

Safety Health & Environment Report 2003

1 July 2002 - 30 June 2003

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Scope of report

The purpose of this report is to inform stakeholders of Australian Vinyls Corporation's safety, health, and environmental (SH&E) performance for the year to 30 June 2003. It assesses this performance against our published targets and commitments and outlines new commitments for the next year to 30 June 2004.

Key events 2002-03

2002-03 saw a number of significant outcomes for Australian Vinyls:

- We achieved the targets set out in our Greenhouse Challenge Agreement (25% reduction in Natural Gas consumption and 12% reduction in electricity consumption from 1998 levels).
- Water consumption per tonne of product was reduced by 10% from the previous year.
- The second Environment Improvement Plan (EIP) for the Laverton site was prepared and agreed with external stakeholders.
- The Laverton plant completed a major maintenance shutdown without recording any injuries or reportable incidents.
- Six Recordable Injuries outside the shutdown period increased our 12 month Recordable Case Rate to 4.8 injuries per 200,000 hours worked.
- A mechanical failure resulted in the formation of a large lump of PVC in a reactor. The plant applied for and received Victorian EPA approval to exceed a licensed stack emission limit during removal of the lump.

Managing Director's Statement

At Australian Vinyls, we have a demonstrated commitment to sharing information about our performance with both the community and our employees. This report, the company's fifth annual Safety, Health, and Environment report, is one of the ways we communicate information about our results, long-term commitments and goals.

The company achieved a number of very positive environmental outcomes during the past year. Major achievements included Australian Vinyls' active contribution to the PVC Industry Product Stewardship Commitment and the completion of Laverton's second Environment Improvement Plan.

Signed in November 2002, the Product Stewardship Commitment (PSC) is a voluntary industry initiative, prepared in consultation with Environment Australia. It sets out the PVC industry's goals for optimising environmental performance throughout the PVC lifecycle. At Australian Vinyls, we contributed significantly to the PSC's development. This involvement is indicative of our proactive approach to environmental issues overall.

Australian Vinyls also signed Laverton's second Environment Improvement Plan in June 2003. Prepared in consultation with the local community and with regulatory authorities, the Plan commits us to actions that will further enhance our environmental performance.

Our commitment to environmental issues is showing significant benefits.

This year we met our Greenhouse Challenge targets and made process improvements that not only saved energy and reduced emissions, but also improved our productivity.

Our performance against the commitments and targets we published last year are discussed in this report. Not all targets were achieved. We recognize and accept that improvement is needed in those areas where the targets were not achieved. This will be a priority in the 03/04 financial year.

I welcome and invite your feedback on this report. This should be forwarded to either environment@av.com.au or 65 Leakes Road, Laverton, 3028.



Murray Winstanley
Chief Executive Officer



Australian Vinyls Profile

Australian Vinyls manufactures polyvinyl chloride (PVC) resin at its Laverton plant. The plant has a capacity of 130,000 tonnes per annum. We also operate a technical service laboratory at Laverton and a research laboratory at Ascot Vale.

Australian Vinyls imports and sells a range of specialty products, including PVC paste resin, thermoplastic elastomers and process additives for the PVC and rubber processing industries.

At 30 June 2003, Australian Vinyls employed 114 permanent staff and 13 full time equivalent contractors. Australian Vinyls Corporation Ltd is a wholly owned subsidiary of AVC Holdings Pty Ltd. The shareholders of AVC Holdings Pty Ltd comprise the company's senior executives and a group company of CPH Investment Corporation.

Australian Vinyls' SH&E policy commits us to managing our activities with respect and care for people and the environment. It can be accessed at our website: www.av.com.au.

Australian Vinyls is also a signatory to, and is committed to, the following programs:

- The chemical industry's Responsible Care program, (available at www.pacia.org.au)
- The PVC industry's Product Stewardship Commitment, (available at www.vinyl.org.au)
- The Greenhouse Challenge
- National Packaging Covenant
- Victoria's Energy Smart Program

The Laverton plant is registered as a Major Hazard Facility under Victorian regulations.

