

# PVC 2006

The annual progress report for the Australian PVC industry's Product Stewardship Program

# Summary of Key Commitments and Progress

Issue	2006 Commitment	Progress as at end 2006	2007 Commitment
<b>one: production and storage</b>			
VCM in finished resin	Residual VCM in finished resin powder (including imported by traders and converters) not greater than 1 ppm.	Achieved by resin manufacturer and resin converters and traders.	Ongoing
VCM emissions resulting from manufacturing	VCM emissions no greater than 50g / tonne PVC.	Achieved. Emissions of less than 18g / tonne PVC.	Ongoing
Environmental management systems at manufacturing and storage sites	To encourage and support advances in environmental management of Signatory operations.  All Signatories to work towards reaching or exceeding the Minimum Acceptable Standard.	12 signatories reported meeting the Minimum Standard.  7 are in the process of meeting the Standard.  1 reported it had not yet started the process of working towards meeting the Minimum Standard.	Ongoing
<b>two: the use of lead and cadmium</b>			
Code of Practice	Adherence to the industry Code of Practice for safe use of additives.	Code updated to recognise completed phase out of cadmium stabilisers, timetable for lead phase out and review of pigments.  Signatories confirmed adherence to Code.	Ongoing
Cadmium use	New Signatories to the Program who are using cadmium stabilisers to agree to a specific phase out date upon signing.	The one Signatory using cadmium stabilisers in 2005, committed to phase out their use by 31 December 2006. The status as at end of 2006 is unknown as the cadmium-using business was sold in November 2006.	Maintain commitment to avoid the use of cadmium stabilisers
Lead use	To phase out the use of lead stabilisers with target phase out dates of 2008 for pipes and fittings and 2010 for other applications.	On track. Good progress being made by pipe and cable sectors  Cable sector phase out due to be completed by end 2007.  Data on stabiliser use shows rise in alternatives to lead stabilisers.	Ongoing
Pigments	To continue the review of pigment use and by 2007, develop a commitment on the use of lead, cadmium and hexavalent chrome pigments by Signatories.	Review completed. New Commitment issued to reduce the use of these pigments (see P.11).	Adherence to new Commitment including substitution of heavy metal pigments by 2010 where technically feasible and alternatives are available.
Other additives	To monitor any pertinent overseas developments.	Continued monitoring and sharing of information eg on tin, calcium zinc, organic based stabilisers, bisphenol A etc.	Ongoing

Issue	2006 Commitment	Progress as at end 2006	2007 Commitment
<b>three: the use of phthalate plasticisers</b>			
Phthalate plasticisers	To implement the industry Policy on phthalate use.	In force.	Ongoing
	To share relevant information with NICNAS.	A number of meetings and discussions were held with NICNAS.	Ongoing
<b>four: waste management</b>			
National Packaging Covenant	All relevant Signatories to have submitted waste management Action Plans under the NPC and to maintain compliance with NPC obligations.	All relevant Signatories are signed up. Action Plans have been lodged by three of four Signatories.	Ongoing
Recycling	To develop an Action Plan for waste management of key applications by 2006.	<b>Vinyl-2-life</b> waste action plan completed, April 2006.	Ongoing implementation of <b>Vinyl-2-Life</b> Action Plan
	To implement commitments contained in <b>Vinyl-2-Life</b> action plan.	Underway. Some have been completed, some still in process and some new actions have been set (refer Appendix).	Ongoing
	To monitor overseas developments.	Research was commissioned to provide information on European recycling technology.  Other recycling developments overseas noted.	Ongoing
Encouraging consumer responsible care	New commitment to provide information to end consumers on management options for end-of-life PVC.	A proforma document developed to assist Signatories to provide such information to end users, via websites and marketing literature. Signatories starting to implement.	All Signatories to complete by end 2007
Life cycle thinking	To consider whole-of-life in the development of new products, taking into account end-of-life issues and waste management options.	Initiatives include focusing on end-of-life product issues, recycling, energy efficiency and material efficiency.	Ongoing
<b>five: research</b>			
Research	To monitor national and international scientific research and share pertinent information with signatories and stakeholders.	Information on a range of issues and matters was shared with Technical Steering Group members and/or Signatories (see P.17).	Ongoing
<b>six: public reporting</b>			
Performance against commitments	Publish 2006 annual performance report by 30 June 2007	Published in September 2007. Report verified by independent third party. Audit statement provided.	Publish independently verified 2007 annual performance report by 30 June 2008
PVC life cycle impacts	To publish annual product stewardship issues review	Review for 2006 published in this document	To publish annual product stewardship issues review
Review implementation and effectiveness of the product stewardship program	Publish a review and recommendations by December 2007	Feedback received on the program published on the Vinyl Council website.	Publish a review and recommendations by December 2007

# Product Stewardship Report 2006

A report on progress of the Product Stewardship Program, a voluntary initiative of the Australian PVC industry, during 2006.

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## Significant Program Developments in 2006

The Code of Practice for Use of Lead and Cadmium in PVC Products in Australia reviewed and updated

A reduction in VCM emissions per tonne of PVC produced by resin manufacturer

Good progress made on implementing substitutes to lead stabilisers by the pipe/fittings and cable sectors

Expansion of the commitment to remove heavy metals from PVC products

Initiatives to incorporate life cycle thinking into product strategies

Geographical extension of pipe/fittings waste recovery and recycling

## Executive Summary

The PVC industry's Product Stewardship Program is a voluntary initiative setting out a series of commitments to address environmental and health issues associated with the life cycle of PVC. These commitments bind the Signatories to deliver specific outcomes.

Now in its fifth year, this is an ongoing long term undertaking of the Australian PVC industry to recognise and progressively address all pertinent environmental issues within responsible and deliverable timeframes. This annual report provides information on progress in meeting the commitments, assesses the status of issues, and records new or revised commitments where appropriate.

Reflecting on discussions with stakeholders around the table at the quarterly Steering Group meetings and the industry's activity, much of the focus during 2006 has been on additives used in PVC manufacturing and waste recovery issues. As a result, further thought has gone into strengthening the Code of Practice for the use of lead and cadmium and analysis of other additives used in products, together with the alternatives.

External stakeholders who participate in the Steering Group or who have given us feedback on the Program, have provided constructive, and at times, challenging input but have enabled the industry in its stewardship thinking and action. For this, we are very appreciative and take this opportunity to thank those who have dedicated time and effort to help us address aspects of PVC's life cycle.

As a result of feedback, we have had this report externally verified by experienced independent auditors, Net Balance Foundation. Their verification statement is contained at the back of the report. This process will help us improve the quality of our reporting, the accuracy of the data collection process, and the measurement and materiality of the commitments themselves.

We continue to welcome feedback on the report and the program. If you would like to comment, please contact us at P.O. Box 211 Richmond, VIC 3121 or email [info@vinyl.org.au](mailto:info@vinyl.org.au).

2007 will see us continue to evolve the Program, facilitate recovery and recycling of end-of-life product and improve transparency in terms of information on products. Later in the year, we will also commence a review of the implementation and effectiveness of the Product Stewardship program, to prepare for a future, improved approach by the industry to its environmental responsibilities.

