an annual priority statement on the EPR schemes that the Director-General proposes to recommend for implementation under the Act. The first EPR Priority Statement was published in March 2004.

The EPR Priority Statement 2004 did not recommend any mandatory scheme for regulatory action. Instead, it put relevant industry sectors on notice to reduce the end-of-life impact of their products or face regulatory action. It listed 16 'wastes of concern', with nine to receive priority focus. The nine priority wastes of concern are:

computers	televisions	nickel cadmium batteries
used tyres	plastic bags	agricultural/veterinary (Agvet) chemicals
Agvet chemical containers	mobile phones/batteries	packaging wastes

The remaining seven wastes of concern are:

cigarette litter	office paper	polyvinyl chloride (PVC)
other electrical products	treated timber	end-of-life vehicle residuals
household hazardous and chemical wastes		

Summary of conclusions and recommendations

Industry sectors vary in the degree to which they are currently addressing the end of life management of their products. A number of priority wastes either have existing voluntary schemes (e.g., Agvet chemicals and chemical containers) or are involved in national negotiations via the Environment Protection and Heritage Council (EPHC) to develop voluntary schemes (e.g., televisions and tyres). Other sectors have relatively underdeveloped approaches at this stage. Below is a summary of the ERG's conclusions and recommendations. More details on each waste of concern, including current industry action, are in the main body of the report.

Computers

The computer sector has been slow to respond to the challenge of product stewardship, despite considering the issue for a number of years. Early proposals were largely conceptual, lacked substance and indicated an unwillingness to take responsibility in a number of key areas, such as historical and orphaned products, infrastructure development, public education and research and development. There was also a strong expectation that local government should be required by legislation to provide collection services at ratepayer expense.

A discussion paper provided by the industry in July 2005 indicated that the industry had reviewed its approach in some of these areas. However, the details of EPR scheme funding and the issue of historical and orphan wastes still remain unresolved. The industry proposes to provide a scheme for new computers put onto the market from a future set date and, while it is prepared to negotiate a solution for historical and orphan waste, it has indicated that this could only occur at a much later date. It is recommended that:

(1) If no satisfactory plan for a fully-funded industry scheme is forthcoming by end-2005, then the Minister should initiate regulatory action to mandate EPR within the computer industry to ensure that the industry takes full physical and/or financial responsibility for the proper recovery and reuse/recycling of computers, including historical and orphan wastes.

Televisions

In July 2004, the television industry established its Producer Responsibility Organisation (PRO) called Product Stewardship Australia Ltd. Progress toward an EPR scheme for televisions is encouraging, recognising that it has been largely focused to-date on the establishment process and it is now progressing to the development of a product stewardship agreement and an implementation framework for presentation to the EPHC in October 2006. It is recommended that:

(2) NSW through the DEC continues to work with the television industry and other stakeholders at the national level as part of the EPHC electricals work to support the implementation of the television product stewardship plan. The DEC should immediately commence work with other jurisdictions to develop a regulatory safety net in the form of a National Environment Protection Measure (NEPM) in line with continuing progress by the industry.

(3) The Minister requests the television industry to begin collections as soon as possible. In preparation, by October 2006 the industry ought to, as a matter of priority, progress the following:

- Negotiate and draft a formal Product Stewardship Agreement with governments and the community, including commitments on collection and recycling levels, reporting, industry participation, promotion and geographical coverage.
- Establish strategic links and commitments with key infrastructure providers, such as local government, waste transfer stations and recycling companies.
- Develop a business plan to achieve the commitments negotiated with Governments in the Agreement, and carry out an economic analysis of the business plan to determine an appropriate funding mechanism for the scheme.

(4) If the scheme is not operational within three months of the NEPM coming into force, NSW should regulate to require the industry to take physical and/or financial responsibility for the end of life management of televisions.

Nickel cadmium batteries (excluding mobile phone batteries)

No NiCad battery is manufactured in Australia, although some assembly takes place domestically for industrial applications. In 2002, 8.5 million NiCad batteries were imported. This represented about 2,000 tonnes in weight. The miniaturisation and portability of electrical equipment has increased the use of a wide array of other different types of rechargeable batteries and NiCad batteries no longer predominate the rechargeable or secondary battery sector.

Current efforts to recover and recycle NiCad batteries and educate consumers about the proper disposal of these batteries and appliances containing these batteries are piecemeal. Furthermore, there is no facility in Australia to recycle NiCad batteries,

and any recovered battery has to be exported for recycling. Regulation does not appear to be appropriate at this stage, given the likely superseding of these batteries. Instead, there appears to be a need to phase out the use of NiCad batteries, whilst ensuring an interim system for recycling. It is recommended that:

(5) Producers, importers and sellers of NiCad batteries improve labelling to educate consumers on options to recycle or safely dispose used NiCad batteries.

(6) The DEC takes the issue of a national phase out of NiCad batteries to the EPHC's Waste Working Group by October 2006.

(7) The DEC creates a new priority waste category in the next priority statement for all batteries, including NiCad batteries, other rechargeable batteries and lead acid batteries.

(8) See Recommendation 33.

Used tyres

The tyre industry's initiative to develop a voluntary, industry-funded product stewardship scheme at the national level through EPHC is acknowledged. However, industry momentum for a used tyre product stewardship scheme has slowed, with little progress since September 2004. It is recommended that:

(9) The Minister requires the tyre industry to finalise the details of its voluntary scheme by December 2005.

(10) NSW through DEC continues to work with other jurisdictions to develop a regulatory safety net in the form of a National Environment Protection Measure (NEPM) pending continued progress by the tyre industry.

(11) The tyre industry should commence its scheme as soon as possible but if a scheme is not operational within three months of the coming into force of the NEPM for Product Stewardship, NSW should regulate to require the industry to take physical and/or financial responsibility for the end of life management of tyres.

(12) The Minister requires the tyre industry to immediately clarify to the DEC the purpose and use of the tyre levy currently being charged to consumers in NSW at the point of sale.

Plastic bags

Environment Ministers have responded to community concern about the number of plastic carry bags used in Australia. Some progress has been made in achieving the targets established in the *Code of Practice for the Management of Plastic Bags*. Retailers report to EPHC on a six monthly basis against the targets in the Code and achieved 26.9 % reduction in usage of bags by December 2004 (against a 25% target). There is a need to ensure that the momentum is maintained. It is recommended that:

(13) The DEC continues to closely monitor industry's reported progress to EPHC in reaching its target of a 50% reduction in the issue of lightweight plastic carry bags by end-2005. The Minister should initiate regulatory action if this is not achieved.

(14) If retailers deliver against their 50% reduction target by end-2005, NSW should continue to participate in the EPHC process to negotiate a further voluntary phase out agreement by end-2008.

(15) The Minister requests the retail industry to provide NSW data as part of its reporting framework to assist in evaluating progress.

(16) The Minister requires the retail industry to, as a matter of priority, implement systems to collect and recycle alternative reusable bags, such as the common polypropylene bags sold in supermarkets, and report on this by October 2006.

(17) The Minister should adopt and affirm a NSW policy position that degradable plastic carry bags are not an acceptable alternative for lightweight plastic carry bags.

Agricultural/veterinary (Agvet) chemicals

The industry-funded EPR scheme for Agvet chemicals, ChemClear, is the industry's agreed follow-up to ChemCollect, which was a free collection and safe disposal scheme of unwanted and deregistered Agvet chemicals. ChemCollect was funded by Australian governments at a cost of $27 million.

ChemClear provides a free collection and disposal service for chemicals sold by participating organisations. The quantities of chemicals sold and collected in NSW is not currently clear. This makes it difficult to assess the effectiveness of ChemClear in terms of both its expectations and collection results. When the EPR Priority Statement was released in March 2004, ChemClear had just started pilot trials in NSW and SA. It was officially launched in NSW in early 2005.

The challenge is now to increase recovery of chemicals and to demonstrate that recovery rates are capturing a substantial percentage of unwanted chemicals from commercial pesticide users in NSW. It is recommended that:

(18) The Minister requires ChemClear to report from the end of FY2005-06 on chemical quantities sold and collected (Group 1 and Group 2) in NSW and provide information about the way in which the effectiveness of the program and progress against targets will be monitored in NSW.

(19) The DEC seeks the support of other governments for a formal national arrangement for annual industry reporting of targets, collection data and promotional activities undertaken under the ChemClear scheme, both nationally and on a State/Territory basis, with reporting to commence from the end of FY2005-06.

Agricultural/veterinary chemical containers

In February 1999, the industry established a voluntary national program called drumMUSTER for the collection and recycling of empty cleaned, non-returnable chemical containers. The program is funded by a levy on users of 4 cents per litre or kilogram of chemical that is sold. Although the scheme is fully funded and widely available, it is not engaging users effectively. In 2003-04, 24.4% of previous year's sales of containers were collected. In the same period, about 9% of the estimated 40,000 users of farm chemicals in NSW returned used Agvet containers at drumMUSTER collections. End user participation therefore appears to be very low and needs to be substantially increased in NSW. It is recommended that:

(20) The Minister requires drumMUSTER to set performance targets by end-2005 that aim for significantly increased end-user participation and increased recovery of Agvet containers in NSW, and describe ways in which these targets will be pursued.

(21) The DEC seeks the support of other governments for a formal national arrangement for annual industry reporting of targets, collection data and promotional activities undertaken under the drumMUSTER scheme, both nationally and on a State/Territory basis, with reporting to commence from the end of FY2005-06.

Mobile phones and batteries

Although the industry has a voluntary product stewardship scheme in place, its performance is unsatisfactory and the scheme is not operating effectively. The collection and participation rates are very low, indicating that much more must be done by industry to capture used mobile phones. The ERG notes that the EPHC is in the process of negotiating a national voluntary agreement with the mobile phone industry. It is recommended that:

(22) Should the EPHC negotiation process fail to result in a robust agreement by April 2006, the Minister should initiate as soon as possible regulatory action to mandate EPR by the mobile telephone industry to ensure that the industry takes full physical and/or financial responsibility for the proper end of life management of mobile telephones and batteries in NSW. A report on implementation progress should be provided by October 2006.

Packaging wastes

The National Packaging Covenant commenced in August 1999. It had an initial life of five years. The EPHC recently approved a new voluntary National Packaging Covenant and regulatory safety net, the National Environment Protection Measure (NEPM) for Used Packaging Materials, which will apply to non- Covenant participants and non-performing Covenant signatories. The new Covenant will be implemented from July 2005 to July 2010. It is recommended that:

(23) The NSW government works through the DEC to support the implementation of key actions and processes necessary to ensure that the strengthened Covenant is effective. This includes:

- facilitated action to promote the Covenant to potential signatories and others who can assist to achieve Covenant outcomes, particularly in the away-from-home sector
- Continued monitoring of the effectiveness of other approaches to whole of lifecycle management of packaging nationally and internationally
- assistance with the development of improved NSW data on packaging as a matter of priority
- implementation of the NEPM to tackle free riders in a timely and effective manner.

(24) The NSW Government should take immediate regulatory action to establish an EPR scheme if the mid-term evaluation at the end of 2008 demonstrates unsatisfactory progress of the Covenant/NEPM model against its targets and key performance indicators.

Cigarette litter

Cigarette manufacturers have largely limited their product stewardship activities to funding community education. They appear to consider that such funding fulfils their product stewardship obligations. However, the activities and projects funded have not translated into widespread reduction of cigarette butt litter. Instead, cigarette butts comprise the largest component of litter in NSW, making up 39% by weight and 34% by volume. They continue to be the most commonly found item during Clean Up Australia activities, totalling 15% in 2004. The impact of current activities funded by cigarette manufacturers is clearly unsatisfactory. It is recommended that:

(25) The Minister requires the tobacco industry to provide by March 2006 a plan and timeline for a whole of NSW approach for the reduction of cigarette butt litter. NSW Government litter survey results should remain the main measure of success.

(26) The Minister receives advice from the DEC about national and international regulatory measures, which may be suitable for application in NSW/nationally to reduce cigarette litter and/or its impact on the environment.

Office paper

The recovery rate of office paper is very low and is making a significant contribution to the commercial sector waste stream. Much more needs to be done by the industry to take a unified approach to recover and recycle office paper. It is recommended that:

(27) 'Office paper' is elevated to high priority waste in the next Priority Statement due to the high volumes of material currently going to landfill.

(28) The Minister requires that producers and importers of office paper and the printing industry should report for FY2005-06 and thereafter annually on their initiatives to 'close the loop' through increased production, importation or use of paper with recycled content, and the establishment and expansion of other markets for post consumer office paper.

(29) The Minister requires that the paper industry should develop a draft product stewardship concept by March 2006. The DEC should then assist the industry in discussing this concept with other jurisdictions and sponsoring the idea of a national approach.

(30) The Minister asks the paper industry to develop a detailed product stewardship plan by October 2006 in consultation with key stakeholders, including property and building owners, office paper recyclers, and the waste industry. This should include baseline data on the amount of office paper consumed, recycled, archived, used for other purposes (e.g., composting) and landfilled. The plan should also address data gaps.

Polyvinyl chloride

The PVC industry's voluntary commitment to product stewardship is a step in the right direction. However, a number of issues remain regarding the use and phase out of some additives from PVC products and the end-of-life management of PVC products that already contain these chemicals. It is recommended that:

(31) The Minister requires the PVC industry to provide its action plan to address priority end-of-life PVC issues to the DEC by December 2005.

Other electrical products *(includes whitegoods, consumer electronics and lighting products)*

There is no product stewardship scheme in place for any of the products in the 'other electrical goods' category, but the interest shown by industry groups from the whitegoods, consumer electronics and lighting sectors is encouraging. The different products within the 'other electrical products' category have been disaggregated and separate recommendations are provided below:

(32) The Minister should require reports from industry by end-2005 identifying initiatives to improve or establish systems for collection and recycling and to reduce hazardous substances in products.

(33) In addition, the Minister should require producers and importers to report, in respect of the following, specific proposals and current actions by December 2005 and a further report on implementation by October 2006:

- Reducing the amount of shredder floc going to landfill from end-of-life whitegoods by, for example, dismantling non-metallic components prior to shredding or developing ways to separate materials from shredder floc or developing end markets for shredder floc.
- Establishing a recovery plan for end-of-life consumer electronics products that contain rechargeable batteries. Work on this could begin in the short to medium term with trials and research and run concurrently with the establishment of the television product stewardship scheme. In the longer term, the industry should

move to phase out the use of non-removable NiCad batteries in favour of less hazardous battery technologies.

- Improving the recovery and recycling of NiCad batteries from emergency lighting and focussing the attention of the commercial sector on improving the recovery and recycling of fluorescent tubes and other vapour lamps.

Treated timber

There are 32 timber treatment plants in NSW. DEC regulates 12 of them, with local government regulating the remaining 20. In March 2005, the Australian Pesticides and Veterinary Medicines Authority announced a phase out (over 12 months) of CCA (copper, chromium and arsenic) treatment for timber used to make picnic tables, outdoor seating, play equipment, patio, domestic decking and handrails. All CCA treated timber must be clearly identified under strict new labelling requirements.

Currently, there is no product stewardship scheme in place. There is a lack of practical recycling opportunities for treated timber and a current inability to sort treated timber from other timber that could be recycled. However, the industry has shown some willingness to work on these issues. It is recommended that:

(34) The Minister requires the treated timber industry to report specific proposals and current actions on the following by end-2005 and a further report on implementation by October 2006:

- Development of processes to identify and separate treated timber from mixed timber wastes.
- Programs to educate consumers on proper disposal of treated timber.
- Assessment of options for the use of more benign alternatives to treat and preserve timber.
- Action to develop end-market uses for recovered treated timber.