PVC profile

PVC resin is used to make a wide range of products, including pipe, pipe fittings, cable insulation, flooring, flexible and rigid packaging and various consumer goods. PVC is classified as non-hazardous under National Occupational Health and Safety Commission (NOHSC) criteria and criteria referred to in transport legislation.

Reporting to the community

Australian Vinyls is committed to the concept of Community Right to Know (CRTK). CRTK recognizes the right of individuals to request SH&E information from the people responsible for managing and regulating chemicals and obliges member companies to inform their communities. We also believe that public reporting is integral to a high quality SH&E program and that individuals have a right to access information about how we manage chemicals and our SH&E performance.

This report is part of our commitment to sharing information with the community. During 2002-03, Australian Vinyls also demonstrated its commitment to CRTK through:

- maintenance of detailed information on its SH&E policies and performance on its company website, including access to annual reports; and
- active support of the Vinyl Council of Australia and its sharing of information on the environmental aspects of PVC.

Stakeholder consultation

Australian Vinyls has established a Laverton Plant Environment Monitoring Team (EMT) involving local residents, the local council and statutory authorities (including the Victorian EPA, WorkSafe Victoria, and City West Water). The EMT involves these stakeholders in our SH&E program and holds us accountable to the community.

The EMT provides input into the Australian Vinyls' Laverton Plant Environment Improvement Plan (EIP) and monitors progress against the EIP commitments and the plant SH&E performance. This year the EMT met bi-monthly throughout the reporting period and assisted in the development of the plant's second EIP, launched in June 2003. Australian Vinyls greatly appreciates and values this voluntary contribution.

Reporting against commitments

Health and safety

Australian Vinyls registered 6 Recordable Case injuries in the reporting period; five strain injuries and one cut requiring suturing. This increased our Recordable Case Rate from 1.5 injuries per 200,000 hours worked for the period October 2001 to June 2002, to 4.8 in 2002-03.

We regret and take any injury arising from our operations very seriously. All injuries are investigated to identify the specific causes and to identify and implement measures to prevent recurrence. This is supported by our ongoing focus on risk reduction and safe work behaviours.

The Laverton plant continues to use its longstanding Unsafe Acts Prevention (UAP) process to maintain a high level of awareness of potential risks and to encourage safe work practices amongst staff and contractors.

The UAP process helps people anticipate and prevent incidents by regular prompting of three questions:

- What are you about to do?
- What could go wrong?
- How can you make it safer, both for people and the environment?

This encourages people to make tangible improvements to the safety of the tasks they perform. A total of 434 "UAPs" were conducted in 2002-03.

Table 1: Health & Safety Indicators

Indicator	2002-03		2003-04
	Actual	Target	Target
Recordable injury case rate per 200,000 hours worked.	4.8	0	2.0
VCM exposure:			
No of exposures >1 ppm ≤ 5 ppm	11	< 8	< 8
No of exposures >5 ppm standard	1	0	0

During 2002-03 the Laverton plant maintenance team also implemented a complementary process with an aim to further reducing injury rates to genuine world-class levels.

Run on a 'No Name, No Blame' basis, the new process identifies common human factors that contribute to injuries, then regularly surveys how tasks are being performed to identify and correct any 'at risk' behaviours.

The overall effectiveness of Australian Vinyls' safety approach was demonstrated during a major shutdown in January 2003.

During the shutdown 73 pressure relief valves were removed, tested and refitted, 24 pressure vessels were entered and inspected and a number of capital project items were completed. As well as the regular Australian Vinyls team, the shutdown involved up to 45 short-term contractors, working approximately 2700 hours over the two week period. There were no reported injuries and the shutdown was completed on time and under budget.

During 2002-03 we also commissioned an independent consultant to conduct and benchmark a safety survey against other organizations. The survey found that Australian Vinyls' management of behavioural safety was above the 90th percentile in 12 of the 14 parameters assessed.