George Macovaz  
Chairman  
Technical Steering Group

# Commitment one: production and storage



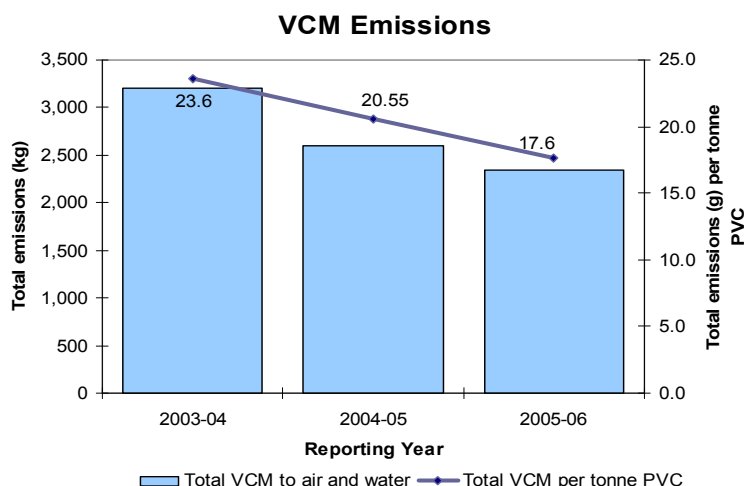
## Residual VCM

The relevant Signatory, Australian Vinyls Corporation, has confirmed that the concentration of VCM in domestically manufactured PVC resin supplied to converters has not exceeded the Program commitment of 1 part per million (ppm). Australian Vinyls measures and records residual VCM in the resin it manufactures and sells, and reports that for the year 1 July 2005 to 30 June 2006, the annual average residual VCM in final product was 0.084ppm.

All Signatories who import PVC resin from overseas confirmed that the residual VCM in such resin was below 1ppm.

## Manufacturing emissions

Under the product stewardship program, Australian Vinyls is committed to ensuring VCM emissions from manufacturing PVC resin remain below 50g per tonne of PVC produced. The company's reported VCM emissions to air and water for the period 1 July 2005 to 30 June 2006 were less than 18g per tonne produced, an improvement on the previous year's figures.



Source: Australian Vinyls Corporation Pty Ltd

## Environment management policy and procedures

In 2005, Signatories agreed to work towards a PVC industry Minimum Acceptable Standard for Environmental Management. All Signatories involved in production and storage activities are expected to confirm annually that their company meets this Standard or is working towards it.

As at the end of 2006, 7 out of 20 Signatories who reported data this year (4 had not reported data by time of issue) were in the process of improving the environmental management of their operations in order to meet or exceed the Minimum Acceptable Standard. Twelve confirmed that their companies meet or exceed the Minimum Acceptable Standard (for example, by being ISO 14000 accredited). One Signatory reported that although the company has the intention of addressing this Commitment, the nature of their business (principally trading) has resulted in other matters being given priority and resources had not yet been assigned to work towards meeting the minimum standard.

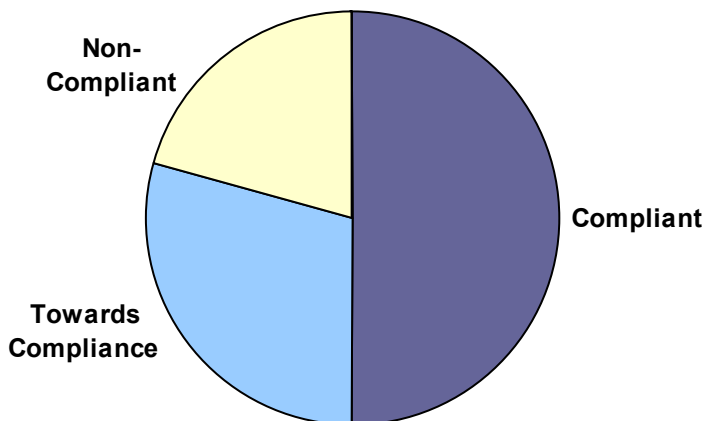
### Commitments:

- VCM retained in manufactured resin shipped to, or imported direct by, converters will not exceed 1 part per million, consistent with best published international standards.
- VCM emissions resulting from Australian manufactured PVC resin will not exceed 50 grams per tonne of PVC produced.
- Encourage and support advances in environmental management of Signatory operations, measured by a repeat survey in 2007.

### Correction:

In our 2005 report, one Signatory reported that it met the Minimum EMS Standard, but this year, has reported it is working towards meeting the Standard. This is considered a more appropriate reflection of their EMS status. Our 2005 report is therefore corrected to show 16 companies (not 15) are working towards the minimum, and 14 (not 15) have met the EMS standard.

With the assistance of EPA Victoria and the Department of Environment and Heritage<sup>1</sup>, the Vinyl Council has shared information on development of appropriate environmental management systems with Signatories.



*Signatories' Progress in meeting the Minimum Standard for Environmental Management, 2006*

### 2007 Action:

- Repeat EMS Status Survey in 2007
- Provide further resources for development of improved EMS

External feedback on this commitment in 2005 raised the matter of third party verification of Signatories' performance in meeting this commitment. This was considered at Technical Steering Group meetings in 2006. The decision was made to seek in the first instance, third party verification of the Program's annual report including verification of a number of Signatory sites' data in the process. This progress report has been externally verified and the assurance statement is provided on page 21. Signatories' confirmation of their EMS status has been included.

Assistance and encouragement to improve environmental management at site level will be continued in 2007. All Signatories will be surveyed through self-assessment questionnaires to evaluate the status of their environment management systems. We will also consider developing further resources to help Signatories meet and report on their site environmental management.

## Commitment two: heavy metal additives

### Implementing the Code of Practice

In 2006, the *Code of Practice for the Use of Lead and Cadmium Stabilisers in PVC Products in Australia* was reviewed by the Technical Steering Group and updated to apply to the use of lead and cadmium in both stabilisers and pigments; to include traded products; to include the phase out of cadmium stabilisers and the timetable for the phase out of lead stabilisers; and, to clarify the use of recyclate.

The new Code of Practice recognises that use of recyclate derived from old, lead or cadmium stabilised PVC products, may mean that some new products will contain traces of lead and cadmium, yet only where such product meets relevant performance or safety standards. The revised Code of Practice is given over page.

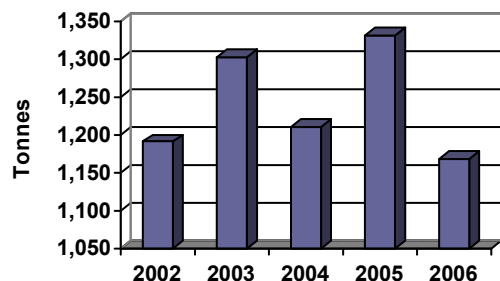
During the process of collecting annual data, all relevant Signatories confirmed that they are adhering to the implementation of the Code of Practice for the use of lead and cadmium in PVC products.

In 2005, external feedback questioned the definition of “industry adherence” and how it is monitored. We seek written confirmation from Signatories at annual reporting time, that they adhere to the Code. In this report, such confirmation has been included in the third party verification process.

## Review of 2006 lead and cadmium use

The charts below represent annual total usage of lead and cadmium metal content of stabilisers used by Signatories<sup>2</sup>. As membership to the PSP program has changed from 2005, the figures for 2006 and 2005 cannot be directly compared. Some Signatories have reported a reduction in lead use over the 2006 reporting year as the switch to non-lead stabilisers has begun. Signatories representing additives suppliers are reporting modest reductions in lead stabiliser use but significant increases in non-lead stabiliser use, confirming this trend. This is being driven particularly by the pipe and cable sectors which expect to be out of lead stabilisers by the end of 2007.