End-of-life vehicle (ELV) residuals

ELV residuals or 'shredder floc' is a major waste stream that is disposed of to landfills. Shredder floc is a by-product of the metal shredding process and usually includes materials derived from the mechanical shredding of white goods and other metallic products, not just from the shredding of vehicles. It comprises mainly non-ferrous material and could include rubber, glass, plastic, lead, other heavy metals, oils and automotive fluids. There is no formal industry wide voluntary product stewardship or EPR scheme to manage ELV residuals. None is being considered.

A national committee exists to consider environmental issues in land transport (Land Transport Environment Committee). However, this committee and its predecessor (Motor Vehicle Environment Committee) have focussed mainly on standards for vehicle emissions, fuel quality and noise.

Earlier this year EcoRecycle Victoria and the Plastics and Chemical Industries Association (PACIA) entered into a two-year partnership to find ways to improve the recovery and recycling of plastics in the automotive industry. However, more positive action is required from vehicle manufacturers. It is recommended that:

(35) The Minister requires vehicle manufacturers to report by April 2006 on proposals and plans to reduce the amount of shredder floc generated during the metal recycling process. For example, by supporting or establishing authorised vehicle treatment stations that would conduct fluid removal and dismantling processes prior to metal shredding, either on their own, or with Automotive Parts Recyclers Association of Australia members or similar dismantling industry partners, thereby maximising overall recycling volumes. A report on implementation progress should be provided by October 2006.

(36) The DEC and industry monitor the partnership between EcoRecycle Victoria and PACIA to increase the recovery and recycling of plastics in the automotive industry in order to assess the outcomes and potential opportunities for reducing the amount of shredder floc derived from end-of-life vehicle shredding going to NSW landfills.

(37) The Minister considers regulation to require all vehicles that are processed by the automotive dismantling industry to have all fluids and major non-metallic items removed prior to the vehicle going for metal shredding.

Household hazardous and chemical wastes

Paints

Various paint take-back trials conducted by individual companies in the paint industry are encouraging. However, whole of industry product stewardship is not satisfactorily demonstrated through the initiatives of one or two progressive companies. It is recommended that:

(38) Used paint is listed as a specific priority product of concern in the next Priority Statement.

(39) The Minister requires that by end-2005 industry outlines plans (including targets) towards the establishment of and/or financial support for recovery systems for paint, and by October 2006 the industry demonstrates clear progress towards implementation.

(40) The Minister introduces a regulatory system if the targets are not met.

Lubricants and oils

There is an existing scheme called Product Stewardship for Oil program that is being run under the *Product Stewardship (Oil) Act 2000 (Cth)* for the recovery and recycling of used lubricants and oils, and which appears to be making good progress. It is recommended that:

(41) The DEC monitors the progress of product stewardship for used oil through the review mechanisms in place for the *Product Stewardship (Oil) Act 2000 (Cth)*, with particular emphasis on the percentage of recoverable oil that is actually recovered and the recovery from the home oil change market.

(42) The Minister requests the scheme to demonstrate initiatives to improve consumer awareness in NSW to ensure that used oil that is now being returned through the NSW Chemical Cleanout program is diverted to oil collection facilities being operated under the Product Stewardship for Oil program.

Lead acid batteries

A system operated by the battery industry to recover and recycle used lead acid batteries appears to be recovering the majority of these batteries. However, there is clear room for improvement to capture used lead acid batteries from individual households and the DIY market. It is recommended that:

(43) The Minister requires that the Australian Battery Industry Association report proposals and current actions by end-2005 to engage suppliers of the DIY consumer markets and householders to divert lead acid batteries away from the municipal waste stream and the NSW Chemical Cleanout program towards more appropriate systems such as point of sale take-back with a further report on implementation in October 2006.

Ongoing ERG roles

National Environment Protection Measure

Where the development of a National Environment Protection Measure (NEPM) is integral to the operation of a product stewardship scheme, there would be value in the ERG having input into the development of the NEPM. It is therefore recommended that:

(44)   The Minister ensures that the ERG has input into the development of NEPMs where they apply to proposed product stewardship schemes for wastes identified in NSW EPR Priority Statements.

Product Stewardship Agreements

Where Product Stewardship Agreements are central to successful compliance with NSW policy on EPR, it is essential that the community is involved in the development of these Agreements. It is therefore recommended that:

(45)   The Minister adopts a NSW position of, and seeks other jurisdictions' support for, community involvement in the development of Product Stewardship Agreements.

Future of the ERG

The ERG, having advised on the effectiveness of existing or proposed EPR schemes and the need for regulatory schemes since March 2004, provides stakeholder representation for the implementation of the Government's EPR policy. As most of the above recommendations are relevant to ongoing and future timelines, it is important that continuity of those recommendations is maintained. To ensure the continuity of advice on the Government's EPR policy, it is therefore recommended that:

(46)   The Minister ensures the ongoing operation of the ERG to advise on the identification of wastes of concern and those for priority focus; the effectiveness of existing or proposed EPR schemes to reduce waste volumes and toxicity; and the need for regulatory schemes.

1 Introduction

1.1 Waste Avoidance and Resource Recovery Act 2001

In 2001, the NSW Government introduced an extended producer responsibility (EPR) policy, with the guiding principle that Government will not intervene where industries are doing the right thing to reduce problem wastes, but can act decisively where they are not. This policy was implemented through the *Waste Avoidance and Resource Recovery Act 2001*, in particular Part 4, which deals specifically with EPR schemes.

Section 15 of the *Act* defines EPR schemes as giving effect to an environmental policy in which producers' responsibilities for their products (physical or financial) are extended to the post-consumer stage of the products' life cycle.[1] Under section 16, the Minister for the Environment may make regulations to implement EPR schemes.

Sections 17 and 18 of the Act specify certain steps that must precede the making of any regulation to mandate EPR schemes. Under sub-section 17(1), the Minister is not to recommend the making of a regulation to implement an EPR scheme unless the Minister is satisfied that it is necessary to do so having regard to the following:

- the volume of waste requiring ultimate disposal or the toxicity of the waste generated
- whether there is a national scheme in place that adequately addresses waste issues in NSW
- whether there is an effective voluntary scheme in place (nationally or State based) that is able to achieve the desired outcomes and is being actively implemented, monitored and reported on
- whether economic analysis supports the implementation of the scheme
- whether there are any constitutional or other impediments to NSW acting unilaterally in implementing the scheme.

Section 18 requires the Director General of the Department of Environment and Conservation (DEC) to publish an annual priority statement on the EPR schemes that the Director-General proposes to recommend for implementation under the Act.

1.2 EPR Priority Statement 2004

In February 2003, the NSW Environment Protection Authority[2] published a discussion paper on EPR and undertook extensive public consultation among industry, environment and community groups. The *EPR Priority Statement 2004* was published in March 2004, together with the *Report on the EPR Preliminary Consultation Program*.[3] Following receipt of further comments, the *Public Consultation Report: EPR Priority Statement 2004* was published in August 2004[4].

The EPR Priority Statement 2004 did not recommend any mandatory scheme for regulatory action. Instead, it put relevant industry sectors on notice to reduce the end-of-life impact of their products or face regulatory action. It listed 16 'wastes of concern', with nine to receive priority focus. The following criteria were used to select wastes of concern:

- Detrimental environmental or public health impacts from the recovery or disposal of the product
- Total volume of the waste requiring disposal or its percentage in the waste stream
- Potential for waste avoidance, reuse or beneficial resource recovery
- Potential to contaminate waste streams and limit opportunities for resource recovery

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[1] 'Producer' includes suppliers and brand owners. EPR schemes include product stewardship schemes.

[2] The EPA is now part of the DEC, but continues to remain as a legal entity for certain enforcement functions

[3] Both documents are available at www.environment.nsw.gov.au/waste/epr

[4] Available at www.resource.nsw.gov.au/epr.htm

- Likelihood of illegal disposal through dumping or littering
- Level of community concern about the waste
- Extent to which EPR is the appropriate tool for managing the waste

Five of the nine priority wastes do not have any existing sector-wide post-consumer waste management scheme in place. The focus for these products in 2004-05 was on encouraging industry groups to establish EPR schemes for the end-of-life management of each of these products. These are:

computers	televisions	nickel cadmium batteries
used tyres	plastic bags	

The other four priority wastes have national EPR or product stewardship schemes. These priority wastes are:

Agricultural/veterinary (Agvet) chemicals	Agvet chemical containers
mobile phones/batteries	packaging wastes

The schemes are ChemClear, drumMUSTER, the Mobile Phone Industry Recycling Program (MPIRP) and the National Packaging Covenant respectively. The focus in 2004-05 has been on assessing the effectiveness of each scheme, particularly in NSW.

The remaining seven wastes of concern are:

cigarette litter	office paper	polyvinyl chloride (PVC)
other electrical products	treated timber	end-of-life vehicle residuals
household hazardous and chemical wastes		

The focus in 2004-05 has been on reviewing these lower priority wastes of concern to assess action taken by industry; whether these products should receive higher or lower priority in future; and to identify specific areas for attention.

1.3   Expert Reference Group

The Priority Statement established an Expert Reference Group (ERG) to advise the Minister for the Environment and the Director General of the DEC on current and proposed EPR schemes and other industry action. The current members are:

Tony Wright (Chair)	Deputy Chair, EPA Board
Tony Wilkins	Manager, News Limited Environmental Secretariat
Michael Bennett	Chief Executive, Refrigerant Reclaim Australia
Michael Hohl	Senior Content Producer – Products, Australian Consumers' Association
Jane Castle	Resource Conservation Campaigner, Total Environment Centre
Robert Verhey	Strategy Manager Environment, Local Government & Shires Association of NSW
Vince Chaplin	Group Manager Environment, Smorgon Steel Recycling (Past president, Australian Council of Recyclers)
Tim Rogers	Executive Director, Sustainability Programs Division (SPD), DEC
Roz Hall	Director, Frameworks and Product Stewardship, SPD, DEC

The ERG's responsibilities include advising the Minister for the Environment and the Director General of the DEC on the identification of wastes of concern and those for priority focus; the effectiveness of existing or proposed EPR schemes to reduce waste volumes and toxicity; and the need for regulatory schemes.

The ERG met nine times between May 2004 and July 2005. At the initial meetings the Group finalised a broad work plan and criteria to evaluate EPR schemes and proposals for the priority wastes of concern. Subsequent meetings involved discussions with industry representatives on the development or implementation of EPR schemes. Appendix 1 lists the main items discussed at each ERG meeting.

1.4   Evaluation criteria

Priority wastes of concern

The ERG developed a list of generic evaluation criteria and key performance indicators (KPIs) to evaluate existing or proposed schemes for the nine priority wastes. The criteria and KPIs took into account guidelines in the Priority Statement[5] and guiding principles published by the Organisation for Economic Cooperation and Development (OECD)[6], with appropriate refinements to make the criteria as relevant as possible and able to be reported on.

The criteria and KPIs were then discussed with each priority industry sector to gain agreement on relevant criteria. Reports were requested from each sector only against applicable criteria. Industry reports and proposals were assessed against these criteria. The generic evaluation criteria covered the following:

1   Scope and coverage
2   Targets and timeframes
3   Design for the environment
4   Collection results
5   Reuse and recycling quantity and quality
6   End user participation
7   Industry participation
8   Funding
9   Data collection
10   Litter or illegal dumping
11   Level of community concern
12   Toxicity levels

Appendix 2 lists the KPIs against each criterion.

Lower priority wastes of concern

For the seven lower priority wastes of concern, the ERG evaluated actions taken by industry before and after the release of the Priority Statement through information obtained in a questionnaire and face-to-face meetings. The criteria and KPIs for priority wastes of concern were not used for the lower priority wastes, as those criteria/KPIs related specifically to existing or proposed schemes. Many of the lower priority wastes have neither an existing scheme nor a proposed scheme being actively planned. The seven questions that were sent to relevant industry sectors representing the lower priority wastes of concern were as follows:

1   What action have you taken to reduce the detrimental environmental or public health impacts resulting from the recovery or disposal of your products?
2   What action have you taken to reduce the total volume of waste disposed of at the end of your products' life? If possible, please express the reduction, if known, in terms of:

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[5] *EPR Priority Statement 2004*, pp 4 to 5

[6] *Extended Producer Responsibility: A Guidance Manual for Governments*, OECD, 2001, Chapter 7.

- total weight (tonnes or kg) and/or volume (cubic metres); and
- weight (kg) and/or volume (cubic metres) per unit of production; and
- as a percentage of the number/weight/volume of products sold.

3   What action have you taken to improve the waste avoidance, reuse or beneficial resource recovery of your products?

4   What action have you taken to reduce the potential for your products to contaminate the waste stream and/or limit opportunities for resource recovery?

5   What action have you taken to reduce the likelihood of the illegal disposal, dumping or littering of your products?

6   What action have you taken to address any community concern about the waste generated from the use and disposal of your products?

7   Are there barriers in your industry that reduce your capacity to implement extended producer responsibility or product stewardship schemes? If so, please describe in detail.

1.5   EPR - Options for action

Actions by industry to manage waste and other environmental impacts from their products can vary along a continuum from fully voluntary to fully regulated approaches. NSW and other State governments have expressed strong support for voluntary national product stewardship in recognition that this provides flexibility and fosters innovation by industry and this is an incentive for them to participate. Voluntary action at the national level is also recognised as a bona fide demonstration of tangible action in evaluating industry progress under the EPR Priority Statement in NSW.

A number of sectors that are developing voluntary product stewardship schemes have also recognised that whilst it may be possible to gain majority sector participation for these initiatives, there will be some companies that will not participate voluntarily and that will therefore have unfair market advantage. This has given impetus to an approach that is well supported by industry in Australia, namely, voluntary sector initiatives underpinned by a regulatory safety net to capture free riders (known as co-regulation).

The TV and tyre sectors approached governments to develop a national 'regulatory safety net', which would apply to non-participants in voluntary sector schemes and which would mandate similar outcomes to be delivered by those companies, thereby ensuring a level playing field. This was the same driver and purpose that led to the development of the National Environment Protection Measure (NEPM) for Used Packaging Materials that underpins the voluntary National Packaging Covenant.

Governments have recently agreed to develop a Producer Responsibility safety net using the same type of measure as the Packaging Covenant (a NEPM). This one will be designed so that new schedules can be added to the base NEPM each time a new sector wide agreement is developed. This NEPM will be developed over the next 12 to 18 months.

The NEPM can only be used as a safety net; it cannot be adapted and used as a fully regulated measure for a sector. The type of actions and obligations required of a non-participating company are different to those that could be considered for full sector regulation because they need to be able to be implemented by individual companies. Deposit-refund systems, for example would be too costly for a single company.

The development of this co-regulatory approach does not preclude governments considering other alternatives such as full regulation if voluntary schemes do not deliver tangible results.

1.6 Key considerations in framing the ERG recommendations

In reaching its conclusions and recommendations the ERG has been mindful of a number of factors that influence the NSW response to and support for EPR.

Producers (including importers) are in the best position to take action to minimise the potential for end-of-life adverse environmental impacts of their products through design choices that will influence material choice, manufacture and recovery options. Brand owners also have the ability to influence the practices and decision of many others in the supply chain.

Recommendations related to each of the 16 priority wastes are framed to drive actions that will either directly or indirectly deliver change throughout the supply chain. The ERG's decision to recommend regulatory action has been largely determined by a sector's failure to seriously engage in voluntary product stewardship and take adequate action to reduce the impacts of their products, in terms of both the volume and toxicity of the wastes. Whilst, on the surface, a number of sectors appear to be taking action and have established initiatives to recover products for recycling or to improve design or user participation, this is often falling short in terms of accountability or hard evidence to demonstrate that real change is being delivered.

Where possible, in view of the EPR framework in the NSW *Waste Avoidance & Resource Recovery Act 2001*, the ERG believes that NSW should take the lead in both raising awareness about a priority waste as an issue of importance nationally, exploring options for national action as a first priority but acting unilaterally if this becomes necessary.