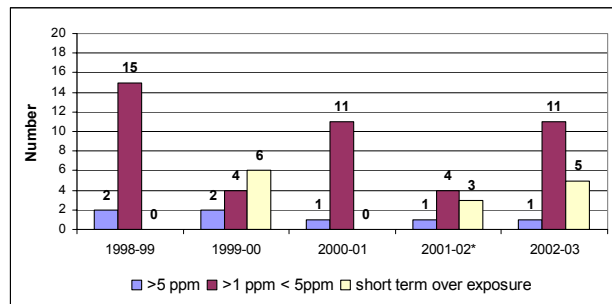
The survey did identify a need to further develop a culture at shop floor level of approaching people who are perceived to be working in an "at risk" manner. We have already initiated actions to address this issue.

VCM exposure monitoring

Australian Vinyls maintains a comprehensive health-monitoring program for employees. This includes medical examinations for people potentially exposed to vinyl chloride monomer (VCM). Assessments were completed for all but two of the scheduled people. One of these declined to undergo assessment and the other will undergo assessment next year.

People who routinely work in the manufacturing areas are also monitored for VCM exposure. We have adopted an internal exposure standard of 1 part per million (ppm) over an eight-hour time-weighted period, significantly below the 5ppm NOHSC 8-hour time-weighted average exposure standard.

Chart 1: VCM Personal Exposures



* Nine month reporting period, October 2001 to June 2002.

In 2002-03, out of 1089 tests, we had one recorded exposure over the NOHSC standard of 5 ppm.

As a result, we did not meet our target of zero. In terms of our more stringent internal standard of 1 ppm, we had 11 recorded exposures, compared to our target of less than 8 for the year. When an exposure is recorded, we review the incident carefully and assess the task being undertaken. We then put in corrective actions to eliminate or minimize future exposures.

Australian Vinyls also investigates "short term" exposures where a personal monitoring result indicates a person has been exposed to more than 30 ppm for any period, or to more than 1 ppm for 30 minutes. There were 5 such exposures in 2002-03.

Environmental Indicators

VCM emissions to air

Australian Vinyls monitors VCM levels in the air within the plant, at specific points around the plant boundary and in emissions from specified EPA licensed discharge stacks.

VCM levels in the general plant area are measured by passive carbon tubes placed at 20 locations around the site. Short-term peak releases are also measured and investigated using an online gas detection system called 'Snoop'. Snoop gives operators a real-time assessment of VCM levels throughout the plant, making it easier to quickly locate, and therefore manage and repair process leaks.

Carbon tubes are also placed at four points agreed with the Victorian EPA to measure VCM levels at or beyond the site boundaries (approximately North, East, South and West of the plant).

The Snoop system is also used to monitor and quantify the amount of VCM emitted from the specified EPA licensed discharge stacks. Alarms are raised to trigger corrective action if a stack emission approaches licence limits.

The quantity of VCM stack emissions measured by Snoop, amounts of VCM in Trade Waste discharged to sewer and any significant incident emissions are used, together with the plant output to calculate a quantity of VCM emitted to air and water per tonne of product, as reported in Table 2 (refer also to Chart 2).

VCM emissions per tonne of PVC produced increased in 2002-03 to 7.6 g/tonne (from 5.9 g/tonne for October 2001- June 2002). As such, we did not meet our target of 5.2 g/tonne however, as noted in Chart 2, emissions at these levels are frequently below the limits of detection of the current analytical techniques.

Benchmarking against two major European producers suggests this performance is typical of that achieved by their plants. Recent improvements in the control of PVC build up in the Reactors and down stream processing equipment are expected to reduce future VCM emissions by reducing the need to open them for cleaning.

Table 2: Environmental Indicators

Indicator	Oct 01 to Jun 02	Actual 02-03	Target 02-03	Future Target 03-04
VCM emissions to air and water (g/tonne PVC)	5.9	7.6 ¹	5.2	10 g/tonne incl fugitive emissions ²
Average in-plant VCM concentration	45 ppb	62 ppb	41 ppb	41 ppb
Losses of Containment (LOC) of VCM	None	No incidents	No incidents	No LOC incidents
Measurement of fugitive emissions	N/A	Method identified & now being adopted	Research/develop accepted method for calculating fugitive emissions	Implement methodology & include quantities emitted in future totals of emissions to air/water.
X16	N/A	No spills or exposures above TWA limit.	No spills or exposures	No spills or exposures above TWA limit.
Energy consumption GJ/tonne PVC	4.4	4.1	4.3	4.0
Greenhouse gas emissions kg CO ₂ equiv/tonne PVC	687	633	652	609 ³
Water consumption kl/tonne PVC	6.0	5.4	5.9	4.9