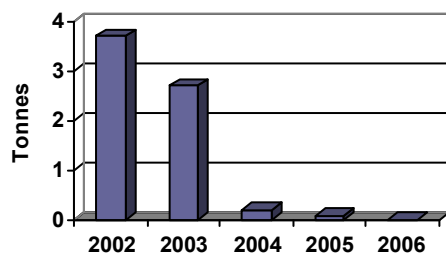
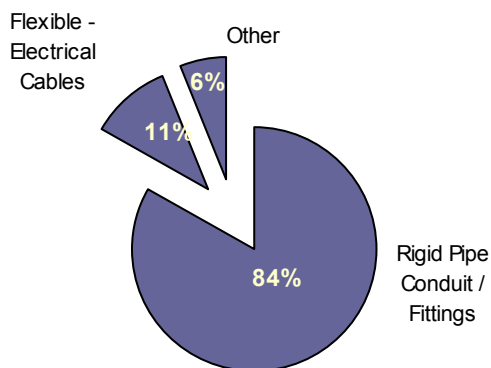
Some Signatories have reported an increase in the use of lead stabiliser due to an increase in product sales during the year.



Lead Stabiliser Use (tonnes metal content)

*Note: The following Signatories were unable to provide their data for lead stabiliser use at the time of publishing: FPI Compounds, Pacific Plastics and Marplex/Orica Chemnet (all three reported use of lead stabiliser last year. Marplex/Orica sold its PVC compounding business in November 2006.*

### Lead Stabiliser Use by Sector



Cadmium Stabiliser Use (tonnes metal content)

### Commitments:

- Implement the Code of Practice for the use of lead and cadmium stabilisers in PVC products in Australia, including the annual reporting of the use of lead and cadmium stabilisers by Signatories;
- New Signatories to the Commitment who are still using cadmium stabilisers agree to a specific phase out date upon signing, taking into account the amount being used and the technical and commercial constraints of substitution.
- Complete the phase out of the use of lead stabilisers in applicable products, by 2008 for pipes and fittings and 2010 for all other applications.
- Review and report in 2006, the use of cadmium, lead and hexavalent chrome pigments by Signatories, including the technical and commercial constraints and consequences of their replacement, and by 2007, develop a commitment related to the use of these pigments by Signatories.

2. To avoid double-counting, the figures are derived from data reported by converters for products sold on the local and export markets, and stabilisers reported sold by Signatory compounders to non-Signatory converters.

# Code of Practice for the Use of Lead and Cadmium in PVC Products in Australia

## **Purpose**

This is a voluntary Code of Practice for the use of lead and cadmium compounds in PVC products manufactured in Australia by the Signatories to this Product Stewardship Program. It reflects the intention of Signatories who use these compounds to comply with its terms and oversee its implementation.

## **Undertakings by Signatories**

### **1. Phase out of cadmium based stabilisers**

As a result of a commitment under the Product Stewardship Program 2002, the use of cadmium stabiliser by Signatories ceased by 30th June 2004. New Signatories to the Program who are using cadmium stabilisers are to agree to a specific phase out date upon signing. Total usage of cadmium stabilisers by Signatories will be reported on an annual basis until phase-out is complete.

### **2. Phase out of lead based stabilisers**

Signatories do not use lead stabilised PVC in children's toys, medical devices, food contact products or potable water pipe. Signatories are committed to phasing out the use of lead stabilisers in all other pipe and conduit products by 2008 and in all products by 2010.

Usage of lead stabilisers will be reported annually by quantity and by major end-use product category until the phase out is complete.

### **3. Recycling of lead stabilised PVC products**

Recyclate derived from lead stabilised PVC products may be used in applications where the product meets relevant performance standards.

### **4. Lead, cadmium and hexavalent chrome pigments**

The use of lead, cadmium and hexavalent chrome pigments by Signatories is very low. A review of technical and commercial constraints and consequences of replacement is to be completed by 2007, and a commitment is to be developed on the use of these pigments.

### **5. Products where further assessment may be required**

Where insufficient data is available to adequately determine the risk to human health and the environment, the Signatories will make appropriate endeavours to obtain the necessary data.

### **6. Overseas trends**

The Signatories will monitor overseas initiatives and trends in:

- reduction in the usage of lead based stabilisers;
- development of alternative stabiliser systems;
- the recycling or disposal of lead stabilised PVC products;
- the abatement of any environmental impacts of lead based stabilisers;

and act on these initiatives and trends where appropriate and practicable.

### **7. Safe manufacturing practice**

The Signatories are committed, as a minimum, to conformance with the requirements of WorkSafe Australia and the relevant state Codes of Practice applicable to stabiliser manufacture and their use in PVC products.

### **8. Australian Standards**

The Signatories will comply with relevant Australian Standards and recommend inclusion of the practical outcomes of this code in relevant new standards or revisions.

### **9. Consultation**

The Signatories will maintain appropriate contact and consultation with the regulatory, environment and health authorities and agencies, including WorkSafe Australia, Department of Environment and Heritage, the State Environment Protection Agencies and the EnHealth Council.

### **10. Public Reporting**

The Council will report annually on the implementation of the code. This will include:

- progress made towards objectives;
- barriers to meeting objectives;
- usage of lead and cadmium stabilisers and pigments by quantity and end-use product category; and
- overseas initiatives and trends.

The report will be posted on the Vinyl Council's website. Signatories will submit the data needed by the Council for this purpose, and will provide periodic reports to the Technical Steering Group on their implementation of the code.



## Phase out of lead stabilisers

The phase out of lead stabilisers is progressing well, with all pipe/fittings sector Signatories confirming they will meet the target phase out date of 2008.

The cable sector Signatory confirms it will have ceased the use of lead stabiliser by 2008, well ahead of the original schedule.

All Signatories report they will reach the phase out target date for their respective industries.

The pipe/fittings sector has commenced the process of seeking amendment of relevant Australian Standards for PVC pipe products to support the removal of lead and cadmium based stabilisers. Revised standards will be issued progressively over the next 12-18 months with statements similar to the following: Additives containing compounds based on lead (Pb), Cadmium (Cd) or Mercury (Hg) shall not be used.

In recognition of the increasing use of recycled post-consumer pipe and fittings which may have been manufactured many years ago, the revised Standards will also include a statement to the effect that: Irrespective of their original composition, recycled PVC is permitted, but only in the centre of sandwich construction pipe.

## Phase out of cadmium stabilisers

All Signatories as at 31 December 2006 reported no use of cadmium based stabilisers.

Last year, one Signatory reported use of cadmium stabilisers in 2005 as a result of purchasing a PVC compounding business that had not been part of the Product Stewardship Program and which had a product range including a cadmium stabilised product. The Signatory was conducting a technical review with the aim of replacing the cadmium based stabiliser with an alternative stabiliser by December 2006. However the company sold the PVC compounding business in November 2006 and information on its progress was unavailable at the time of this report's issue.

## Overseas trends

The use of lead stabilisers is decreasing worldwide due to voluntary initiatives by the PVC and other industries, and the European REACH<sup>3</sup> legislation. With the implementation of REACH, lead stabiliser is unlikely to be authorised for use beyond 2010. Thus, these stabilisers are likely to be phased out by the PVC industry earlier than the original target phase out date (2015) established under the European PVC industry's voluntary commitments program, Vinyl 2010.

Under Vinyl 2010, the PVC industry has already achieved a decrease of over 21% in the use of lead stabilisers as at the end of 2006.

In the United States, heavy metals, particularly lead, are a public health concern. The PVC industry in the US has only used lead stabilisers in cable insulation where it has specific electrical properties. A move towards non-lead cable sheathing is, however, underway and manufacturers are certifying non-lead products in other applications such as window, pipes/fittings and packaging.

Sector	Lead Phase Out Target Date
Pipe/Fittings	2008
Custom compound	2010
Cable	2010
Profile	2010
Hose and tubing	2010
Mouldings	2010
Other building materials	2010

3. Registration, Evaluation and Authorisation of Chemicals



California Proposition 65 requires testing and/or labelling of products containing lead and other chemicals of concern.