The ERG recognises that further work is needed on regulatory and legislative issues. It urges action to address any identified barriers as a matter of priority. In addition, issues such as the following will make a significant contribution to the implementation of successful product stewardship schemes in NSW:

- All voluntary product stewardship schemes should ensure that they build in mechanisms for regular feedback from a range of groups within the community, including State and Local Governments, community and environment groups and the waste and recycling industry.

- The development of markets is critical to the success of product stewardship schemes. Governments, both state and local are important purchasers that have the capacity to support and drive markets for recycled content products where these are price and performance competitive. Governments must ensure that these issues are integrated into their purchasing policies.

2 Priority wastes of concern

2.1 Computers

Problems

Computers are complex products made from non-renewable resources. The average computer contains more than 700 substances, including a number of hazardous materials, such as, lead, cadmium, mercury, hexavalent chromium and brominated flame-retardants.

Australia is among the top ten countries in the world for per capita computer use. More than nine million computers are now in use, with three million entering the market in 2004 alone (up 22% from 2003). About a third of these computers are used in NSW, where over 70% of households have at least one computer.

About one million computers (20,000 to 30,000 tonnes) reach end-of-life in NSW each year. Many householders tend to just store end-of-life computers for extended periods in cupboards or garages. It is estimated that there are more than four million computers being stored in this way in Australia. About 2,000 to 5,000 tonnes of computer waste are going to landfill in NSW each year. Disposal options are limited for computers from households or small businesses.

Industry profile

The Australian computer market is dominated by a small number of subsidiaries of multinational companies. The top six companies (HP, Dell, Acer, IBM, Toshiba and Apple) represent close to 60% of the market. However, non-brand or 'white box' computers[7], which are assembled from imported generic parts, represent a sizeable portion of the Australian market (about 35%). Apart from some computer assembly, there is no computer manufacturing in Australia.

Two peak industry bodies represent computer producers and importers. They are the Australian Information Industry Association (AIIA) and the Australian Electrical and Electronic Manufacturers' Association (AEEMA). The AIIA is the main industry body engaged with governments on product stewardship for computers. Recently, AEEMA and AIIA announced that they are considering a merger to better serve the IT sector.

Industry actions

The need for the end-of-life management of used computers has been on the national agenda since 1998. The AIIA has been working with its members and governments on product stewardship issues since 2001. In 2002, the AIIA worked with the DEC to organise and fund a computer collection pilot in Sydney called 'Recycle IT'. In March 2004, the AIIA submitted a draft product stewardship proposal to governments. The proposal was largely conceptual, but anticipated the establishment of a producer responsibility organisation (PRO) by end-2004 to start collections by mid-2005. In response, governments raised a number of questions about the practicality of the proposal and asked AIIA to provide more detail.

In August 2004, the AIIA commissioned a consultant to further develop its product stewardship proposal and undertook to provide governments with a new proposal by the end of 2004. In late February 2005, jurisdictions received an Interim Report from the AIIA that showed little progress had been made since March 2004. However, in

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[7] Usually only the central processing units (CPUs)

July 2005, the industry released a discussion paper, "*AIIA – E-waste Program Development Phase,*" which indicated that the industry had further developed its proposed product stewardship scheme in the interim period.

In the discussion paper, the industry proposed to establish a product stewardship scheme covering computers sold after a set future date. Initially, the computers would be collected through the Australia Post retail outlet network and existing waste infrastructure, such as landfills and waste transfer stations. Kerbside collections could be used in future where agreement could be reached with local governments. Collection and processing would be funded by a levy on new products, which would be collected by a producer responsibility organisation (PRO). Co-regulation would be required to ensure all producers participate.

Historic and orphaned products would not be covered initially by the proposed scheme. Instead, the industry proposes to negotiate an equitable solution for historic waste with governments and other stakeholders that would leverage the collection and processing network established under the future waste part of the scheme.

In parallel, a number of companies already offer collection services for their commercial and government customers. However, these are not really end-of-life management schemes, since these computers are relatively new and are resold into the household market or exported for reuse overseas. A few computer companies are now looking at setting up collection services for household computers for recycling. DELL, for example, has set up a collection and recycling service for household computers (any brand) in the Sydney metro area on a pay-for-service basis. HP and IBM are also looking to setting up collection and recycling schemes for household computers. The AIIA's proposed scheme is designed to accommodate individual company schemes.

Key issues and observations

Product stewardship for computers needs to involve producers and importers concentrating on improving the end-of-life management of their products by reducing the content of hazardous materials and improving computer collection and recycling, particularly from households. Reuse, where possible, should also be encouraged.

On 15 April 2005, the NSW Minister for the Environment indicated that the lack of progress on product stewardship in the computer industry had been unsatisfactory. A number of other jurisdictions have expressed similar sentiments.

Although the industry initially promised the setting up of a PRO by end-2004, with collections starting in mid-2005, this has not materialised. A number of interim reports indicated that little progress was being made in a number of key areas. The July 2005 discussion paper shows that the industry has reviewed its approach on a number of these areas, opening the way for further discussion. In particular, the industry seems to have accepted a degree of responsibility for infrastructure development, education and research and development, while still seeking government assistance. It has also clarified that it will co-operate with local government on a service provider basis wherever possible.

However, the key sticking point still remains the issue of historical and orphan wastes. The AIIA proposal indicates that the industry is willing to accept some responsibility for this waste, if a solution is negotiated. It also proposes that the infrastructure developed under the future product part of the scheme be leveraged to provide that solution. No indication is given for how long it will take to develop this infrastructure or a timeframe for developing a solution.

Conclusion and recommendations

The computer sector has consistently failed to deliver on its product stewardship commitments or make significant progress towards the establishment of a product stewardship scheme. It is recommended that:

Recommendation 1: If no satisfactory plan for a fully-funded industry scheme is forthcoming by end-2005, then the Minister should initiate regulatory action to mandate EPR within the computer industry to ensure that the industry takes full physical and/or financial responsibility for the proper recovery and reuse/recycling of computers, including historical and orphan wastes.

2.2 Televisions

Problems

Televisions are made from a large number of materials, most of which are non-renewable. Televisions also contain a number of hazardous materials, including lead in the side glass of cathode ray tube (CRT) screens and in circuit boards; brominated flame retardants in plastics; beryllium, mercury and cadmium in circuit boards; and phosphors on CRT screens.

Since their introduction almost 50 years ago, televisions have become a ubiquitous part of Australian life. Almost 99% of NSW households own at least one television and over 60% own more than one. Annually, over 1.4 million new televisions, with an average life span of 15 to 20 years, enter the Australian market. This number may increase in the near future with the move to digital television broadcasting. It is estimated that up to 15,000 tonnes of televisions are being land filled in NSW each year.

Industry profile

The Australian television industry is characterised by increasing competitiveness, volatility and low margins. It can be divided into 'established brands' and 'non-established brands', all of which are imported.

There are 15 established brands, which made up 67% of the market in 2003. Established brands include Sony, Sharp, NEC, Panasonic, Philips and LG. There are 35 non-established brands that make up the remaining 33% of the market. Non-established brands are newer in the market and generally hold less than 1% of market share. The percentage of non-established brands is increasing.

The Consumer Electronics Suppliers' Association (CESA) is the main industry body representing the television industry. About 60% of the television market belongs to CESA members. This includes almost all established brands. Notable exceptions are Grundig, Akai and Toshiba. Only three of the 35 'non-established' brand owners are members of CESA.

Industry actions

In 2002-03, CESA and EcoRecycle Victoria conducted a television collection pilot in Melbourne. In December 2003, CESA submitted a draft product stewardship strategic plan for televisions to the Environmental Protection and Heritage Council (EPHC). The plan was updated in April 2004 after consultations with jurisdictions. A public version of the strategy was released by CESA in August 2004.

The strategic plan outlines an approach, which includes the establishment of a producer responsibility organisation (PRO), to run an industry scheme to collect and recycle televisions, including historic and orphaned products. The scheme would work with existing infrastructure providers, such as local government and transfer stations, to establish permanent collection sites. The scheme would begin in Sydney and Melbourne, and roll out to other State capitals and regional and rural areas over time. The scheme would be financed through a levy on the sale of televisions, with benefits being paid to recyclers. The PRO would administer the levy and benefits.

In July 2004, the television industry established its PRO, called Product Stewardship Australia Ltd (PSA). So far, PSA has worked on building its membership base, reaching its initial target milestone of 10 foundation companies[8]. These companies

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[8] Castel, Dick Smith Wholesale, Hagemeyer, LG, NEC, Panasonic, Philips, Samsung, Sharp and Sony

represent about 70% of the cathode ray tube television market and over 50% of the total television market. PSA is also establishing strategic links with local government and infrastructure providers and working with NSW and other jurisdictions to establish base line data on the number of televisions that are now being held in the community and current disposal rates and routes.

Key issues and observations

Product stewardship for televisions needs to concentrate on improving end of life management by reducing the content of hazardous materials and improving collection and recycling.

The television industry still needs to address the outcomes and deliverables of its proposed voluntary scheme, including specific targets, key performance indicators and reporting frameworks and milestones. Until these issues are resolved, it is not possible to gauge the potential effect of the scheme.

The television industry has requested a national regulatory safety net to be developed as a prerequisite for implementing its voluntary scheme. (see section 1.5 above).

Conclusion and recommendations

Progress for televisions is encouraging, recognising that it has been largely focussed to-date on the establishment process and it is now progressing to the development of a product stewardship agreement and implementation framework for presentation to the EPHC in October 2006. It is recommended that:

Recommendation 2: NSW through the DEC continues to work with the television industry and other stakeholders at the national level as part of the EPHC electricals work to support the implementation of the television product stewardship plan. The DEC should immediately commence work with other jurisdictions to develop a regulatory safety net in the form of a National Environment Protection Measure (NEPM) in line with continuing progress by the industry.

Recommendation 3: The Minister requests the television industry to begin collections as soon as possible. In preparation, by October 2006 the industry ought to, as a matter of priority, progress the following:

- Negotiate and draft a formal Product Stewardship Agreement with governments and the community, including commitments on collection and recycling levels, reporting, industry participation, promotion and geographical coverage.
- Establish strategic links and commitments with key infrastructure providers, such as local government, waste transfer stations and recycling companies.
- Develop a business plan to achieve the commitments negotiated with Governments in the Agreement, and carry out an economic analysis of the business plan to determine an appropriate funding mechanism for the scheme.

Recommendation 4: If the scheme is not operational within three months of the NEPM coming into force, NSW should regulate to require the industry to take physical and/or financial responsibility for the end of life management of televisions..

2.3   Nickel Cadmium batteries

Problems

The cadmium in Nickel Cadmium (NiCad) batteries can adversely affect the environment and human health if disposed of inappropriately. If disposed off with other wastes, NiCad batteries can undermine the potential to recover useful materials from that waste stream.

Industry profile

The NiCad battery market is divided between consumer and industrial applications. The majority of batteries tend to be used by industrial applications where high performance and longevity are paramount. For general consumer items such as mobile phones and digital cameras, metal hydride and lithium-based batteries are replacing NiCads. There is evidence that the cheaper end of the domestic cordless tool market uses NiCad batteries in its products because alternative batteries are more expensive.

No NiCad battery is manufactured in Australia, although some assembly takes place domestically for industrial applications. In 2002, 8.5 million NiCad batteries (about 2,000 tonnes) were imported. There is no peak industry association for NiCad battery importers and suppliers. There are only associations that represent producers and importers of appliances powered by NiCad batteries. These are the Consumer Electronics Suppliers' Association (CESA), Australian Electrical and Electronics Manufacturers' Association (AEEMA), and Lighting Council Australia.

The miniaturisation and portability of electrical equipment has increased the use of a wide array of other different types of rechargeable batteries and NiCad batteries no longer predominate the rechargeable or secondary battery sector.

Industry actions

Suppliers of NiCad batteries for commercial and industrial applications tend to take back the old battery when a new one is purchased. The batteries are then returned to the overseas manufacturer, which will use recovered materials in new batteries. This has resulted in a well-established recovery system and a collection rate of 95%. However, there is no facility in Australia to recycle NiCad batteries. Any recovered NiCad battery has to be exported for recycling.

In the case of electrical equipment suppliers, companies focus on the supply of integrated appliances and do not single out associated batteries. Some after sales replacement battery units may be available to the domestic user but no collection scheme is offered. However, some specialist battery retailers are now providing collection bins for consumers to drop off of a wide range of used batteries when purchasing new ones.

Key issues and observations

Whilst the disposal of small (domestic) quantities of NiCad batteries into the garbage bin does not adversely affect the environment, it can undermine alternative waste treatment (AWT) processes. This is because metals in NiCad batteries could transfer into any AWT end product (stabilised organic material for a variety of uses), which could in turn adversely affect the environment.

There is an economic incentive to recover the nickel and cadmium from NiCad batteries, provided there are sufficient quantities. However, NiCad batteries that cannot be easily removed from the appliances or removable NiCad batteries that are not appropriately labelled can easily be lost even in an established recovery system.

Product manufacturers and suppliers also tend to view NiCad batteries (or any rechargeable battery) as an integral part of an appliance.

Conclusions and recommendations

Current efforts to recover and recycle NiCad batteries and educate consumers about the proper disposal of these batteries and appliances containing these batteries are piecemeal. Furthermore, there is no facility in Australia to recycle NiCad batteries, and any recovered battery has to be exported for recycling. Regulation does not appear to be appropriate at this stage, given the likely superseding of these batteries. Instead, there appears to be a need to phase out the use of NiCad batteries, whilst ensuring an interim system for recycling. It is recommended that:

Recommendation 5: Producers, importers and sellers of NiCad batteries improve labelling to educate consumers on options to recycle or safely dispose used NiCad batteries.

Recommendation 6: The DEC takes the issue of a national phase out of NiCad batteries to the EPHC's Waste Working Group by October 2006.

Recommendation 7: The DEC creates a new priority waste category in the next priority statement for all batteries, including NiCad batteries, other rechargeable batteries and lead acid batteries.

Recommendation 8: See Recommendation 33.

2.4   Used tyres

Problems

About 170,000 tonnes of tyres reach their end of life each year in Australia. This is equivalent to 18 million passenger car tyres. As NSW accounts for 30% of vehicle registrations, about 51,000 tonnes of waste tyres are generated each year in NSW. About half of the used tyres are disposed of to NSW landfills each year.

Although tyres are banned from landfills in Sydney Metropolitan and Extended Regulated Areas, some tyres do still slip through the net. Whole tyres can consume large amounts of landfill space. Tyres have been reported to rise back to the surface in landfills and destabilise compacted landfills. Data on the toxicity of tyre leachate is limited, but preliminary studies indicate that leachate from tyres may, in certain circumstances, be toxic to aquatic organisms.

Dumped tyres provide habitat for weeds; impact on visual amenity and provide conditions for mosquito breeding. Some local authorities have been left with large clean-up costs for abandoned stockpiles of used tyres. In 2004, the DEC investigated five illegal dumping sites with about 700 tonnes of illegally dumped or stored tyres.

When stored in stockpiles, used tyres threaten environmental and public health. Burning tyres are extremely difficult to extinguish and can cause severe air pollution. The non-combustible components of tyres contain a range of potentially toxic materials that can be released to the atmosphere if tyres are burned in an uncontrolled fashion (as is the case for fires in illegal dumps). Emissions can include dioxins and furans as well as oxides of nitrogen and sulphur.[9] The runoff of water used to fight tyre fires could cause water pollution.

Industry profile

Goodyear and Bridgestone produce about 50% of all tyres sold in Australia. Both companies are members of the Australian Tyre Manufacturers Association (ATMA). The remaining tyres are imported. Almost all of the importers are members of the Australian Tyre Importers Group (ATIG). There are a small number of used tyre collectors and transporters, with one company (Sims Tyre Cycle) accounting for 60% of all tyres collected in NSW. Another peak organisation, the Joint Working Group on Tyres (JWGT), is representing ATMA and ATIG in negotiations with governments, industry and the community to develop a used tyre product stewardship scheme.