In South Africa, the PVC pipe industry has committed to phasing out lead stabilisers in potable water applications by 2006 and all applications by 2007.

In Asia, there is increasing attention on considering alternatives to lead stabilisers. The Korean PVC pipe industry agreed in 2006 to a voluntary commitment to substitute lead stabilisers in sewage pipe by 2010 and is planning an amendment to the relevant standard.

## **Alternative stabilisers**

As reported last year, lead stabilisers are being replaced in Australia with calcium zinc and organic based stabilisers. Please refer to last year's report or the Vinyl Council's website for more detail about these substitutes.

Some stabiliser alternatives have undergone official scientific risk assessment by overseas government authorities. According to the European assessment of calcium zinc compounds, there are no health or safety issues for calcium zinc stabilisers used in PVC products.

Under the European risk assessment for tin compounds, all major stabilised rigid PVC applications are assessed as safe; however, some concerns have been identified for flexible PVC applications (flooring and wall-coverings) in relation to indoor air quality. Australian Signatories to the Product Stewardship Program manufacturing or supplying these products have confirmed they do not add tin stabilisers to their products, or where they are still used in special application products, have already committed to phasing them out by 30 June, 2007.

## **Pigments**

During 2006 the use of cadmium, lead and hexavalent chrome pigments by Signatories was reviewed and by the end of 2006, a proposal for a commitment on pigments was drafted.

The new Commitment agreed in early 2007 is given overpage.

### **Pigment usage for 2006**

The Technical Steering Group called for data on cadmium pigment use in its annual data collection process for 2006. There was no report of cadmium pigment usage by Signatories in 2006; however, FPI Compounds and Orica Chemnet who reported use of these pigments in 2005 did not submit data for 2006.

There is no reported use of hexavalent chrome pigment by Signatories. Two Signatories reported use of lead-based pigments.

## Commitment on Pigments

The PVC industry in Australia accounts for only a small proportion of the total consumption of cadmium, lead and hexavalent chrome pigments, which are used in a wide range of applications across a number of sectors. Alternatives are available for use, although there may be technical and commercial constraints in moving to these for some applications. However, Signatories to the PVC industry Product Stewardship Program are committed to removing toxic heavy metals from PVC products as reflected in the ongoing progress to remove lead stabilisers and the phase out of cadmium stabilisers.

A number of Australian PVC manufacturers have already ceased the use of cadmium, lead and hexavalent chrome pigments, or are publicly committed to phasing them out within a specified timeframe. Only a small number of Signatories are currently using them, because of the specific colour and technical properties these metals offer as pigments and the importance of colour to the application for safety reasons (eg in the case of conduit), or aesthetic reasons (eg in the case of certain consumer products).

Given this, a reduction in use of cadmium, lead and hexavalent chrome pigments by Signatories to the Product Stewardship Program will have a small impact on the total amount of these compounds used in Australia.

Nevertheless, Signatories:

Agree to review the technical feasibility of replacing cadmium, lead and hexavalent chrome pigments in existing product lines and to report results of the review;

Agree to substitute by 2010 the use of cadmium, lead and hexavalent chrome pigments where technically feasible and suitable alternatives are available.

Agree to cease the use of cadmium, lead and hexavalent chrome pigments in development of new products if suitable alternatives for the application exist.

Agree to a Policy on the Use of Lead, Cadmium and Hexavalent Chrome in which Signatories

- Adhere to relevant Australian Standards, and agree not to use cadmium, lead and hexavalent chrome pigments in sensitive applications (eg, toys, childcare articles, potable water products, food contact).
- Agree to ensure good industrial hygiene practices in the PVC industry to protect employees and the community from exposure to pigments and manage pigment-contaminated wastes appropriately.
- Will seek assistance (via the Vinyl Council) from government in developing safety-net regulation if required to underpin the reduction commitment.
- Agree to report their usage of cadmium, lead and hexavalent chrome annually by application, in kilograms of metal content.

## 2007 Action:

- *Collect data on heavy metal pigment use*

## Commitment three: plasticiser use

All relevant Signatories reported adherence to the Policy for the Use of Phthalate Plasticisers in Flexible PVC Products in Australia.

### Phthalate Use

Today, DINP and DIDP are the phthalate plasticisers most commonly used by Signatories such as in vinyl flooring and cable sheathing and insulation. DEHP is used in a number of general purpose flexible applications.

### Australian Regulatory Developments

In 2006, the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) declared 9 phthalates as Priority Existing Chemicals for risk assessment with a specific focus on sensitive end uses: toys, childcare articles and cosmetics. Hazard Assessments on the 25 phthalates used in Australia are

### Commitments:

- *Continue the adoption of the PVC industry's policy for the use of phthalate plasticisers in flexible PVC products in Australia;*
- *Share relevant information with NICNAS to assist its review of phthalates.*

being undertaken by NICNAS and a risk assessment of DEHP use in medical devices is underway, to be completed for the Therapeutic Goods Administration which regulates this application.

NICNAS consulted actively during 2006 with the Vinyl Council and other relevant industry organisations to finalise these PEC declarations and proposals for assessment. At our invitation, NICNAS provided a briefing to Vinyl Council members and PSP Signatories in June to inform them of the process.

The Vinyl Council shared research and information on phthalate use by the PVC industry with NICNAS, and worked with the PVC supply chain and other industry groups to respond and advise NICNAS. PVC industry stakeholders attended a NICNAS meeting in December 2006.

Draft Hazard Assessments were published by NICNAS for public comment in mid 2007.

## **Overseas developments**

In April 2006, the European Union formally published its risk assessments for DINP and DIDP. The assessments confirmed that these plasticisers are not classified as hazardous and pose no risks to human health or the environment from their current use. These comprehensive assessments mark the end of a 10 year process of scientific evaluation by regulators.

Information on these risk assessments can be found at the websites: [www.dinp-facts.com/RA](http://www.dinp-facts.com/RA) and [www.didp-facts.com/RA](http://www.didp-facts.com/RA)

The EU's risk assessment of lesser used, DBP, has also been published in its Official Journal. It recommended some additional occupational exposure safety measures to be taken.

In Europe, the use of DEHP continues to decline and now accounts for about one fifth of total phthalate use. This switch from DEHP is due to both changes in end product performance requirements and uncertainty about its safety as the European Commission's Risk Assessment on DEHP had not been finalised by the end of 2006.

In November 2006, the US Government's National Toxicology Program (NTP) published an updated Brief on the Potential Human Reproductive and Developmental Effects of DEHP.

The NTP's Panel found there was insufficient evidence for a conclusion that DEHP causes adverse developmental or reproductive effects in humans, but there is evidence that DEHP causes adverse developmental or reproductive effects in laboratory animals. The NTP judges the scientific evidence sufficient to conclude that DEHP may adversely affect human reproduction or development if exposures are sufficiently high.

The NTP's Panel has "serious concern" for critically ill male infants who undergo very high exposure to DEHP as a result of intensive life saving medical treatment using PVC medical devices.

NTP also has "concern" for male infants younger than one year (because of exposure through breast feeding and based on exposures at high end of estimated exposure range) and male offspring of women undergoing certain

medical treatments during pregnancy. There is “some concern” for male offspring exposed during pregnancy and male children older than one year (again based on exposures at high end of estimated exposure range).

The European Commission’s Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) is preparing an Opinion on the safety of DEHP use in medical devices, expected in mid 2007. The Australian PVC industry will monitor these developments closely.

## Alternatives to phthalates

Alternatives to phthalate plasticisers do exist; however, aside from cost, substitution may be affected by technical constraints and functional equivalency. Alternatives have also not undergone such extensive evaluation for their safety as phthalates.

A number of additives suppliers have developed non-phthalate plasticisers and the PVC industry is exploring the use and availability of these. Although the substances are being promoted as phthalate alternatives, there are significant technical and commercial constraints in moving to these additives and few applications have taken them up. DINP and DIDP which have been risk assessed by the European Commission and found safe in their normal uses, remain the plasticisers of choice.

## Our conclusions

We have a commitment to cease the use of a phthalate in any application where available scientific evidence shows it to have unacceptable health or environmental impacts.

We continue to monitor the scientific developments related to phthalate plasticiser use. Based on the European risk assessments, it is the industry’s current view that the most commonly used phthalates, DINP and DIDP may be used safely in PVC products.

There is some concern for certain populations exposed to DEHP from intensive use of PVC medical devices as resulting levels of exposure may be high relative to the usual margins of safety. However, the concerns are based on rodent studies and there is no evidence we are aware of that humans are being harmed by use of PVC medical products.

The EU’s risk assessment of DEHP is due to be finalised in 2007 and a risk assessment on DEHP is due to be published by the Australian regulatory authorities. We will consider the findings of these.

### 2007 Action:

- *Review NICNAS Hazard and Risk Assessments and overseas assessments of DEHP*

# Commitment four: waste management

## Commitments:

- *Where relevant to the company concerned, Signatories will be signatories to and maintain compliance with, the National Packaging Covenant. A summary of their progress under their Covenant Action Plans to be provided.*
- *Signatories will develop an action plan by 2006 for the implementation of future waste management plans to address priority end-of-life PVC issues, based on the results of the 2005 waste audit.*
- *Signatories agree to consider the whole-of-life in the development of new PVC products, taking into account the end-of-life of the product and appropriate waste management options.*
- *Signatories manufacturing PVC products commit to disseminate publicly, through company websites or other appropriate media, information pertinent to the final consumer of their products on how to and where to reuse, recycle or dispose of their product safely.*

For more information on the Covenant, visit <http://www.deh.gov.au/settlements/waste/covenant/index.html>

## Packaging waste

All the relevant Signatories in relation to PVC packaging have re-signed to the National Packaging Covenant Mark II, launched in 2005. These are Aperio Group; Australian Vinyls Corporation and Plaspak Group (together forming the Vinyl Bottle Industry Group); and Pliant Corporation. All have lodged 3 or 5 year Action Plans under the Covenant and all but one (Pliant) have filed Annual reports for 2005-06. Examples of progress by Signatories under the Packaging Covenant as at November 2006 include:

- **Aperio's Rapfast (PVC) business unit** has continued to be active in the recycling arena. All trims and scrap material reclaimed in manufacturing is reprocessed. Material which cannot be reclaimed in-house is sold for reclamation and reprocessed by third parties. Virtually no PVC material is sent to landfill. All cores and cartons are sourced from manufacturers utilising up to 85% recycle in the production of their board.
- **Vinyl Bottle Industry Group** has lodged its third Action Plan, for 2005-08, with the NPC with targets for the Vinyl Cycle program including:
  - Increase post-consumer recycling of PVC bottles to >50% of PVC bottles consumed
  - Vinyl Cycle program to achieve recycling of 6.5% of total recycled
  - Increase bottle collection from 64% of households to 75% by end of Plan

Progress is summarised in the Box below.

- **Plaspak**, in addition to its involvement in the Vinyl Cycle bottle recycling program, has lightweighted plastic containers it manufactures where possible. All plastic waste is now collected and recycled by approved recyclers, diverting 170 tonnes of waste per annum from landfill. All office paper, printer cartridges, factory paper and cardboard are now collected and recycled and Plaspak's offices use A4 recycled paper. All machines in the Plaspak factory now have closed loop recycling during production for immediate use of clean production scrap back through the process. Water cooling in the factory is also closed loop and each month checked for leaks.

### Vinyl Cycle Progress

- 193 tonnes of post-consumer bottle waste recovered from kerbside, 2005-06.
- 50% of all PVC bottles consumed are collected
- By 30 June 2006, 90% of Australian population able to return PVC bottles through council-run kerbside collection programs
- Current total Australian recycling rate for PVC bottles: 23%

The Group received the positive feedback from the NPC's independent assessors on its annual report for 2005-06. The assessors found that the group had set out its internal results against targets, as well as required NPC data, and was well placed to demonstrate trends over time as initiatives take effect.

Key challenges faced by Vinyl Cycle going forward:

- Increasing the supply of sorted PVC waste from a diminishing number of Material Recovery Facilities
- Competing with the high price being offered for mixed plastics waste from overseas buyers

## Vinyl-2-Life waste action plan

The Vinyl-2-Life waste action plan was developed in 2005-06, based on the key findings of the 2005 PVC Waste Audit completed by Nolan ITU, as well as information and recommendations from the End-Of-Life Environmental Issues Report<sup>4</sup> and industry's ability to influence the recovery of material.

The document sets out the actions agreed upon by Signatories to enhance the recovery, reuse and recycling of PVC products at the end of their initial useful life. The plan targets those PVC waste streams of significant volume or having a particular sensitivity from the community's perspective. Progress against the plan has been reported on a quarterly basis to the Technical Steering Group and actions have been revised or new actions developed as the plan has progressed.

The plan has been lodged with the NSW Department of Environment and Conservation<sup>5</sup> under its Extended Producer Responsibility Strategy.

A detailed summary of the progress against the plan is given in the Appendix.

## Post Industrial Recycling

A number of Signatories reported improvements in post-industrial waste recycling:

- **Australian Plastic Profiles** recycles its internal PVC waste back into its process either by regrinding or micronising.
- **Nylex** recycles over 95% of all manufacturing PVC waste either in-house or via third party reprocessors who supply PVC compound to the market.
- **Pipemakers** recycled 1300 tonnes of factory waste rigid PVC during 2006. In addition, during 2006, an arrangement with a local waste management

## Vinyl-2-Life Highlights:

- Cable scrap recovery & recycling trial commenced and 5 tonnes scrap reprocessed and used in new products
- Research on overseas recycling technologies undertaken
- Market impediments to cable waste recovery and recycling investigated
- Pipe recovery and recycling program extended from metropolitan Sydney to Melbourne and Brisbane
- Profile waste streams quantified and assessed for recovery. Very low volumes of waste available for recovery
- Thermoformed packaging waste recovery investigated. High demand for and recovery of post-industry waste
- Recovery of flooring offcuts from building sites commenced

## Armstrong World Industries: Diverting Waste from Landfill

In 2006, Armstrong World Industries, a manufacturer of vinyl sheet flooring and tiles, diverted 227 tonnes of waste from landfill by:

### Post-Consumer Recycling

- 110 tonnes of PVC bottles collected from kerbside waste collection;
- 4 tonnes of HDPE supermarket shopping bags;
- 1 tonne of flooring waste (job site off-cuts program & end-of-life pilot program).

### Post-Industrial Recycling

- 39 tonnes of paper from across the company's plants
- 6 tonnes of paper from the company's offices
- 2 tonnes of stretch/cling wrap
- 25 tonnes of metals to scrap steel
- 40 tonnes of wood sent for wood chipping

Armstrong World Industries has improved its overall material utility (direct and indirect materials) since 2004 by 5% and now uses or recycles around 96% of all incoming materials. Their objective is to achieve zero net landfill from local manufacturing by 2012. Armstrong's Thomastown (Victoria) plant broke the zero net landfill barrier in 2006. Around 8,000 tonnes of material was processed at the plant during 2006, 42 tonnes of waste was sent to landfill—down from 110 tonnes in 2005. Continued use of post-consumer and post-industrial PVC and HDPE, together with added emphasis on recycling wood, paper, metals and packaging, saw 100 tonnes diverted from landfill, resulting in a net 58 tonnes positive result.