Industry actions

In December 2000, an industry and government stakeholder workshop agreed that a national approach was needed. In August 2002, the JWGT proposed an industry-run product stewardship scheme based on a levy-benefit model and in October 2002 the Environment Protection and Heritage Council (EPHC) agreed that national action was required on end-of-life tyres.

In mid-2003, the Australian Tyre Recyclers Association was formed to represent the tyre recycling industry and, together with government and other stakeholders, is now working with the JWGT to develop a voluntary product stewardship scheme. In April 2004, the EPHC noted that industry was making good progress towards a voluntary product stewardship scheme and requested governments to consider options to regulate companies that do not participate in the voluntary scheme.

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[9] *A National Approach to Waste Tyres*, Commonwealth Department of the Environment and Heritage, 2001 (see www.deh.gov.au)

The industry commissioned an economic study to determine the appropriate levels of levy and benefits, for completion by November 2004, but it will not be completed until later in 2005, due to changes to senior management in industry. The industry now expects to present its final business plan and draft product stewardship agreement to the EPHC at its October 2005 meeting, with the aim of signing the agreement at the April 2006 EPHC meeting and implementing the scheme in the second half 2006.

Key issues and observations

Industry action is noted. However, while the bones of a plan have been on the national agenda since 2002, there has been little tangible movement towards implementation.

Used tyres contain useful resources but there is no coordinated approach to recover and recycle those resources because they are perceived as having a low or negative value. Long distances to end-markets and limited local secondary reuse applications are also major challenges to the recovery of used tyres in rural and remote areas.

A number of resource recovery and secondary use options exist for used tyres. These include use of crumbed tyres in consumer products (e.g., rubber mats and carpet underlay); in asphalt, bitumen and building products (sport fields, tile and ceramic adhesives) and in composite products (posts, pipes and railway sleepers). About 11,000 tonnes of used tyres (22%) are crumbed in NSW. A number of these applications have the potential for significant growth.

Tyres also have energy-from-waste potential in cement manufacturing and electricity generation. The energy value of used tyres is comparable to coal. Used tyres can also be converted (via pyrolysis) to oil and other products. At present this is considered to be a low-value recycling outcome that would require subsidies to be economically viable. Other lower value applications include use in civil engineering and as a stemming agent in mining explosives.

Conclusions and recommendations

The tyre industry's initiative to develop a voluntary, industry-funded product stewardship scheme at the national level through EPHC is acknowledged. However, industry momentum for a used tyre product stewardship scheme has slowed, with little progress since September 2004. It is recommended that:

Recommendation 9: The Minister requires the tyre industry to finalise the details of its voluntary scheme by December 2005.

Recommendation 10: NSW through DEC continues to work with other jurisdictions to develop a regulatory safety net in the form of a National Environment Protection Measure (NEPM) pending continued progress by the tyre industry.

Recommendation 11: The tyre industry should commence its scheme as soon as possible but if a scheme is not operational within three months of the coming into force of the NEPM for Product Stewardship, NSW should regulate to require the industry to take physical and/or financial responsibility for the end of life management of tyres.

Recommendation 12: The Minister requires the tyre industry to immediately clarify to the DEC the purpose and use of the tyre levy currently being charged to consumers in NSW at the point of sale.

2.5   Plastic bags

Problems

Lightweight plastic carry bags supplied by supermarkets and other retailers are present virtually everywhere and this makes them very prone to be litter items. They represented 4% of litter counted in the NSW Litter Survey and 6% of rubbish collected during Clean Up Australia Day activities.[10] Litter from plastic bags affects public amenity and harms wildlife that ingests plastic bags or gets tangled up in them. Evidence indicates that plastic bags are a harmful type of marine debris that affects 20 threatened species.

Industry profile

Although retailers do not produce lightweight plastic carry bags, they are, considered to be 'suppliers' of these bags. They include supermarkets, food and liquor retailers, general merchandise and apparel retailers, fast food and convenience stores and service stations. Supermarkets are responsible for about 50% of bags issued.[11]

Domestic manufacture of lightweight plastic carry bags is small. The only supplier of the raw material and the two manufacturers that supply nationally are located in Victoria and Queensland.[12] In 2004, they produced 1.6 billion bags. Another 3.2 billion bags were imported. In 2002, about 60% to 75% of bags were used by households as garbage bags, equating to an annual 6.7 billion units or 36,700 tonnes disposed to landfill. In theory, the remaining 25% to 40% were 'available' for recycling.[13]

Industry actions

The Australian Retailers Association (ARA) developed a *Code of Practice for the Management of Plastic Bags.* It is due to expire at the end of 2005. The Association facilitated the implementation of the Code among retailers regardless of whether the retailers were its members.

The Code initially targeted supermarkets, setting actions and targets that covered bag reductions, staff training and provision of in-store collection facilities for bag recycling. Non-supermarkets were also encouraged to sign the Code and the ARA set itself a target of 25 per cent sign up of these retailers by end 2005. Under the Code, supermarket (Group 1) members have to reduce the use of lightweight plastic bags by 25% by end-2004 and by 50% by end-2005.

The Environment Protection and Heritage Council's Plastic Bags Working Group, comprising industry and government officials, is currently drafting a phase out agreement that would commence in January 2006 to deliver the complete phase out of lightweight plastic bags by the end of 2008.

Key issues and observations

The ARA's first six monthly progress report (Jan-June 2004) showed an annualised 29% reduction in plastic bags issued. The second progress report (Jul-Dec 2004) showed a reduction of 26.9% in plastic bags issued. This is above the Code's target of 25% for the end of 2004. These figures represented only the four major

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[10] *NSW Litter Report 2004*, DEC, p. 15; *Clean Up Australia Rubbish Report 2004*, p.2

[11] *Plastic Retail Carry Bag Use 2002-2004 - Consumption Interim Report,* DEH March 2005, p. 9

[12] *Plastic Shopping Bags-Analysis of Levies and Environmental Impact* Final Report, Environment Australia, 2002, (Prepared by Nolan-ITU) p.9

[13] *Plastic Bags Working Group Report to the National Packaging Covenant Council* EPHC December 2002, p.11

supermarkets and their calculations were not transparent. It is unclear whether retailers will reach the 50% reduction target by December 2005. This will largely depend on the participation of non-supermarket retailers. The Code set a 25% sign up for non-supermarkets by the end of 2005, but as at February 2005 only 4% of this group has signed the Code.

Supermarkets have been promoting and selling alternative reusable bags (e.g., bags made from polypropylene). There is limited data on the environmental impact of replacing lightweight plastic bags with such bags. While lightweight plastic bags can be recycled domestically, the technology to recycle polypropylene bags is currently not available in Australia. Although polypropylene bags have a longer lifespan and can be reused a number of times, the issue of collecting these bags for recycling at the end of their life needs to be considered as well.

Degradable bags that break down within a period of time after disposal are being developed. The use of degradable plastic bags is a complex issue because of the range of polymer types and additives, which could potentially undermine the recycling of other plastic polymers with which they may be mixed in the recycling stream. To clarify these issues the Commonwealth Department of the Environment & Heritage has been working with Standards Australia to develop a range of standards for degradable bags. Two have been finalised and a dozen other Standards are under preparation. The work suggests that degradable plastic bags are best suited to niche applications (e.g., bags to carry fishing baits, so that they dissolve in water if they fall overboard, or bags to dispose of dog faeces, so that they break down easily).

Conclusions and recommendations

Environment Ministers have responded to community concern about the number of plastic carry bags used in Australia. Some progress has been made in achieving the targets established in the *Code of Practice for the Management of Plastic Bags*. Retailers report to EPHC on a six monthly basis against the targets in the Code and achieved 26.9 % reduction in usage of bags by December 2004 (against a 25% target). There is a need to ensure that the momentum is maintained. It is recommended that:

Recommendation 13: The DEC continues to closely monitor industry's reported progress to EPHC in reaching its target of a 50% reduction in the issue of lightweight plastic carry bags by end-2005. The Minister should initiate regulatory action if this is not achieved.

Recommendation 14: If retailers deliver against their 50% reduction target by end-2005, NSW should continue to participate in the EPHC process to negotiate a further voluntary phase out agreement by end-2008.

Recommendation 15: The Minister requests the retail industry to provide NSW data as part of its reporting framework to assist in evaluating progress.

Recommendation 16: The Minister requires the retail industry to, as a matter of priority, implement systems to collect and recycle alternative reusable bags, such as the common polypropylene bags sold in supermarkets, and report on this by October 2006.

Recommendation 17: The Minister should adopt and affirm a NSW policy position that degradable plastic carry bags are not an acceptable alternative for lightweight plastic carry bags.

2.6 Agricultural/veterinary chemicals

Problems

Unwanted stocks of agricultural or veterinary (Agvet) chemicals pose serious risks to the environment and human health due to their high toxicity.

If disposed of improperly with other wastes, Agvet chemicals can undermine the potential to recover useful materials from that waste stream.

Pesticide contamination of primary produce could also have a serious impact on international trade.

There is a high degree of community concern about the impact on human health and the environment of any improper disposal of Agvet chemicals.

Industry profile

The Australian Agvet market accounts for 1.8% of world sales of agricultural chemicals and 1.4% of veterinary chemicals. Pesticide sales in Australia are between 120,000 and 135,000 tonnes per year. Imports account for between 20% and 30% of sales.

Companies involved in the production of Agvet chemicals have a range of interests and specialities, including oil, petrochemicals, industrial chemicals, agricultural chemicals, fertilisers, bio-chemicals, gene technologies, veterinary chemicals, animal medicines and pharmaceuticals. Large multinational companies (e.g., Bayer) have interests in several of these product areas.

Many of the companies active in Australia are members of the National Association for Crop Production and Animal Health (Avcare) or the Veterinary Manufacturers and Distributors Association (VMDA). A new industry association, the Generic Agricultural Chemical Association (GACA), was formed recently with 15 inaugural members, with another 70 expected to join.

Industry actions

ChemClear is an industry-funded EPR scheme for Agvet chemicals. It is the industry's agreed follow-up action to ChemCollect, which was a free collection and safe disposal scheme of unwanted and deregistered Agvet chemicals implemented by Australian governments at a cost of $27 million. Funding was on a 50/50 basis between the Commonwealth and States/Northern Territory (the ACT did not participate, as it conducted a similar program a few years earlier). Collections under the ChemCollect program were completed in December 2002, with the recovery of more than 1,700 tonnes of chemicals, of which 521 tonnes were collected in NSW.

ChemClear was initiated by Avcare, VMDA and the National Farmers Federation (NFF). Agsafe, an independent subsidiary of Avcare, runs ChemClear on behalf of Avcare, VMDA and the NFF. When the EPR Priority Statement was released in March 2004, ChemClear had just commenced pilot trials in NSW and SA. Under the scheme, participating organisations, which are not limited to members of the founding organisations, contribute 1 cent for every kilogram or litre of chemicals sold.

The scheme provides free collection and disposal services for chemicals sold by participating organisations (Group 1 chemicals), namely all Avcare and VMDA members. According to Agsafe, Group 1 chemicals cover 90% of pesticide sales in Australia.

'Unregistered' chemicals or Group 2 chemicals are collected only for a fee. These are Agvet chemicals whose registration had expired more than two years ago and farm chemical products of non-Avcare or VMDA members companies that are either currently registered or whose registration or permit ceased since the last collection.

By September 2004, ChemClear had collected 2,673 kg of registered (Group 1) chemicals and 919 kg of unregistered (Group 2) chemicals in NSW. Another 301 kg of Group 1 chemicals and 602 kg of Group 2 chemicals have been booked but not collected yet. ChemClear was officially launched in NSW in early 2005.

Key issues and observations

Agsafe reported that ChemClear is available free of charge for 90% of pesticide sales. Any commercial pesticide user has access to the scheme and can make bookings for collection. Although the scheme took longer than expected to get off the ground, Agsafe has announced that it now holds bookings in every State/Territory and has formally launched the scheme in NSW.

There is no collection target for ChemClear. However, Agsafe has expressed an expectation that the scheme could collect as much as 50,000 kg of unwanted chemicals by end-2005.

The total amount of chemicals that is actually being held by farmers is not known. This means that there is insufficient data on the extent of the problem, namely, the amount of Group 1 or Group 2 chemicals that farmers do not need anymore but are not bringing them to ChemClear collections. This makes it difficult to assess the effectiveness of ChemClear in terms of both its expectations and collection results.

Conclusions and recommendations

The challenge is now to increase recovery of chemicals and to demonstrate that recovery rates are capturing a substantial percentage of unwanted chemicals from commercial pesticide users in NSW. It is recommended that:

Recommendation 18: The Minister requires ChemClear to report from the end of FY2005-06 on chemical quantities sold and collected (Group 1 and Group 2) in NSW and provide information about the way in which the effectiveness of the program and progress against targets will be monitored in NSW.

Recommendation 19: The DEC seeks the support of other governments for a formal national arrangement for annual industry reporting of targets, collection data and promotional activities undertaken under the ChemClear scheme, both nationally and on a State/Territory basis, with reporting to commence from the end of FY2005-06.

2.7   Agricultural/veterinary chemical containers

Problems

Agricultural and veterinary chemical (Agvet) containers that are disposed of improperly can potentially contaminate the environment with toxic substances that can adversely affect soil and ground water.

Agvet containers disposed of without proper rinsing with other wastes could result in the residual chemicals undermining the potential to recover other useful materials from that waste stream.

Any disposal of Agvet containers into landfill is a waste of resources, as the plastic in the containers can be recycled into useful secondary materials.

Industry profile

See section 2.6 above.

Industry actions

In February 1999, the industry established a voluntary national program called drumMUSTER for the collection and recycling of empty cleaned, non-returnable chemical containers. The program is funded by a levy on users of 4 cents per litre or kilogram of chemical that is sold.

The scheme was based on an agreement among the Australian Local Government Association (ALGA), Avcare, National Farmers Federation (NFF) and the Veterinary Manufacturers and Distributors Association (VMDA). Agsafe, a subsidiary of Avcare, has been contracted to implement drumMUSTER. All Avcare members (27) are obliged to participate as a condition of their membership. VMDA members (4) are encouraged to participate. There are 24 voluntary participating independent manufacturers (not members of Avcare or VMDA).

The program covers all of NSW. There are now service agreements with 67% of Councils. The service agreements cover how the scheme will operate in each local Council area, and entitle participating Councils to receive information on organising collections and running the scheme, and supports and funds from drumMUSTER. Importantly, the costs of Councils' involvement are fully reimbursed by drumMUSTER. These agreements now mostly cover local Council areas in rural and farming communities where 99% of Agvet containers are sold.

Key issues and observations

The coverage of the scheme appears to be good, with about 90% of containers eligible for collection and 100% of higher priority Councils (those with a large number of Agvet container sales) having a service available.

There appears to be a wide range of targets for the scheme, including annual forward collection targets.

In 2003-04, 246,272 containers were collected in NSW against a target of 315,000. This represented 24.4% of previous year's sales (estimated based on the levy). The national average was 33% of previous year's sales.

According to Agsafe's report to the ERG, all containers recovered are sent for recycling, with 80% of these being reprocessed domestically for manufacture into agricultural drainage pipe, various types of stakes and posts and electrical conduits. The remainder is exported for reprocessing, mainly to China.

The rate of end-user participation, that is, the percentage of NSW farmers using the scheme to return Agvet containers remains quite low. In 2001-02 about 4% of the estimated 40,000 users of farm chemicals in NSW returned used Agvet containers at drumMUSTER collections. This figure went up to 5% in 2002-03 and 9% in 2003-04. (Nationally the participation rate in 2003-04 was 8% of an estimated 136,500 farm chemical users.)

Conclusions and recommendations

Although the scheme is fully funded and widely available, it is not engaging users effectively. End user participation appears to be very low and needs to be substantially increased in NSW. It is recommended that:

Recommendation 20: The Minister requires drumMUSTER to set performance targets by end-2005 that aim for significantly increased end-user participation and increased recovery of Agvet containers in NSW, and describe ways in which these targets will be pursued.

Recommendation 21: The DEC seeks the support of other governments for a formal national arrangement for annual industry reporting of targets, collection data and promotional activities undertaken under the drumMUSTER scheme, both nationally and on a State/Territory basis, with reporting to commence from the end of FY2005-06.

2.8   Mobile phones and batteries

Problems

The sale of mobile phones in Australia has proliferated exponentially since the late 1990s, with industry estimates placing the total number of mobile phones sold at 30 million. Of these, more than 7 million were sold in 2004. There are now about 16 million registered mobile phone users. The average life expectancy of a mobile phone is just 18 months, largely due to the rapid development of new technology and the nature of mobile phone contracts, which encourage regular replacement.

Although about 14 million mobile phones have reached end of life in Australia, the number going to landfill is unknown. Anecdotal evidence indicates that a large number is sitting in drawers and cupboards and an unknown number has been exported for reuse in developing countries. The Australian Mobile Telecommunications Association (AMTA) estimates that about 1.5 million phones have been recycled through its Mobile Phone Industry Recycling Program (MPIRP). This still leaves a large number of mobile phones unaccounted for.

Some of the components in mobile phones and batteries are made from non-renewable resources. Heavy metals in mobile phones and batteries, such as nickel, copper and cadmium, may have an adverse impact on the environment if disposed of to landfills or energy-from-waste facilities. If disposed of with other wastes, mobile phones could undermine the potential to recover useful materials from that waste stream.

Industry profile

Mobile phones are manufactured overseas and imported into Australia. The Australian mobile phone industry comprises a small number of brand owners (16) and carriers/service providers (6). Almost all of these are members of AMTA, the peak industry body. Only two brand owners are not members of AMTA.

Industry actions

The mobile phone industry is the only electrical industry sector with a product stewardship scheme. AMTA runs the scheme, which covers handsets, batteries and accessories. It was initiated in 1999 after being trialled in NSW in 1998. The majority of mobile phone brand owners and service providers and a significant number of mobile phone retailers are in the scheme.

The scheme is financed by a 42-cents levy on each new handset sold (30 cents from brand owners and 12 cents from carriers/service providers). The funds cover the cost of administration, promotion, collection and recycling. The old equipment is collected in bins located at participating mobile phone retailers, of which there are currently 1,600 participating nationally, representing about 30% of retail outlets. No levy has been collected since 2001, although participants have been invoiced and have therefore incurred the liability.

Planet Ark was contracted by AMTA in 2002 to promote the scheme under the banner of "Mobile Phones 4 Planet Ark" with a goal of collecting 1 million phones through its campaign. In 2004, the contract with Planet Ark was discontinued. Recovery during that period is estimated[14] to be less than 200,000 handsets.

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[14] AMTA only weighs the tonnage of equipment (handsets, batteries and accessories) and does not count the number of handsets collected.

To improve consumer participation in its scheme, AMTA recently commissioned a $200,000 consumer research survey of 900 consumers, 200 businesses and 20 industry, environmental and government representatives. The survey showed that most people (60%) kept their old phones or gave them away. About 9% threw their phones away, lost them or had them stolen. About 46% knew about the AMTA recycling program but only 4% recycled their old handsets and 2% donated their phones to a charity. The survey showed that 12.4 million used mobile phones were being kept in homes and offices; 1.5 million were thrown into rubbish bins and 900,000 were recycled.[15]

Environment Ministers have expressed dissatisfaction with the levels of recovery and recycling of mobile phones. At the EPHC meeting on 5 April 2005, Ministers agreed to direct the EPHC Waste Working Group to negotiate a voluntary agreement with clear targets with the mobile phone industry.

Key issues and observations

The mobile phone industry has a voluntary product stewardship scheme in operation, based on a levy/benefit model. The levy has received ACCC approval and covers all handsets, batteries and accessories including historical and orphan products and can be used for research, infrastructure development and promotion of the scheme. Industry participation, which includes the retailers, is very good.

However, there is no audited data available and estimates provided by the industry indicate that the number of handsets collected is very low. Also, knowledge of the scheme in the community is very low and the scheme lacks performance targets. Data collection and reporting are inadequate. The stockpiling of materials in the recovery process is a significant concern.

While the number and accessibility of collection sites is encouraging, far more needs to be done to expand and strengthen this network, as well as capitalising on the promotional opportunities inherent in the retail/customer relationship.

Conclusions and recommendations

Although the industry has a voluntary product stewardship scheme in place, its performance is unsatisfactory and the scheme is not operating effectively. The collection and participation rates are very low, indicating that much more must be done by industry to capture used mobile phones. The ERG notes that the EPHC is in the process of negotiating a national voluntary agreement with the mobile phone industry. It is recommended that:

Recommendation 22: Should the EPHC negotiation process fail to result in a robust agreement by April 2006, the Minister should initiate as soon as possible regulatory action to mandate EPR by the mobile telephone industry to ensure that the industry takes full physical and/or financial responsibility for the proper end of life management of mobile telephones and batteries in NSW. A report on implementation progress should be provided by October 2006.

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[15] *Sydney Morning Herald*, May 7, 2005.

2.9   Packaging wastes

Problems

The amount of packaging being produced, used and disposed of is increasing. These activities utilise energy and resources; generate solid waste and release emissions to air and water. Packaging waste is also a source of litter (e.g., soft drink cans, glass and plastic bottles). Packaging accounts for a significant component of municipal waste, as well as away-from-home waste. Consequently, packaging is a substantial contributor to landfill costs and impacts. Only about half of the 3.3 million tonnes of packaging that was consumed nationally in 2003 was recovered for recycling.[16]

Industry profile

The National Packaging Covenant commenced in August 1999. It is a voluntary agreement among governments and the packaging supply chain to reduce packaging and improve the recycling of packaging waste. More than 600 signatories have signed up to the Covenant from a good cross section of the packaging supply chain, which includes raw material suppliers, packaging manufacturers and users (brand owners and retailers) and packaging designers and consultants. In the case of brand owners, kerbside audits show that more than 80% of brand owners are signatories.

A number of industry associations represent various parts of the packaging supply chain. This includes the Packaging Council of Australia, Beverage Industry Environment Council, Australian Retailers Association, Australian Food and Grocery Council and the Australian Council of Recyclers.

Packaging that is consumed in Australia is manufactured locally and imported. Imports come in as raw material, empty packaging and filled packaging. Consumption figures do not currently include packaging entering as filled product. It is estimated that 39% of packaging is consumed in households and 61% is consumed away from home. Current recovery rate is about 48%.

Industry actions

The first Covenant had a life of 5 years. After three separate and independent evaluations of the Covenant, the EPHC recently approved a revised Covenant and an associated safety net (National Environment Protection Measure for Used Packaging Materials (NEPM)) that will be implemented from July 2005 to July 2010. Key features of the strengthened Covenant compared to the previous Covenant are:

- A clear overall objective 'to reduce environmental degradation arising from the disposal of used packaging and conserve resources through better product design and encouragement for the recovery, re-use and recycling of used packaging materials'
- Explicit statement of environmental goals and related performance goals
- Quantified overarching targets and key performance indicators
- Stronger guidance for industry for better product stewardship practices
- Stronger enforcement of the safety net against non-signatory brand owners and underperforming signatories.

Targets have been incorporated into the revised Covenant. There is an overarching target to increase the amount of packaging recycled from the current 48% to 65 %. Packaging made from specific materials will make a contribution to the overarching target as follows:

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[16] *RIS on the Revised National Packaging Covenant*, NOLAN ITU, April 2005.

- paper and cardboard - 70% to 80% (currently 64%)
- glass – 50% to 60% (currently 35%)
- steel – 60% to 65% (currently 44%)
- aluminium – 70% to 75% (currently 64%)
- plastics – 30% to 35% ((currently 20%)

There is also a target to reduce the amount of non-recyclable packaging, (e.g., plastic 4 to plastic 7 and some cardboards) from current 10% to 25% and a target for no increase in packaging waste to landfill. The development of the targets involved extensive negotiations between industry, governments and environment groups.

There will be a mid-term review of the Covenant at the end of 2008. If the Covenant is found to be not performing at this point, EPHC or individual jurisdictions may introduce systems to replace it as soon as it expires.

Key issues and observations

The revised Covenant aims to provide more accountability with better governance frameworks and quantifiable environmental goals than the previous Covenant. This includes better Action Plans from signatories. The focus is on whole of lifecycle management and not just specific aspects of packaging wastes. Key issues that arise for the main stakeholder groups are:

- The need to support explicit and quantifiable overarching goals and targets will require more robust product stewardship sector or industry-level efforts by the packaging supply and recovery chains instead of relying only on existing kerbside collection systems.
- The need for all signatories to produce and report on Action Plans that contain quantifiable measures will require increased efforts by all stakeholders to improve data collection and record keeping.
- The away-from-home sector[17] is the primary focus area. It is estimated that packaging wastes from this sector comprise at least half of the total packaging waste stream. A key focus for Covenant programs and funding will be the establishment or improvement of systems and infrastructure for away-from-home collections. The challenge with away-from-home sector is that it requires the participation and cooperation of players who may not be Covenant signatories and who are beyond the regulatory safety net, which focuses on brand owners.
- Implementation of the revised Covenant will need a higher degree of 'policing' of free riders and will require State and Territory governments to increase resource enforcement activity.
- The industry-led redrafting and promotion of a revised Environmental Code of Packaging coupled with company-specific data sets will increase the reporting workload of the packaging supply chain. However, it will also minimise the likelihood that new forms of packaging may be difficult to recycle or reprocess.

A detailed Implementation Plan will be developed by the National Packaging Covenant Council for funding and programs to tackle away-from-home systems and recycling. The Plan will need to identify additional infrastructure and collaborative actions needed from all stakeholders.

Conclusions and recommendations

It is recommended that:

Recommendation 23: The NSW government works through the DEC to support the implementation of key actions and processes necessary to ensure that the strengthened Covenant is effective. This includes:

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[17] Includes shopping centres, offices, hotels, malls, walkways, parks, and other commercial, industrial and entertainment venues

- facilitated action to promote the Covenant to potential signatories and others who can assist to achieve Covenant outcomes, particularly in the away-from-home sector
- Continued monitoring of the effectiveness of other approaches to whole of lifecycle management of packaging nationally and internationally
- assistance with the development of improved NSW data on packaging as a matter of priority
- implementation of the NEPM to tackle free riders in a timely and effective manner.

Recommendation 24: The NSW Government should take immediate regulatory action to establish an EPR scheme if the mid-term evaluation at the end of 2008 demonstrates unsatisfactory progress of the Covenant/NEPM model against its targets and key performance indicators.

3 Lower priority wastes of concern

3.1 Cigarette litter

Problems

Cigarette butts comprise the largest component of litter in NSW, making up 39% by weight and 34% by volume.[18] They continue to be the most commonly found item during Clean Up Australia activities, totalling 15% in 2004.[19] Other jurisdictions' litter survey results have also found that cigarette butts comprise a large component of litter.[20] Cigarette butts take a long time to break down. Estimates range from two months to 12 years. They have the potential to release toxic emissions into water and soil as they decompose, and may kill aquatic life when ingested.

Industry profile

There are three major manufacturers of cigarettes. They are British American Tobacco Australia (BATA), Imperial Tobacco and Philip Morris. BATA's Australian market share in 2003 was 38.5%, Imperial had 21.8% and Philip Morris' market share was 39.7%.[21]

BATA and Philip Morris make cigarettes in Australia using a combination of home grown and imported tobacco. BATA also exports Australian grown leaf to other facilities in the Asia Pacific. In contrast, Imperial contracts BATA to make its cigarettes. Annual consumption is in the billions, with locally manufactured cigarettes predominating. For example, 23 billion cigarettes were manufactured in 2003. Imported cigarettes, though not as numerous as domestic ones, still make up a significant number. About 801 million cigarettes were imported in 2001-02.

Industry actions

In July 2003, BATA Established the Butt Litter Trust (BLT) with $1.4 million of funding for two years. The BLT's focus has been on behaviour change rather than infrastructure. Primarily, the BLT funds community organisations nationwide that successfully submit community education proposals. BATA has also provided seed funding to 'ButtsOut', a commercial provider of personal ashtrays. In May 2005, BATA extended its funding of the BLT with $1.4 million for another two years.

Imperial Tobacco and Philip Morris have both supported activities of Keep South Australia Beautiful (KESAB), which has been active mainly in South Australia. In 2002-03, Philip Morris contributed $331,775 to KESAB. Imperial Tobacco has provided $50,000 over two years.

KESAB's activities focus on awareness and provision of adequate disposal facilities, including public education campaigns, infrastructure, information sharing and research. KESAB's environmental solutions arm coordinates interstate initiatives, which to-date have been limited in NSW to the Sydney Festival, and, for a few weeks during school holidays, for the length of the Hume Highway.

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[18] *NSW Litter Report*, DEC 2004, p. 1 (Cigarette litter was found at 59 of the 60 sample sites)

[19] Clean Up Australia Rubbish Report 2004

[20] Over 76 % of litter surveyed at Melbourne CBD sites and 37% of litter surveyed across Victoria. (KABV 2004) Keep SA Beautiful found cigarettes to be 40 of total litter surveyed (KESAB 2004)

[21] *Tobacco Product Manufacturing in Australia*, IBISWorld, November 2004

Key issues and observations

Public health implications from cigarette consumption remain the key industry driver. According to the cigarette companies, statutory restrictions on communications between tobacco manufacturers and consumers constrain their ability to convey any information that could raise environmental awareness.[22]

BATA's establishment of the BLT is the most progressive activity of the three companies. In the last round of funding in 2005, three out of the total of 11 community projects were funded in NSW, with the rest going to projects in Queensland (2), South Australia (2) and Victoria (4). Activities funded by Philip Morris and Imperial Tobacco were for national campaigns of Keep Australia Beautiful, with dedicated NSW activities being disjointed and not running for more than a few weeks.

Conclusions and recommendations

Cigarette manufacturers have largely limited their product stewardship activities to funding community education. They appear to consider that such funding fulfils their product stewardship obligations. However, the activities and projects funded have not translated into widespread reduction of cigarette butt litter. The impact of current activities funded by cigarette manufacturers is clearly unsatisfactory. It is recommended that:

Recommendation 25: The Minister requires the tobacco industry to provide by March 2006 a plan and timeline for a whole of NSW approach for the reduction of cigarette butt litter. NSW Government litter survey results should remain the main measure of success.

Recommendation 26: The Minister receives advice from DEC about national and international regulatory measures, which may be suitable for application in NSW/nationally to reduce cigarette litter and/or its impact on the environment.

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[22] Source: Imperial Tobacco's submission to the Expert Reference Group.

3.2   Office paper

Problems

Printing and writing grade paper is made of high quality fibre with high recyclability, but collection of source separated paper or separation after collection remains low. In 2003, over 1.6 million tonnes of printing and writing paper were consumed in Australia, while only 211,000 tonnes were recovered for recycling, representing a recovery rate of about 13%. The remainder is either archived (6%) or is going into landfill. Consumption in NSW in 2003 was 620,000 tonnes, with about 83,000 tonnes or 13.4% recovered, which is still less than the 17% recovery rate for printing and writing paper in Victoria. As a comparison, newsprint producers and publishers have, through a voluntary producer responsibility scheme, achieved a national recovery rate for newsprint of 74.5% (2004), which is considered world's best practice.

Almost 1.1 million tonnes of printing and writing grade paper is consumed nationally in the commercial and industrial sector. This paper is referred to as 'office paper' and is the focus of this 'waste of concern.' Printing and writing grade paper used in households is generally recovered as mixed paper through the kerbside collection system. Domestic paper (excluding newsprint) is addressed through the National Packaging Covenant.