The company won the Keep Australia Beautiful "Litter and Waste Award" in 2006 and were also finalists in the Product Innovation (Clean Production) category.



## Encouraging Consumer Responsible Care

Signatories have committed to provide information about the recycling potential and/or safe disposal of their PVC products, and by so doing, encourage responsible care by consumers.

To assist Signatories with this commitment, a proforma document was developed, suitable for providing the necessary information on company websites.

Australian Vinyls, Armstrong and Aperio are in the process of preparing information on end-of-life options to be posted on their new websites. All Signatories are to have completed this by end 2007.

### 2007 Action:

- *Implement Vinyl-2-Life action plan*
- *Provide Consumer Responsible Care information*

service was set up for them to accept and sort soiled PVC waste for recycling.

- **Armstrong World Industries** recycled 1,463 tonnes of its own factory rework during the year. In addition, the company recycled 4 tonnes of post-industrial waste purchased from others.

## End-of-Life Pipe Recycling

The plastics pipe industry group, PIPA, a Signatory to the Product Stewardship Program, has implemented a process whereby scrap PVC and polyethylene pipes are recovered from the construction and demolition waste stream. The PVC pipes are granulated and added into new pipe production at Signatory factories. The scheme now operates in Brisbane, Sydney and Melbourne.

The process was described in a paper presented at Plastics Pipes XIII in Washington DC 2006. The results are also to be reported in a paper to be published in the journal *Plastics, Rubber and Composites: Macromolecular Engineering* in 2007.

## Life cycle thinking

A number of Signatory companies now recognise the importance of life cycle management of their products. Examples of initiatives undertaken by Signatories in 2006 include:

- **Armstrong** are developing a new flooring product that will incorporate more than 25% recycled content including job site off-cuts and end-of-life material. This project is due for release July 2007.

Armstrong's Braeside site completed a Resource Efficiency Project with Sustainability Victoria that focused on identifying materials, energy and water waste streams. The results will be drawn together by 3rd quarter 2007 to form objectives for improvement under ISO14001.

The company is currently running a pilot program on end-of-life products for sheet and tile flooring products. Plant trials have been run at both sites and Armstrong is working on a system to permit end-of-life take back. Upon successful completion of this pilot program, a statement will be generated on their website informing end consumers of the option(s).

- **Aperio** has been working with a number of its major customers to reduce the amount of material used in its PVC film products by downgauging (producing thinner film) where appropriate. It is estimated that this has resulted in a reduction of 2% in the amount of material used to meet customer requirements based on present sales volumes.
- **Iplex** is committed to introducing material efficient products such as oriented PVC pressure pipes and foam core non-pressure pipes and conduits in which the required mechanical properties are achieved using less material than with traditional PVC products. As with traditional PVC, these newer products are thermoplastic and therefore suitable for recycling.
- **Polyflor's** product strategies use ISO14001 principles to consider and address life cycle thinking for its vinyl floor coverings. Over the past 5 years, Polyflor has consistently cut energy consumption in the main production facilities, achieving reductions in usage of 20%. The last 12 months has seen further reductions in energy, exceeding the company's





targets by over 5% in kW/m<sup>2</sup> of flooring product produced. This saving has been independently assessed by the Carbon Trust as being equivalent to reducing carbon emissions by over 300 tonnes.

- **Plaspak** consulted independent parties such as RMIT, the Vinyl Council, as well as customers, for Life Cycle Assessment procedures to allow cradle to grave thinking in relation to new and current products.

Under the Product Stewardship Program, information and experience on the application of life cycle thinking will continue to be shared.

## Commitment five: research

### Research undertaken in 2006

Polytech Resources was commissioned by the Vinyl Council to obtain information on certain PVC recycling technologies and activities in Germany as part of the **Vinyl-2-Life** action plan.

### Information sharing

At each Technical Steering Group (TSG) meeting, the opportunity to share news of research and industry developments was included on the agenda. The following are examples of research and development discussed:

- Titanium Dioxide - A summary of the evaluation by the International Agency for Research on Cancer.
- Summary of industry's understanding of phthalate risk assessments.
- Progress of the European industry's product stewardship program, Vinyl 2010 and use of stabilisers.
- AP3 Sustainability Action Plan - May 2006.
- NICNAS declaration of phthalates as priority existing chemicals.

In addition, the following speakers presented at TSG meetings during 2006:

- Polytech Resources consultant, Alfred Eiden presented a summary of his report on European recycling including latest technologies and recycle applications of post-industrial and post-consumer PVC products for cabling, pipe and flooring products.
- PACIA's Heather Thurman spoke on the automotive recycling project including impediments to recycling automotive shredder residue, future investigations, and actions related to building and construction waste.
- Product Stewardship Council's Russ Martin outlined the objectives of the Product Stewardship Council and summarised principals for Product Stewardship.
- NSW Department of Environment and Conservation's<sup>6</sup> Roz Hall, Director of Product Stewardship and Frameworks, provided an update on the Government's Extended Producer Responsibility Strategy.
- The Federal Department of Environment and Heritage's<sup>7</sup> Dr Paul Bainton, Director Product Stewardship, joined a meeting by teleconference and provided an update on the Australian Government's Co-regulatory Framework development.

6. The Department changed its name in 2007 to Department of Environment and Climate Change NSW

7. The Department changed its name in 2007 to Department of Environment and Water Resources.

### *Commitment:*

*Monitor national and international developments in scientific research relevant to the potential health and environmental impacts of the PVC product life cycle. Share information with other Signatories and responsible Authorities and Agencies. Where data is required but unavailable to answer significant and material questions about the health or environmental impact of PVC products or raw materials in Australia, make appropriate endeavours to secure the necessary data.*

## Commitment six: public reporting

### Commitments:

- *Publish the 2006 progress report by 30 June 2007, together with an updated review of product stewardship issues.*
- *Review and report on the implementation and effectiveness of the Product Stewardship Program by 31 December 2007.*

### 2007 Action:

- *Provide Program evaluation report.*
- *Publish progress report by 30 June 2008.*

This progress report was published in September 2007. In early 2007, the Technical Steering Group decided to commission an external verification of the report, following feedback from external stakeholders.

The objective of the verification process is to provide an independent opinion on the accuracy of the data and statements made in the Report.

The verification process involved some signatory site visits to examine data sources and verify data/statements. The methodology uses a specified set of principles and standards to assess the quality of a Signatory's reported data and the organisation's underlying systems, processes and competencies that underpin its performance.

A copy of the verification statement is provided on page 21 in this report.

### Feedback

Feedback received in 2005 on the Product Stewardship Program by members of the Community, and our responses, have been published on the Vinyl Council's website at [www.vinyl.org.au](http://www.vinyl.org.au). We welcome feedback on the report and the program itself. If you would like to comment, please contact us at P.O. Box 211 Richmond, VIC 3121 or email [info@vinyl.org.au](mailto:info@vinyl.org.au).

## Commitment seven: Technical Steering Group

- *Discharge Technical Steering Group responsibilities as outlined in the 2002 Commitment.*
- *Review the implementation and effectiveness of the Product Stewardship Commitment Program by end 2007.*

Year	No of TSG Meetings
2003	4
2004	4
2005	4
2006	4

Members of the Technical Steering Group 2006	
Member	Organisation
Sophi MacMillan	Australian Vinyls Corporation Pty Ltd Vinyl Council of Australia
Alex Hruza	Chemson Pacific Pty Ltd
Mike O'Shea	CSIRO
Barbara Butt	Dept of Environment and Heritage
Alan Whittle	Iplex Pipelines Australia Pty Ltd
Alex Young	NSW Dept of Environment and Conservation
David Williamson	Nylex Films and Fabrics
David Janetzki	Olex Cables Australia Pty Ltd
Stephen Dowling (until Nov 06)	Orica Australia Pty Ltd
Paul Martonhelyi	Plastral Pty Ltd
Tom Elovaris	Pliant Corporation Pty Ltd
Ian Lilja	Sun Ace Australia Pty Ltd
George Macovaz (Chairman)	Vinidex Pty Ltd
Lia Anna Maiorino	Vinyl Council of Australia

# Signatories

As at the end of 2006, the Product Stewardship Program Signatories are:

Aperio Group (Australia) Pty Ltd	Plaspak Pty Ltd
Armstrong World Industries (Australia) Pty Ltd	Plastral Pty Ltd
Australian Plastic Profiles Pty Ltd	Plastics Industry Pipe Association
Australian Vinyls Corporation Limited	Pliant Corporation Pty Ltd
Chemson Pacific Pty Ltd	Polvin Compounds Pty Ltd
FPI Compounds Pty Ltd	Polyflor Australia Pty Ltd
Innua Australasia Pty Ltd	Sun Ace Australia Pty Ltd
Iplex Pipelines Australia Pty Ltd	Tarkett
Nylex Industrial Products	Terminals Pty Ltd
Olex Australia Pty Ltd	The Normandy Group S.A
Orica	Tyco Water Pty Ltd
Pacific Plastics (QLD)	Vinidex Pty Ltd
Pipemakers	Vinyl Council of Australia

*Note: Prior to publishing this report in mid-2006, there have been further changes to the list of Signatories. The current list is available on the Council's website at <http://www.vinyl.org.au/product/signatories>*

## Change of Signatories

During 2006, floor covering company, Tarkett, became a Signatory to the Program. A number of Signatories left the program during 2006 - Mitten Vinyl, Laserlite, Bridgestone, Cryogrind, Icon Plastics and Allplas. This was largely due to the introduction of a modest fee to contribute to the cost of implementing the Product Stewardship Program.

Four companies did not comply with their obligations as Signatories to provide their annual data for the progress report: FPI Compounds, Orica, Pacific Plastics, Polvin Compounds. In the case of Orica, difficulties in obtaining data arose as their PVC compounding business was sold towards the end of the year. Non-compliant companies have been contacted in accordance with the Program's procedures and those companies unable to demonstrate progress in meeting the commitments will be de-listed as Signatories in 2007.

## Glossary

**Australian PVC industry (the industry):** For the purpose of this document, the Australian PVC industry is the Vinyl Council, its member companies and other PVC companies which are Signatories to this Program.

**BBP:** Butylbenzyl phthalate

**Converter:** a manufacturer of PVC product from resin or compound.

**DBP:** Dibutyl phthalate

**DEHP:** Diethylhexyl phthalate

**DIDP:** Diisodecyl phthalate

**DINP:** Diisononyl phthalate

**EMS:** Environmental Management System

**The Program:** the Product Stewardship Program, signed by members of the Australian PVC industry.

**Phthalate Plasticiser:** Softeners from the phthalate family of chemicals added to PVC resin to impart softness and flexibility to products requiring those attributes.

**PVC (Vinyl):** Polyvinyl chloride

**Signatories:** the members of the Australian PVC industry who have signed the Program as an indication of their commitment to product stewardship.

**Stabiliser:** A compound used as an additive in the manufacture of PVC products to improve the thermal stability during processing and the heat and/or UV stability of the end-use product.

**Stakeholders:** The PVC industry, its employees, suppliers and customers, the local and general communities, consumers, government and regulators, and any other groups significantly impacted by the industry.

**TSG:** The Technical Steering Group established by the Signatories to monitor and report on the implementation of this Commitment

**uPVC:** unplasticised PVC

**Vinyl Council:** the Vinyl Council of Australia (the Council)

# The Vinyl Council Product Stewardship Policy

The Vinyl Council recognises that PVC products add significant benefit to society, including environmental benefit, as a function of their excellent performance, durability and affordability. However, as with any manufactured product, there are impacts, which need to be understood, characterised and addressed along the PVC product life cycle.

## PRODUCT STEWARDSHIP

The Council believes that raw material suppliers, product manufacturers, product distributors and consumers are joint stewards for the safe and beneficial production, use and disposal of those products. This is what we understand by Product Stewardship: the shared management of the health, safety and environmental aspects of PVC products through each of their life cycles.

## Vinyl Council Product Stewardship Policy

The Council will assist members, relevant authorities and experts to understand, characterise and address product stewardship issues associated with the life cycle of PVC products in Australia in a manner consistent with our understanding of the values and expectations expressed by the general community.

Members will inform the Council of any significant environmental or health safety issues coming to their attention in connection with the manufacture, use or disposal of PVC products.

Through its website, publications and public statements, the Council will seek to keep stakeholders informed of the principal issues. This will include full and balanced reporting of issues and industry performance.

The Council will offer leadership and guidance to member companies in addressing stewardship issues associated with their respective PVC products.

### Action 2007:

- *Review the wording of the policy in 2007 and update or revise as necessary.*

Published by:

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## INDEPENDENT VERIFICATION STATEMENT

Net Balance Foundation Limited  
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Victoria 3000 Australia  
Tel +61 3 8641 6400 Fax +61 3 9600 1295  
Web netbalancefoundation.org

To the Signatories and Stakeholders of the Vinyl Council of Australia:

The Vinyl Council of Australia (VCA) commissioned Net Balance Foundation (Net Balance) to provide a statement, representing our independent opinion on the integrity of information presented within "Vinyl Council of Australia Product Stewardship Progress Report 2006" (this report). This is the fifth year of the PVC's industry's Product Stewardship Program (PSP) and the third progress report by the organisation. The VCA was responsible for the preparation of the report and this statement represents Net Balance's independent opinion. Net Balance's responsibility in performing our verification activities is to the Signatories of the VCA alone and in accordance with the terms of reference agreed with them. Any reliance that a third-party may place on the report is entirely at their own risk.

The objective of the verification process is to provide the VCA and its stakeholders with an independent opinion on the accuracy of the information presented within this report. This is confirmed through verification of the information provided during site visits and at a broad desk-top level, reviewing underlying systems, processes and competencies that support the claims made within this report.

We undertook this verification program by:

- verifying key data and statements in the PSP database and the report;
- undertaking an 80-20 review focusing eighty percent of the resources on the top twenty entities and issues;
- undertaking site visits and examining site-based data at four signatory sites;
- reviewing data from an additional four signatory sites by desk-top assessment, and by telephone and e-mail dialogue;
- undertaking a review of the database developed to record and manage the information submitted by signatories and completing a logic test on the data submitted by the remaining signatories to ensure that what has been submitted by the organisations not verified is compatible with the data submitted by the organisations who have been verified; and
- undertaking a site visit and examining site-based data at the VCA office;
- providing an independent verification statement and brief report on findings.

The verification process was subject to the following limitations:

- The process was undertaken through a 'desktop' review of data provided by the eight selected signatories to the PSP and the VCA. Interviews were conducted with the relevant data owners, either in person or by telephone and email.
- The verification was undertaken through a 'desktop' review of data provided by a sample of eight selected signatories, from a total of twenty-seven signatories to the Product Stewardship Program, of which four had failed to submit data by the required date. The remaining data was subjected to a logic test and this sampling methodology was selected to give an appropriate representation of the signatory group, and it is expected that future verification programs will select different signatories to compile a sample in order to give a fuller picture of the PSP going forward. A desktop review of information provided by the VCA was also conducted.
- Although this was the third year that a progress report was produced, this was the first time that the report was independently verified. Consequently, some of the processes for data collection, co-ordination and retention require continued development.