Industry profile

Office paper is manufactured in Australia as well as being imported. Australian Paper, the only domestic producer, supplies to about 25% of the market. The remainder is imported as both base product and as printed material, such as exercise books, other finished stationery, reports, manuals, catalogues, envelopes and books. While there are a number of larger importers, there are also a significant number of small offshore printers supplying the market, making it a fractured market.

There are a number of peak industry bodies that cover office paper. These include the National Paper Council, Independent Paper Group of Australia, Australian Plantation Products and Paper Industry Council (A3P) and the Printing Industries Association of Australia.

Industry actions

Until recently, the industry had not engaged in product stewardship waste management activities. However, the industry has taken action over the past 12 months to consider product stewardship options. Two parallel product stewardship initiatives have been undertaken to-date. These are:

- The Paper Industry Forum was established at an industry meeting in Melbourne in February 2005. The Forum is a coalition of businesses in the Australian paper supply chain, including manufacturers, importers, printers and converters of office paper products. The Forum recently commissioned Nolan ITU to gather baseline paper consumption and recovery data and provide the industry with options for an industry product stewardship plan. Nolan ITU finalised its report in May 2005. The report, which includes definitional issues, estimated material flows and risks to the industry of not taking action, is now being used by the industry to further evaluate its options for possible sector-level responses.

- The Printing Industries Association of Australia (PIAA), which is the association representing domestic printers and importers of printed material, is undertaking the second initiative. This group has also commissioned a report on options for managing product stewardship for office paper.

Key issues and observations

While recent activity in the office paper supply chain is encouraging, it is still early days for product stewardship in the office paper industry. Sector initiatives have focussed on finding consensus in the industry and have not yet addressed ways to manage that responsibility. There has been little discussion about what outcomes might be reached (e.g., recovery rates, timelines, milestones) or how the outcomes could be reached (e.g., expanded services for key generators, improved source separation, improved sorting at MRFs after collection).

A number of fundamental questions still remain to be resolved. For example, the term 'office paper' is not used by the industry. It is important that this term is clearly defined and understood so that it identifies precisely which products and companies would be covered by any voluntary initiative. Additional baseline information on the quantity of office paper going to landfill from different types of generators also needs to be established so that recovery targets and improvement can be measured.

Conclusions and recommendations

The recovery rate of office paper is very low and is making a significant contribution to the commercial sector waste stream. Much more needs to be done by the industry to take a unified approach to recover and recycle office paper. It is recommended that:

Recommendation 27: 'Office paper' is elevated to high priority waste in the next Priority Statement due to the high volumes of material currently going to landfill.

Recommendation 28: The Minister requires that producers and importers of office paper and the printing industry should report for FY2005-06 and thereafter annually on their initiatives to 'close the loop' through increased production, importation or use of paper with recycled content, and the establishment and expansion of other markets for post consumer office paper.

Recommendation 29: The Minister requires that the paper industry should develop a draft product stewardship concept by March 2006. The DEC should then assist the industry in discussing this concept with other jurisdictions and sponsoring the idea of a national approach.

Recommendation 30: The Minister asks the paper industry to develop a detailed product stewardship plan by October 2006 in consultation with key stakeholders, including property and building owners, office paper recyclers, and the waste industry. This should include baseline data on the amount of office paper consumed, recycled, archived, used for other purposes (e.g., composting) and landfilled. The plan should also address data gaps.

3.3   Polyvinyl chloride (PVC)

Problems

Over 200,000 tonnes of PVC is used in new products in Australia each year. About 10,000 tonnes of PVC are recycled (90% from industry and 10% from domestic use) and about 10,000 tonnes are disposed of to Sydney landfills every year.

Vinyl chloride monomer, the raw material from which the resin is made, can be hazardous to human health and the environment if not handled properly. There are also a number of additives used in PVC that have raised some concerns in Australia and overseas. These include some stabilisers, plastisers, and brominated flame retardants.

There are three main problems associated with PVC during waste management:

- PVC can be a source of chlorine in energy-from-waste facilities, which may release dioxins to the atmosphere if inappropriate technology is used.

- During the recycling of mixed plastics, the presence of PVC may cause the formation of hydrochloric acid, which can damage machinery and is an occupational health and safety risk for workers.

- Some additives used in PVC may limit recycling or reuse options.[23]

Industry profile

PVC products are manufactured locally as well as being imported. Over 95% of PVC consumed in Australia is used in durable building products, such as piping (typical life expectancy between two and 50 years).

According to the Plastics and Chemical Industries Association, total quantities of PVC recycled in Australia in 2003 from all sectors, including packaging and non-packaging (durable) materials, was 7,675 tonnes against a national consumption of 221,286 tonnes.

Some of the recovered PVC was exported (1,174 tonnes). The Vinyl Council of Australia (VCA) is the peak organisation representing the industry. Members of the Council are signatories to a PVC industry Product Stewardship Commitment.

Industry actions

In November 2002, the Australian PVC industry released a voluntary Product Stewardship Commitment to promote improved environmental practices. The 33 signatories included the only resin manufacturer, PVC compounders and product manufacturers, raw material suppliers, service providers to the industry and one recycler. The industry committed to reducing the toxicity of stabilisers and plasticisers by phasing out the use of cadmium stabilisers, initially limiting the use of lead stabilisers and later phasing out its use altogether, and monitoring the environmental and health impacts of phthalate plasticisers and, if necessary, ceasing its use.

The industry also made a commitment to manage PVC waste by devising programs with major developers and waste managers to recycle PVC pipe off-cuts from construction sites and monitoring overseas developments in the recovery and recycling of PVC products. The industry reported[24] that signatories to its Product Stewardship Commitment achieved the following in 2003-04:

- Phased out use of cadmium stabilisers
- Established timetable for phase out of lead stabilisers by 2010

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[23] *Report on the Extended Producer Responsibility Preliminary Consultation Program*, DEC, March 2004, p. 68

[24] Report dated 18 October 2004 submitted by the VCA to the ERG in response to the ERG's questions

- Ensured that all signatories involved in PVC packaging signed up to the National Packaging Covenant and submitted action plans and progress reports
- Established a pilot recycling schemes for pipe off cuts on construction sites
- Commissioned independent audit of PVC wastes to assist in developing appropriate waste recovery and management responses.

Some of the planned actions of the signatories to the vinyl industry's product stewardship commitment in 2005-06 include:[25]

- Keeping vinyl chloride monomer (VCM) in manufactured resin and VCM emissions at levels that are well below internationally accepted industry practice.
- Implementing the Code of Practice for the use of cadmium pigments and lead stabilisers in PVC products, including annual reporting of use by signatories.
- Requiring new signatories still using cadmium stabilisers to agree to specific phase out dates.
- Phasing out use of lead stabilisers by 2008 for pipes and 2010 for other uses.
- A report in 2006 on the use of cadmium pigments by signatories, including technical and commercial constraints for replacement.
- Continuing the PVC industry's policy of using phthalate plasticisers in flexible PVC products in Australia and sharing relevant information with NICNAS (National Industrial Chemicals Notification and Assessment Scheme) to assist its review of phthalates.

Key issues and observations

The industry's Product Stewardship Commitment and actions are positive moves toward taking greater responsibility for PVC products. However, a number of questions still remain regarding some of the additives. For example, while the industry scheme involves the phase out of cadmium stabilisers, it does not address the issue of cadmium-containing PVC products or recycling cadmium-containing products. The same applies to lead containing PVC products.

Another issue for PVC product stewardship is the lack of data on the amount and source of PVC wastes generated and the accuracy of recovery and recycling rates. However, the VCA commissioned consultants to perform a waste audit between December 2004 and March 2005 and has since reported that it will develop an action plan by 2006 to address priority end-of-life PVC issues identified in the waste audit.

Conclusions and recommendations

The PVC industry's voluntary commitment to product stewardship is a step in the right direction. However, a number of issues remain regarding the use and phase out of some additives from PVC products and the end-of-life management of PVC products that already contain these chemicals. It is recommended that:

Recommendation 31: The Minister requires the PVC industry to provide its action plan to address priority end-of-life PVC issues to the DEC by December 2005.

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[25] *Draft Review and Progress Report on the PVC industry Product Stewardship Commitment*, Vinyl Council of Australia, May 2005

3.4   Other electrical products

This category excludes computers, televisions and mobile phones.

Problems

This category covers a wide range of product types, including large whitegoods (e.g., washing machines, refrigerators, air-conditioners, microwaves, dishwashers) to consumer electronics (DVD players, stereos, portable music players, kettles, power tools, toys), and lighting (fluorescent tubes, emergency lighting). A number of these products are ubiquitous in Australian households. A recent ABS survey found that almost every NSW household had a refrigerator; over 95% had a vacuum cleaner and almost 90% had a video recorder. High ownership rates were found for many other electrical products. In the commercial sector, over 71 million fluorescent tubes are in service nationally.

The amount of end-of-life products recovered or disposed of to landfill varies according to product type. It is estimated that about 70% of white goods are collected for recycling. This is largely driven by the resource value of the ferrous metals in these products. However, a significant amount of shredder floc, which contains a number of hazardous substances as well as significant quantities of glass, plastics, foam, rubber, circuit boards and other materials, is left over from the recycling process. Shredder floc is disposed of in landfills.

Very few consumer electronics are recovered for recycling. Some consumer electronics contain a number of hazardous substances, including lead, mercury, cadmium, beryllium and brominated flame-retardants. Some cordless electronic products, such as cordless phones, shavers, handheld vacuums, cordless power tools and toys are a significant source of Nickel Cadmium (NiCad) batteries. About half of all consumer NiCad batteries enter the market installed in consumer electronic products.

Similarly, very few lighting products are recovered for recycling. Lighting products may contain toxic substances, such as mercury (an average fluorescent tube contains 30mg of mercury), polychlorinated biphenyls (PCBs) and phosphors. Emergency lighting uses NiCad batteries.

Industry profile

The products in this category are manufactured in Australia and overseas. The markets for these products differ by product type. In general, about half of the whitegoods and about 25% of consumer electronics and small appliances are manufactured domestically. There is considerable variation among product groups within each of these categories.

Multinational producers are the dominant players in the consumer electronics industry. Domestic producers tend to operate in niche markets. Cheaper imports of non-established brands make up a significant part of some consumer electronics sub-sectors. For whitegoods, a number of the multinational producers have domestic manufacturing facilities, such as Fisher & Paykel and Electrolux.

The major industry association for this category of products is the Australian Electrical and Electronic Equipment Manufacturers' Association (AEEMA). Some organisations that are connected to AEEMA represent certain sub-sectors, for example, the Consumer Electronics Suppliers' Association (CESA) and Lighting Council Australia.

Industry actions

Governments have been formally discussing product stewardship with the electrical sector in Australia since 1998. However, most of the industry initiatives have focused on televisions and computers. The consumer electronics sector has clearly indicated that it accepts, in principle, responsibility for all consumer electronic products, but the industry plans to concentrate on establishing a product stewardship scheme for televisions before it tackles product stewardship for other product types. Outside of the work on televisions, there are only individual company initiatives, such as Sony's trial on the take back of rechargeable batteries.

Product stewardship in the whitegoods sector has been largely restricted to individual company initiatives, such as those undertaken by Fisher & Paykel and Electrolux. These initiatives have focused mostly on research. The lighting industry had not considered product stewardship to any extent prior to the publication of the Priority Statement. Currently, the lighting industry's interest is on the use of NiCad batteries in emergency lighting and their recovery during building decommissioning and refits.

Key issues and observations

The electrical products industry is made up of a wide number of separately contested markets with different environmental issues, product use patterns and disposal routes. While synergies will be possible among some product groups, others will require very different solutions. The industry should not be treated as a single uniform entity.

While NSW acknowledges the focus of parts of the consumer electronics industry on developing and implementing a product stewardship scheme for televisions, NiCad batteries are also a priority waste of concern.

About half of consumer NiCad batteries enter the market in consumer electronic products. While NiCad batteries have been phased out of some product types, such as mobile phones, laptop computers and video/digital cameras, they are still the predominant battery technology in a number of cordless products. In addition, the consumer NiCad batteries that are not in electronic products when they enter the market are specifically made as replacement batteries for those products. Less hazardous but more expensive battery technologies, such as Nickel Metal Hydride or Lithium Ion, are alternatives that are proven and available.

While the main battery technology of concern is NiCads, batteries are often not marked and are therefore indistinguishable for end-users. The batteries are also often difficult or not designed to be removed, so they are discarded. The industry will need to take these issues into account to ensure NiCads are captured. A longer-term goal would be the phase out of NiCad batteries in favour of less hazardous alternatives.

For whitegoods, the main issue is shredder floc. Whitegoods collection rates are relatively good and as long as international steel prices remain high, there will be a strong pull to recover those products. However, so far the only reason they are collected is for the steel. All other materials end up as shredder floc, which currently has no end-use. There may be opportunities for the whitegoods sectors to work with the automotive sector since shredder floc is a common problem. There is a current initiative in Victoria between PACIA, EcoRecycle and the automotive industry, which may provide some direction on this issue.

For lighting, the focus on NiCad batteries in emergency lighting is good. However, the lighting industry has completely ignored the issue of the hazardous content of fluorescent tubes and other vapour lamps. While a facility in Melbourne has the technology to recycle these lamps, the cost of collecting and transporting them has been prohibitive. Only whole lamps can be recycled.

Conclusions and recommendations

There is no product stewardship scheme in place for any of the products in the 'other electrical goods' category, but the interest shown by industry groups from the whitegoods, consumer electronics and lighting sectors is encouraging. The different products within the 'other electrical products' category have been disaggregated and separate recommendations are provided below:

Recommendation 32: The Minister should require a report from industry by end-2005 identifying initiatives to improve or establish systems for collection and recycling, and to reduce hazardous substances in products.

Recommendation 33: In addition, the Minister should require producers and importers to report, in respect of the following, specific proposals and current actions by December 2005 and a further report on implementation by October 2006:

- Reducing the amount of shredder floc going to landfill from end-of-life whitegoods by, for example, dismantling non-metallic components prior to shredding or developing ways to separate materials from shredder floc or developing end markets for shredder floc.

- Establishing a recovery plan for end-of-life consumer electronics products that contain rechargeable batteries. Work on this could begin in the short to medium term with trials and research and run concurrently with the establishment of the television product stewardship scheme. In the longer term, the industry should move to phase out the use of non-removable NiCad batteries in favour of less hazardous battery technologies.

- Improving the recovery and recycling of NiCad batteries from emergency lighting and focussing the attention of the commercial sector on improving the recovery and recycling of fluorescent tubes and other vapour lamps.

3.5   Treated timber

Problems

Treated timber contains preservatives (fungicides and insecticides) containing chemical substances such as copper, chromium and arsenic (CCA). Other chemicals that are also present in preservatives are creosote and tributyl-tin naphthenate (TBTN). These preservatives extend the life of timber. However, chromium and arsenic are also well known human carcinogens and copper is toxic to aquatic organisms. TBTN is known to have endocrine- disrupting potential[26]. Creosote contains 150 different chemical compounds, mostly polycyclic aromatic hydrocarbons, which are known carcinogens. Humans and the environment can be put at risk if exposed to these chemicals at high enough levels.

Treated timber waste is a problem because increasing quantities are being disposed of to NSW landfills in mixed timber wastes. It is estimated that up to 350,000 tonnes of wood waste is disposed of to landfills in the Sydney Metropolitan Area annually. The quantities of CCA treated timber being landfilled are unknown, but it is expected to grow significantly over the coming years as structures built with CCA treated timber are demolished. It is, however, difficult to identify treated timber at the end of its life (e.g., it may have been painted). This makes it difficult to separate and recover non-treated timber from mixed timber wastes.

Currently, there is no practical recycling opportunity for treated timber. Timber preservatives may contaminate mulches and composts and they create environmental problems if they are burned without appropriate emission control equipment. The inappropriate disposal of treated timber can cause localised air emissions, leachate problems in unlined landfills or low-level land contamination if applied as mulch.

Industry profile

The largest supplier of timber in NSW is Forests NSW[27]. The production of treatment chemicals is restricted to a small number of local companies. Currently, there are four suppliers of timber preservative chemicals with two companies, namely, Koppers Arch Wood Protection and Osmose (Australia) supplying the bulk of the market. More companies are involved in the application of chemical treatment. There are 32 timber treatment plants in NSW with DEC regulating 12 and local government regulating the remaining 20 plants. These companies are represented by a number of peak bodies.

Imported treated timber accounts for up to 35% of the market. All imported packaging timber is treated. Vineyards are the largest market for CCA treated timber, followed by the construction sector. The largest market for non-CCA treated timber is the construction sector.

Industry actions

The industry continues to sponsor research into thermal processing of CCA treated timber for energy recovery and environmental protection as well as an investigation of a range of technologies to detect chemical treatments. In response to restrictions on chemical treatments and buyer demands, the timber industry is currently researching chemical free wood preservation techniques for radiata pine (e.g., thermal modification).

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[26] Chemicals that can interfere with hormones, and which may increase the risk of cancer, malformations, infertility and sterility.

[27] Forest NSW is a public trading enterprise within the NSW Department of Primary Industries and manages more than 2.8 million hectares of native State forests and plantations. It was formerly known as State Forests of NSW.

In March 2005, the Australian Pesticides and Veterinary Medicines Authority (APVMA) announced a phase out (over 12 months) of CCA treatment for timber used to make picnic tables, outdoor seating, play equipment, patio, domestic decking and handrails. All timber treated with CCA will have to be clearly identified under strict new labelling requirements.

Key issues and observations

There are many alternatives to treated timber, for example, concrete, steel framing, and plastics. There is also a range of alternatives to treatment with CCA preservatives. The main ones are ACQ (alkaline copper quartenary) and Copper Azole. While these alternative chemicals may reduce the impact of treated timber on human health, they can still potentially undermine the recovery and recycling of non-treated timber from mixed timber wastes.

There is currently no technology available to identify treated timber in mixed timber wastes in order to separate it from recoverable non-treated timber waste.

Reuse of treated timber is common where the timber is still in good condition. However, reuse has only been possible for very small quantities of used treated timber. There is also some concern that treated timber could be reused in applications which could bring it into contact with people. Currently, there is no commercial facility in Australia that is capable of recovering the heavy metals or other preservative chemicals in treated timber.

CCA treated timber will be in the waste stream for many years. Alternative treatments to CCA will become more prevalent in years to come. Meanwhile, the industry is unclear on which problems it should address.

Conclusions and recommendations

Currently, there is no product stewardship scheme in place. There is a lack of practical recycling opportunities for treated timber and a current inability to sort treated timber from other timber that could be recycled. However, the industry has shown some willingness to work on these issues. It is recommended that:

Recommendation 34: The Minister requires the treated timber industry to report specific proposals and current actions on the following by end-2005 and a further report on implementation by October 2006:

- Development of processes to identify and separate treated timber from mixed timber wastes.
- Programs to educate consumers on proper disposal of treated timber.
- Assessment of options for the use of more benign alternatives to treat and preserve timber.
- Action to develop end-market uses for recovered treated timber.

3.6   End-of-life vehicle (ELV) residuals

Problems

ELV residuals or 'shredder floc' is a major waste stream that is disposed of to landfills. Shredder floc is a by-product of the metal shredding process and usually includes materials derived from the mechanical shredding of white goods and other metallic products, not just from the shredding of vehicles. It consists mainly of non-ferrous material, and could include rubber, glass, plastic, lead, other heavy metals, oils and other automotive fluids. Well in excess of 100,000 tonnes of shredder floc are generated in NSW each year, with about 65% originating from vehicles (whitewoods are another source – see section 3.4).

The key environmental impact is the potential leaching of materials in shredder floc into the ground at landfill sites. Materials with potential negative environmental consequences in ELVs include: oil, coolant, fuel, brake and other fluids; air-conditioning gases; and heavy metals including lead, hexavalent chromium, cadmium and mercury. Other materials such as rubber, plastic and glass that could potentially be recycled are also lost once these materials enter the shredding process.

Industry profile

Australia's vehicle manufacturers and importers are well organised under the Federal Chamber of Automotive Industries (FCAI). The FCAI membership comprises the four passenger motor vehicle manufacturers (Toyota, Ford, Holden and Mitsubishi) and all major international brands importing passenger, light commercial and four-wheel drive vehicles, and motor cycles into Australia. There is also a peak industry organisation for automotive products, namely Federation of Automotive Product Manufacturers (FAPM).

There is an industry for the reuse of second-hand vehicle parts and components. It is well organised and is represented by the Auto Parts Recyclers Association of Australia (APRAA), the members of which now undertake some of the tasks that assist in minimising shredder floc volumes and are well placed to provide this service.

Industry actions

A national committee called the Land Transport Environment Committee (LTEC) (formerly the Motor Vehicle Environment Committee) was formed in 2004 by the National Environment Protection Council (NEPC) and the National Transport Commission (NTC) [28]. The LTEC provides a national approach to reduce the harmful effects of road and rail transport on public health and the environment. Although the MVEC strategy that was published in 1998 included possible actions to address waste stream issues, such as, recycling of vehicle body parts, the main initiatives have since been only in the areas of emission, fuel quality and noise standards.

The Commonwealth Department of Environment and Heritage (DEH) commissioned an information paper in 2001 on the environmental impact of ELVs. The paper found, among others, that there appeared to be substantial opposition from the FCAI to any move to mandate recycling levels through a European style EPR approach. [29]

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[28] NEPC comprises Ministers from the Commonwealth and all States and Territories. The NTC was formed to improve the safety and efficiency of land transport and to reduce its environmental effects. It was formerly called the National Road Transport Commission, and was renamed following the expansion of the its functions to include rail transport issues as well

[29] See *Environmental Impact of End-of-Life Vehicles: An Information Paper (2002)*, paper prepared for the DEH by A D Edwards Consulting Pty Ltd. Note that the European Parliament's ELV directive is the only significant example of EPR to be enacted anywhere for vehicles. The directive makes vehicle manufacturers responsible for recycling targets (95% by weight by 2015) for the ELVs that they had manufactured.

The Victoria EPA undertook some initial work on a national agenda for action on shredder floc under the auspices of the EPHC's Waste Working Group. The Group identified a current difficulty of quantifying the environmental and public health impacts of shredder floc. The Victoria EPA is continuing to monitor the issue on behalf of the national group.

A new two-year partnership between EcoRecycle Victoria and the Plastics and Chemical Industries Association (PACIA) from 2005 is targeting the increased recovery and recycling of plastics in the automotive industry. According to PACIA, potentially more than 80,000 tonnes of material that end up in landfill in Victoria could be put to better use. Some of the planned outputs from the partnership, which could potentially reduce the amount of shredder floc that ends up in landfills, are as follows:

- Providing a focus and resource for product stewardship in automotive plastics management
- Design for recycling for improved recovery of plastics
- Identifying barriers to recovery and re-processing of automotive plastics and developing industry networks to overcome these barriers
- Developing end-market options for plastic recyclate.

Key issues and observations

Both the FCAI and the FAPM declined to meet the ERG or provide more detailed responses to the ERG's questions even though they are key stakeholders. The FCAI wants a national approach, with the caveat that any scheme must be supported by a rigorous cost-benefit analysis. The FAPM said its members have no direct involvement in more than 75% of ELV residuals generated here.

APRAA and the Motor Traders Association of Australia (NSW Division) met members of the ERG. They discussed the workings of the existing industry for the reuse of used automotive parts but stated that there is a need for manufacturers to work together with this industry to ensure a better uptake of and access to used automotive parts. Vehicle manufacturers could, for example, make vehicles easy to disassemble to maximise the amount of non-metallic parts that are dismantled for reuse.

Conclusions and recommendations

There is no formal industry wide voluntary product stewardship or EPR scheme in Australia to manage ELV residuals. No industry wide scheme is being considered. It is recommended that:

Recommendation 35: The Minister requires vehicle manufacturers to report by April 2006 on proposals and plans to reduce the amount of shredder floc generated during the metal recycling process. For example, by supporting or establishing authorised vehicle treatment stations that would conduct fluid removal and dismantling processes prior to metal shredding, either on their own, or with APRAA members or similar dismantling industry partners, thereby maximising overall recycling volumes. A report on implementation progress should be provided by October 2006.

Recommendation 36: The DEC and industry monitor the partnership between EcoRecycle Victoria and PACIA to increase the recovery and recycling of plastics in the automotive industry in order to assess the outcomes and potential opportunities for reducing the amount of shredder floc derived from end-of-life vehicle shredding going to NSW landfills.

Recommendation 37: The Minister considers regulation to require all vehicles that are processed by the automotive dismantling industry to have all fluids and major non-metallic items removed prior to the vehicle going for metal shredding.

3.7   Household hazardous and chemical wastes

Household hazardous and chemical wastes (HHCW) refer to wastes collected through the NSW Chemical Cleanout program. These include paints, lubricants/oils, batteries with lead and other toxic materials, automotive chemicals, community sharps, domestic pesticides and cleaning products, solvents and pharmaceuticals.

The ERG focussed on paints, lubricants/oils and lead acid batteries, as these wastes comprise almost 80% of the material collected in the Chemical Cleanout program[30]. Lead acid batteries in particular are of significant concern because of their potential to undermine the results of alternative waste treatment technologies to produce stabilised organic matter.

Paints

Problems

The inadvertent or deliberate discharge of paint into sewer or storm water systems and the propensity for liquid paint to leach from landfills are major environmental concerns. Paint disposed of in the municipal waste stream could undermine the potential to recover useful materials from that waste stream, particularly from organic wastes meant for alternative waste treatment. The disposal of unused paint is a waste of valuable resources, which can be recovered and recycled and sold to consumers as new paint.

Industry profile

About 61 million litres of household paint is consumed in Australian annually, of which about 88% is water-based and 12% is solvent-based. About 11% of the paint purchased is unused and is disposed of or remains in storage. This puts the potential waste stream at about 6.7 million litres per annum (about 8,500 tonnes).

Almost all paint producers or importers are members of the Australian Paint Manufacturers Federation (APMF). There are four major companies in Australian market. They are Orica, Wattyl, Barloworld and Akzo Nobel, with the last manufacturer focussing only on industrial coatings. Among them they have a combined market share of more than 50%.[31] The remaining 50% comprise several smaller paint manufacturers and importers, most of which are members of the APMF.

Industry actions

Industry has conducted a few trials in NSW and Victoria on the collection and reprocessing of paint. Between November 2002 and May 2003, Waste Service NSW (now WSN Environmental Solutions) and the APMF conducted a paint collection trial with leftover household paint deposited at the Lucas Heights Landfill.[32] About 2,500 kg of light-coloured water-based paint was collected but only about 100 kg was reusable. Of the 2,016 cans collected 92% were four-litre cans and under.

In March 2003, Orica (makers of Dulux paint), Bunnings, the APMF and EcoRecycle Victoria conducted a paint collection trial in Victoria. The trial involved collections at a Bunnings store car park over one weekend. About 1,800 litres of paint were collected, of which a portion was reconstituted and resold as fence paint.

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[30] All data on NSW Chemical Cleanout presented here is for collections conducted between 1 July 2003 and 30 June 2004.

[31] *Paint manufacturing in Australia*, IBISWorld Pty Ltd, January 2003

[32] WSN collects household quantities of paint at its transfer stations and landfills. These typically result in around 600 tonnes of paint per year. The paint is sent to Chemsal in Victoria for reprocessing. Chemsal processes about 1,000 tonnes of paint each year. The metal cans are sent for recycling and the liquid fraction is sent for energy recovery via the cement industry.

In April 2004, Orica, Bunnings and EcoRecycle Victoria undertook a second trial in conjunction with Chemsal and Blue Scope Steel. This trial, called 'Paintback', collected paint over the counter in a Bunnings store over a one-month period. It also looked at some of the technical issues involved in separating and reconstituting the recovered paint. About 42 tonnes of unused paint (including cans) were collected, of which 68% was water-based and 32% was solvent-based. From this, about 6,300 litres of quality water-based paint returned to the market as fence paint and 10 tonnes of metal cans were recovered for metal recovery. All the organisations involved in the trial expressed an interest in continuing to explore paint recovery.

Orica, Chemsal and EcoRecycle are currently investigating options for the automation of the recovery process, focusing on the separation of water and solvent-based products as well as appropriate detection levels for bacterial contamination of water-based paints. Options for mechanical decanting are also being investigated and quantified to ascertain the investment required to minimise manual handling.

Key issues and observations

There is a clear community desire for a mechanism to return unused paint. Paints comprised 45% (217 tonnes) of the material collected in the NSW Chemical Cleanout program in 2003-04. However, there is no industry contribution to this scheme, and the ongoing use of public funding to collect paint is not acceptable in the absence of a concerted product stewardship effort to support the recovery of used paint.

The industry as a whole appears to be content with educating consumers on safe disposal and recycling options (through information in labels, brochures and the Internet), and encouraging customers to return unused paint to existing waste transfer stations and landfills and through the NSW Government's Chemical Cleanout program.

The industry cites cost as a prohibitive factor to establish and operate new infrastructure to recover paints from consumers preferring to promote existing facilities such as waste transfer stations and landfills. The cost barrier is yet to be clearly demonstrated. Exploration of industry sponsored recovery schemes needs far more rigorous work.

Conclusions and recommendations

Various paint take-back trials conducted by individual companies in the paint industry are encouraging. However, whole of industry product stewardship is not satisfactorily demonstrated through the initiatives of one or two progressive companies. It is recommended that:

Recommendation 38: Used paint is listed as a specific priority product of concern in the next Priority Statement.

Recommendation 39: The Minister requires that by end-2005 industry outlines plans (including targets) towards the establishment of and/or financial support for recovery systems for paint, and by October 2006 the industry demonstrates clear progress towards implementation.

Recommendation 40: The Minister introduces a regulatory system if the targets are not met.

Lubricants and oils

Problem

Used oil is hazardous. It is toxic and carcinogenic and harmful to the environment when irresponsibly discarded. It is also poisonous if swallowed or inhaled and can present a fire hazard if not properly stored. The improper disposal of used oil can pollute land, waterways, underground reservoirs and the marine environment. One litre of used oil can contaminate up to one million litres of water.

Industry profile

The member companies of the Australian Institute of Petroleum (AIP) account for about 80% of lubricants sold in Australia. These companies are: BP, Caltex, Mobil Oil, Shell and Valvoline. According to the AIP, some 520 million litres of lubricants and greases are sold in Australia every year.

Industry actions

The key product stewardship action of the industry is the payment of a levy by producers and importers for petroleum-based oils and their synthetic equivalents under the Product Stewardship for Oil (PSO) program run by the Commonwealth under the *Product Stewardship (Oil) Act 2000 (Cth)*. The current levy rate is 5.449 cents per litre (or kilogram for greases). The levy is used by the Commonwealth to pay benefits to oil recyclers, to provide an incentive to recycle, with benefits ranging from 3 cents to 50 cents a litre, based on the level of use of the recycled oil.

The AIP reports that of the 520 million litres of oil sold in Australia every year, only 270 million litres is recoverable, the rest being consumed (burnt) in the process of use. Of the recoverable amount, about 80% is collected through the PSO program. A large part of the uncollected oil is reused, typically as burner fuel in small power generators or in some industries (e.g., hydroponics).

Key issues and observations

Lubricants and oils comprised 17% (84 tonnes) of the NSW Chemical Cleanout collections in 2003-04. The ongoing use of public funding to collect used oil is not viable, as the infrastructure to recover used oil is available under the PSO program.