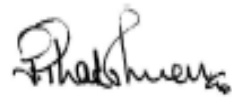
Based on the scope of the verification process, the following represents the auditor's opinion:

- The findings of the verification engagement provide confidence in the information contained within the report. The level of data accuracy was found to be within acceptable limits, but additional improvements to data management by each of the signatories, including the reduction of manual aggregation and transcription processes are recommended to reduce potential for minor anomalies and mis-statements.
- Data trails selected were generally identifiable and traceable, and the personnel responsible were able to demonstrate the origin(s) and interpretation of data.
- The statements made in the report appropriately reflect the PSP commitments achieved during the period.
- All suggested changes to the data submitted by individual signatories were satisfactorily addressed by the VCA prior to finalising the report.
- Net Balance acknowledges the complexity of the VCA's task in coordinating data from the twenty-seven signatories to the PSP and commends the organisation on the development of a database to store and manage all of the information.

Overall, the auditor is satisfied that the report is an appropriate representation of the sustainability performance of the signatories to the VCA in relation to the PSP during the reporting period

Going forward, it is recommended that internal processes for the measuring and reporting of progress against commitments and actions plans, as well as specific environmental, health and safety data, be further developed by the VCA and each of the signatories to the program, reducing potential for human error or loss of intellectual property through natural staff turn-over, which are key risks in performance measurement and reporting. Net Balance has also provided additional suggestions for reporting improvement in some areas which have been outlined in a more detailed report presented to the VCA.

On behalf of the verification team  
29th October 2007  
Melbourne, Australia

A handwritten signature in black ink, appearing to read 'Terence Jeyaretnam', with a stylized flourish at the end.

Terence Jeyaretnam  
Director, Net Balance & Lead CSAP (IRCA UK)

## Progress Against Vinyl-2-Life Action Plan

Objective 1 Cables	Actions	Timeline	Progress as at 31 Dec 06
Investigate current recovery and recycling, including: <ul style="list-style-type: none"> <li>• how effective is existing infrastructure?</li> <li>• what barriers to recovery exist?</li> <li>• what parties are/would be involved in recovery?</li> <li>• what programmes for recovery exist overseas and what are the better practices?</li> </ul>	<ol style="list-style-type: none"> <li>1. Develop pilot project to test feasibility of closed loop recycling of cable waste:               <ul style="list-style-type: none"> <li>• identify metal recycling partner</li> <li>• identify PVC recycling partner</li> <li>• coordinate recovery and recycling for three month trial period</li> <li>• measure and report progress</li> </ul> </li> <li>2. Identify other sources of PVC cable waste</li> </ol>	September 2006	Underway. Metal and PVC recycling partners identified. Initial trial reprocessing sample of collected cable scrap completed successfully. Exploring options for freight. Further reprocessing trials to be completed.
	<ol style="list-style-type: none"> <li>3. Identify reprocessors / recyclers</li> <li>4. Investigate overseas markets for scrap, and recycling technologies and practices</li> </ol>	September 2006 September 2006	Complete Underway. Report commissioned and completed by Polytech Resources.
<b>Objective 2 Pipes</b>	Develop a more consistent supply of pipe material for reuse/recycling	June 2006	Done
	<ol style="list-style-type: none"> <li>1. Extend the Collex trial to all Collex Sydney recycling centres</li> <li>2. Extend the Collex trial to metropolitan Melbourne</li> </ol>	September 2006	Done. Also established a collection program in Brisbane.
<b>Objective 3 Profiles</b>	Identify potential for recovering profiles by application type	June 2006 September 2006 December 2006	<p>Done. Profiles data includes conduit, normally considered with pipe, and thus exaggerates volume of profile waste available as it assumes a 5 year rather than 35+ year life.</p> <p>Underway. Already collecting conduit. Conduit accounts for approx 40-50% of the recovered materials. Able to collect all rigid PVC.</p> <p>Very low volume of rigid profiles – approx. 285 tonnes estimated for cladding, 105 tonnes estimated for other rigid profiles.</p>

<sup>1</sup> uPVC refers to unplasticised PVC i.e. rigid applications

4. Obtain data from the building and construction sector on average quantities of PVC in key building types	December 2006	Done. PVC accounts for about 1-1.5% of all construction materials by weight.
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#### Objective 4 Floor Coverings

Understand work currently being undertaken in Australia and overseas to assess feasibility for expanding recovery of floor coverings.

1. Identify potential recyclers/reprocessors of vinyl floor coverings both in Australia and overseas.	March 2007	Underway. Manufacturer conducting reprocessing trials with reprocessor.
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2. Develop a commitment with relevant Signatories to trial recovery of end-of-life flooring and installation offcuts when fitting new vinyl floor coverings.	March 2007	Underway. Commenced collection and reprocessing of flooring offcuts from building sites.
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#### Objective 5 Bottles

Support the Vinyl Bottle Group in continually enhancing recovery and local recycling of PVC bottles.

1. Actively engage with the Vinyl Bottle Group to support their activities	Ongoing	VCA attends and provides input to project meetings bi-monthly. Co-produced new brochure with Vinyl Bottle Group to promote the program to Councils etc. Distributed editorial to waste media. Ongoing.
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2. Promote the view that sleeves/labels used on plastic containers be compatible with the container polymer for recycling purposes.	December 2006	To appear on VCA website.
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#### Objective 6 Blister Packaging

Investigate the feasibility of recovering PVC blister packaging.

1. Investigate existing commitments regarding blister packaging under the National Packaging Covenant	September 2006	Done. High level of post-industrial reprocessing but no post-consumer recovery.
---	----------------	---

2. Gather data and information on the use of blister packaging in Australia, working with other stakeholders (Councils, retailers, packaging companies etc).	March 2007	Underway. Meetings held with end market users, manufacturers and waste service providers on blister packaging. Discussion held with PACIA for potential inclusion in PACIA led rigid packaging project. Documentation reviewed.
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3. Investigate the technical feasibility and constraints in recovering and recycling PVC blister packaging.	March 2007	Underway. Issues raised so far concern: <ul style="list-style-type: none"> <li>- polymer identification</li> <li>- food &amp; cardboard contamination</li> <li>- cross-polymer contamination</li> <li>- difficulty sorting and segregating by polymer</li> <li>- high proportion of imported material.</li> </ul>
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5. Prepare a progress report December 2006

December 2006

Reported through Vinyl-2-Life quarterly progress reports.

### **Objective 7 Automotive Products**

Investigate opportunities for PVC recycling in the automotive sector

Engage with PACIA in its project to investigate plastics recycling in the sector.

Ongoing for next 12 months

Done. PACIA presented findings to TSG on June 15<sup>th</sup> 2006. VCA attended a Sustainability forum arranged as part of the PACIA project, with attendees from across the automotive supply chain and plastic sector.

The forum noted that plastics are probably not the biggest environmental impact over a vehicle life or even at end of life. The problem of plastics disposal at end of life is not necessary a high priority for most automotive companies. Design issues such as resource efficiency and design for disassembly is a greater priority. Nevertheless, it was recognised that the automotive sector needs to focus on finding value added solutions to treating plastic waste and to create linkages between recyclers and manufacturers.

PACIA's project has been completed. The PVC industry remains committed to working with the automotive and plastics sectors to resolve automotive plastics recycling issues.