An independent review of the *Product Stewardship (Oil) Act 2000 (Cth)* was conducted in 2004. A final report was presented to the Minister for the Environment and Heritage in May last year[33]. Broadly, the review confirmed the AIP's report on collection figures. It concluded that the PSO program should be retained and made specific recommendations to improve the scheme.[34]

A separate report into the PSO program[35] noted that 72% of the recoverable used oil in NSW and ACT was collected in 2002, against a national average of 53%, Only Tasmania and South Australia performed better, returning collection figures of 96% and 74% of the available oil.

Conclusions and recommendations

There is an existing scheme for the recovery and recycling of used lubricants and oils, which appears to be making good progress. It is recommended that:

Recommendation 41: The DEC monitors the progress of product stewardship for used oil through the review mechanisms in place for the *Product Stewardship (Oil) Act 2000*, with particular emphasis on the percentage of recoverable oil which is actually recovered and the recovery from the home oil change market.

Recommendation 42: The Minister requests the scheme to demonstrate initiatives to improve consumer awareness in NSW to ensure that used oil that is now being returned through the NSW Chemical Cleanout program is diverted to oil collection facilities being operated under the Product Stewardship for Oil program.

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[33] *Independent Review f the Product Stewardship (oil) Act 2000 – Final Report*, The Allen Consulting Group, May 2004

[34] Eleven specific recommendations were made and they covered data collection, benefits for recycling, recycling processes, governance, consultative processes and consumer awareness.

[35] *Independent Review of the Transitional Assistance Element of the Product Stewardship for Oil (PSO) Program*, Australian Academy of Technological Sciences and Engineering, March 2004

Lead acid batteries

This section covers only lead acid batteries. Other battery types are covered in section 2.3 (NiCad batteries) and section 3.4 (rechargeable batteries used in electrical and electronic appliances).

Problems

Lead acid batteries contain hazardous materials, which can cause environmental and human health problems if disposed of inappropriately.

Lead acid batteries that are disposed of in landfills represent inefficient use of non-renewable resources.

Inappropriate disposal of lead acid batteries with other wastes could undermine resource recovery from that waste stream, especially when using alternative waste treatment technologies to produce stabilised organic matter.

Industry profile

The Australian Battery Industry Association (ABIA) represents the only two domestic manufacturers of automotive type lead acid batteries and distributors/wholesalers. ABIA members supply 90% of the 4.5 million automotive batteries in the Australian market. As lead acid batteries have an average life of three to four years, batteries installed in new cars will either be retrieved by the dealer during servicing or via an auto-club (NRMA equivalent), which are likely to be supplied by ABIA members. The collected batteries are disassembled and recycled both domestically and overseas.

Industry actions

The ABIA reported that it has a scheme that collects used batteries from the distributors and retailers its members supply. It estimates that its members achieve a 96% recycling rate Australia wide.[36] The Association advises that NSW represents 30% of the market, or 1,350,000 units. At a 96% recovery rate, ABIA NSW members would be collecting 1,296,000 units. The recovery system is largely driven by the value of the recovered material. High international commodity prices for lead are a further incentive for this process.

Non-ABIA members (only two companies) source their batteries from Asia. These companies are known to supply ABIA distributors with batteries, implying that a portion of these batteries is also being recovered by ABIA.

Key issues and observations

Although the ABIA has a scheme for the return of used automotive batteries, lead acid batteries comprise about 15% (60 tonnes) of material collected at the NSW Chemical Cleanout program every year. This indicates a need for the ABIA to target the 'Do-it-yourself' (DIY) consumer market[37], as the ongoing use of public funding to support the collection of lead acid batteries from private consumers is not sustainable.

Lead acid batteries disposed of in household garbage also represent a problem for alternative waste treatment technology (AWT) processes. A major waste management company operating an alternative waste treatment facility in Sydney, which produces stabilised organic matter, recently reported[38] that it is separating about three tonnes of lead acid batteries (200 units) per week from the household waste arriving at its facility. Over a year this amounts to about 10,000 units or 140 tonnes.

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[36] ABIA submission to the ERG

[37] That is, supplied by retail automotive shops and therefore non ABIA members,

[38] Verbal report to the DEC in May 2005

Conclusions and recommendations

The system operated by the battery industry to recover and recycle used batteries appears to be recovering the majority of batteries. However, there is clear room for improvement to capture batteries from individual households and the DIY market. It is recommended that:

Recommendation 43: The Minister requires that the Australian Battery Industry Association report proposals and current actions by end-2005 to engage suppliers of the DIY consumer markets and householders to divert lead acid batteries away from the municipal waste stream and the NSW Chemical Cleanout program towards more appropriate systems such as point of sale take-back with a further report on implementation in October 2006.

4   Ongoing ERG roles

4.1   National Environment Protection Measure

Where the development of a National Environment Protection Measure (NEPM) is integral to the operation of a product stewardship scheme, there would be value in the ERG having input into the development of the NEPM. It is therefore recommended that:

Recommendation 44: The Minister ensures that the ERG has input into the development of NEPMs where they apply to proposed product stewardship schemes for wastes identified in NSW EPR Priority Statements.

4.2   Product Stewardship Agreements

Where Product Stewardship Agreements are central to successful compliance with NSW policy on EPR, it is essential that the community is involved in the development of these Agreements: It is therefore recommended that:

Recommendation 45: The Minister adopts a NSW position of, and seeks other jurisdictions' support for, community involvement in the development of Product Stewardship Agreements.

4.3   Future of the ERG

The ERG, having advised on the effectiveness of existing or proposed EPR schemes and the need for regulatory schemes since March 2004, provides stakeholder representation for the implementation of the Government's EPR policy. As most of the above recommendations are relevant to ongoing and future timelines, it is important that continuity of those recommendations is maintained. To ensure the continuity of advice on the Government's EPR policy, it is therefore recommended that:

Recommendation 46: The Minister ensures the ongoing operation of the ERG to advise on the identification of wastes of concern and those for priority focus; the effectiveness of existing or proposed EPR schemes to reduce waste volumes and toxicity; and the need for regulatory schemes.

Appendix 1 – Summary of ERG meetings

1st meeting - 5 May 2004

Agreed on a broad work plan.

Discussed key EPR and product stewardship concepts and definitions.

Agreed on evaluation criteria for existing and proposed EPR schemes and requested the DEC product stewardship section to develop specific KPIs for each criterion.

2nd meeting - 17 June 2004

Decided to publish periodic ERG information sheets.

Finalised a detailed work plan, including further meeting dates on 26 August, 23 September, 4 November and 2 December.

Finalised KPIs for evaluation criteria.

Agreed to progress toxicity reduction (Outcome Area 4 of the *Waste Avoidance and Recovery Strategy 2003*) within the EPR framework.

3rd meeting - 15 July 2004

Discussed ChemClear and drumMUSTER schemes with representatives from Agsafe, and the Mobile Phone Industry Recycling Program with representatives from the Australian Mobile Telecommunications Association. Finalised specific evaluation criteria for each scheme and agreed on reporting deadlines.

4th meeting - 2 September 2004

Approved evaluation questionnaire for the seven lower priority wastes of concern.

Discussed the review of the National Packaging Covenant and the applicability of the ERG's evaluation criteria with representatives from the National Packaging Covenant Council. Tasked the DEC team to evaluate the revised Covenant proposal against the ERG's evaluation criteria and provide feedback to the Covenant Council.

Discussed the implementation of the Code of Practice for the Management of Plastic Bags with representatives from the Australian Retailers Association (ARA). Finalised applicable evaluation criteria and agreed on reporting deadlines.

Tasked the DEC team to prepare an issues paper on batteries in general.

5th meeting – 30 September 2004

Agreed to monitor the implications of the Basel Convention on EPR schemes in Australia (the Convention restricts the export of hazardous wastes.

Discussed progress on proposed national product stewardship schemes with representatives from the following industry organisations and agreed on applicable evaluation criteria and reporting deadlines:

- Televisions – Consumer Electronics Suppliers Association
- Computers – Australian Information Industry Association
- Used tyres – Joint Working Group Tyres (representing, among others, the Australian Tyre Manufacturers' Association and the Australian Tyre Importers Group)

6th meeting – 5 November 2004

Considered options to progress different types of batteries under an EPR framework and agreed to:

- gather more data on barriers and opportunities to recover single-use batteries,
- pursue rechargeable battery issues, including NiCad batteries and other rechargeable batteries through product stewardship in the electronics sector,
- gather more data on barriers and opportunities to recover used lead acid batteries discarded by DIY consumers.

Discussed EPR and product stewardship issues with representatives from the following organisations:

- Cigarette butt litter – British American Tobacco Australia, Imperial Tobacco, Philip Morris, the Independent Butt Littering Trust, and Keep South Australia Beautiful Environmental Solutions
- Paints – Australian Paint Manufacturers Federation and Orica Consumer Products
- Lubricants and oils – Australian Institute of Petroleum and Oil Recyclers Association of Australia
- Office paper – Australian Paper, Printing Industries Association of Australia, Independent Paper Group of Australia

7th meeting – 9 December 2004

Discussed EPR and product stewardship issues with representatives from the following organisations:

- Polyvinyl Chloride – Vinyl Council of Australia
- Electrical products – Australian Electrical and Electronic Manufacturing Association, Consumer Electronics Suppliers' Association, Electrolux Home Products, and Fisher & Paykel Australia Pty Ltd
- End-of-life vehicle residuals – Motor Traders Association of Australia (NSW Branch) and Automotive Parts Recyclers Association of Australia
- Treated timber – Timber Preservers Association of Australia, Australasian Treated Timber Coordination Group, and Australian Timber Importers Federation

8th meeting – 24 May 2005

Discussed the draft ERG report to the Director General of the DEC and the Minister for the Environment.

9th meeting - 14 July 2005

Made further changes to the draft ERG report to the Director General and the Minister and resolved to finalise the report out of session.

Appendix 2 – Evaluation criteria and KPIs for priority wastes

Criteria	Key performance indicators (KPIs)	
	Existing schemes	**Proposed schemes**
1 Scope and coverage	Are all products produced/imported by that sector covered by the scheme? Are historical products covered? Are orphan products covered? What percentage of NSW does the scheme cover? What percentage of the NSW population has access to the scheme?	Which products does the scheme propose to cover? Will historical products be covered? If so, how many? Will orphan products be covered? If so, how many? What percentage of NSW (geographically) will the scheme initially cover? What percentage of the NSW population will initially have access to the scheme? What will be the coverage (geography & population) after three years?
2 Targets and timeframes	This section relates to performance indicators that have been established for the scheme. Please provide details of targets and milestones for delivery in respect of: - The coverage of the scheme (geography & population) - Collection (quantity and weight) of end-of-life products - Reuse/recycling of end-of-life products, materials or components as a percentage of the products sold - Industry participation as a percentage of market share - End-user participation as a percentage of population - Product redesign based on design for the environment - Reduction/control of littering or illegal dumping - Any other target not covered above	What targets and timeframes have been set for the proposed scheme in respect of the following? - Coverage of the scheme (geography and population) - Collection of end-of-life products – number and weight - Reuse/recycling of end-of-life products, materials or components as a percentage of the products sold - Industry participation as a percentage of market share - End-user participation as a percentage of population - Product redesign based on design for the environment - Reduction/control of littering or illegal dumping - Any other target not covered above
3 Design for the environment	What design for the environment improvements have been made to improve the end-of-life performance of the product? This could include one or more of the following: - Dematerialisation – level of reduction in product weight or size - Extended life-span –increase in producer warranty periods or any other indicator - Improved recyclability/disassembly etc – percentage increase in recyclable components or percentage increase in components that	What design for the environment (DfE) improvements are proposed to improve the end-of-life performance of the product? This could include one or more of the following: - Dematerialisation – planned reduction in product weight or size - Extended life-span – planned increase in producer warranty periods or other indicators of product life extension - Improved recyclability/disassembly etc – planned percentage increase in recyclable components or percentage increase in

Criteria	Key performance indicators (KPIs)	
	Existing schemes	**Proposed schemes**
	- are easily disassembled for repair or reuse. - Use of recycled content – percentage increase in recycled content in products - Demonstration that the product has been manufactured to international environmental best practice standards	- components that are easily disassembled for repair or reuse. - Use of recycled content – planned percentage increase in recycled content in products - Are products being manufactured to international environmental best practice standards? If not, what measures are being taken to do so?
4 Collection results	The number/weight of products captured by the scheme as demonstrated by the number/weight of products/parts collected as a percentage of number/weight sold.	How many products will be captured by the scheme? - This can be demonstrated by the number/weight of end-of-life products (or parts or components) to be collected as a percentage of the number/weight of products sold.
5 Reuse and recycling – quantity and quality	QUANTITY - How many/much of what is collected is reused or its constituent material recycled? - Amount reused (number/weight) as a percentage of total collected - Amount sent for recycling (number/weight) as a percentage of total collected - Amount of materials recovered in recycling process (weight) - Amount of materials rejected due to contamination QUALITY – of reuse/recycling as demonstrated by: - Percentage reused as whole product - Percentage reused as components in same product or other product types - Percentage material recovered for same or similar use - Percentage material recovered as lower quality material - The amount of energy recovered Where are the recovered products/materials used? - Domestic markets (%) - Export market (%)	QUANTITY - How many/much of what is collected will be reused or its constituent material recycled? - Amount to be reused (number/weight) as a percentage of the total that is expected to be collected - Amount to be sent for recycling (number/weight) as a percentage of the total that is expected to be collected - Amount of materials planned for recovery in the recycling process (weight) - Planned measures to reduce contamination of collected end-of-life products, parts or components QUALITY – of planned reuse/recycling as demonstrated by: - Percentage planned for reuse as whole product - Percentage planned for reuse as components in same product or other product types - Percentage of material planned for recovery for same or similar use - Percentage of material planned for recovery as lower quality material - Plans for energy recovery Where are the recovered products/materials proposed to be used? - Percentage planned for use in domestic markets - Percentage planned for use in export market

	Criteria	Key performance indicators (KPIs)	
		Existing schemes	**Proposed schemes**
6	End-user participation	Level of end-user awareness of and participation in the scheme - Rate of end-user participation (%) - Extent of end-user knowledge/awareness of scheme (%) - Availability/access of collection points (number/ease of access) - Any restriction (e.g., fee) for participation	Plans to ensure end-user awareness of and participation in the scheme: - Projected rate of end-user participation (%) - Plans to ensure/increase end-user knowledge/awareness of scheme - Plans to enable easy access to collection points - Plans to minimise restrictions/fees for participation, if any restrictions or fees are envisaged
7	Industry participation	Number of producers/importers actively participating, as demonstrated by: - Number of producers/importers in the scheme - Percentage of market (sales) represented by participants Was there any negative impact on participants' domestic or international competitiveness?	Projected number of producers/importers that will participate in scheme: - Number of producers/importers that will participate in the scheme - Percentage of market (sales) that will be represented by participants Is participation expected to impact negatively on domestic or international competitiveness of participants? If yes, please quantify impact, or at least describe likely impact.
8	Funding	How is the scheme funded? How secure/long-term is the funding? How will future orphaned products be funded?	How will the scheme be funded? How secure/long-term is the funding? How will future orphaned products be funded?
9	Data collection	How much data is being collected? How robust is the data? How is the data verified?	What data will be collected? How robust will the data be? How will the data be verified?
10	Litter or illegal dumping	No data needs to be provided. It will be evaluated with information from the Department of Environment and Conservation, which will provide the industry an opportunity to comment on the KPIs to be used for this criterion.	What actions have been planned for under the scheme to reduce littering or illegal dumping of the products or its component parts?
11	Level of community concern	No data needs to be provided. It will be evaluated with DEC information (e.g., results of the DEC's "Who cares about the environment" surveys.	No data needs to be provided. It will be evaluated with DEC information (e.g., results of the DEC's "Who cares about the environment" surveys.
12	Toxicity levels	Have toxic substances in products/materials been removed? If not, have the levels of toxicity been reduced? Please provide details.	Planned removal/reduction in toxic substances in component parts. Please provide details of the substances and quantify the planned removal or reduction.