Notes:

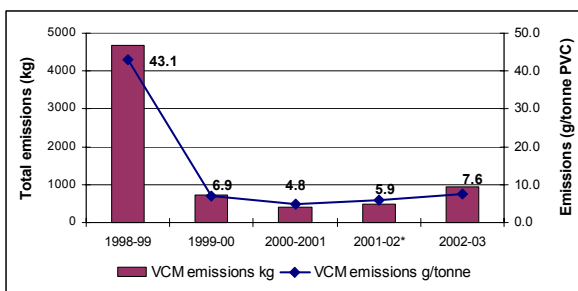
1. *At this level, VCM stack concentrations are frequently below the limit of detection of the current analysers. Calculation of this quantity has conservatively replaced readings where analysers have not detected the presence of any VCM with 0.1 ppm, the lower limit of detection of the analysers. In 2002-03, this added 2 g/tonne to value reported above.*
2. *This target includes an additional allowance for fugitive emissions. As noted in the table a new method to quantify these emissions is currently being introduced.*
3. *Calculated Greenhouse emissions and targets are subject to changes in the factors issued by the Australian Greenhouse Office for conversion of energy consumption to equivalent Carbon Dioxide emissions.*

Slurry emissions

After polymerization, un-reacted VCM is removed from PVC by steam stripping. To control VCM emissions during downstream processing and to control VCM levels in our final product, we monitor the level of VCM after stripping and investigate any results greater than 10 ppm

A Victorian EPA protocol for environmental management sets a 24 hour average limit of 100 ppm for the residual VCM level after steam stripping. During the reporting period, there was one daily average result above this limit. This resulted from short term loss of stripping control following tripping of an instrument power supply.

Chart 2: Point Source VCM Emissions to Air and Water



Note: Calculation of the quantities of VCM emitted to air has conservatively replaced readings where the analysers have not detected the presence of any VCM with 0.1 ppm, the lower limit of detection of the analysers. The result for 2001-02 relates to the 9 months from October 2001 to June 2002

Under the industry's Product Stewardship Commitment and under our own product quality specifications, Australian Vinyls guarantees that the amount of VCM in the resin despatched to customers does not exceed 1 ppm.

During the reporting period all dispatched product met this standard. The average residual VCM in the final product was 0.03 ppm.

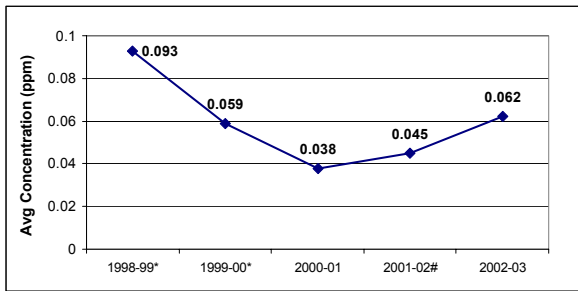
Fugitive emissions

During the year we investigated new methods for calculating the amount of VCM emitted to air from dispersed equipment leaks (fugitive emissions). The method we plan to adopt is based on that used by European manufacturers and is consistent with the US EPA's Method 21 and the method recommended by Environment Australia.

Until this can be implemented, we continue to report average weekly ambient VCM concentrations arising from fugitive emissions and other sources within the plant.

As expected, the average in-plant VCM concentration remains well below both the 5 ppm NOHSC 8 hour time-weighted average and 1 ppm Australian Vinyls exposure standards (refer to Chart 3).

Chart 3: Average ambient “in-plant” VCM concentration (ppm)



* 12 week rolling average at year end.

Nine month reporting period from October 2001 to June 2002.

X16 emissions to air

X16 vapour is a severe irritant even at low concentrations. In liquid form it is moderately volatile, flammable, toxic and corrosive. Occupational exposure risks are related to short term exposure. As such Australian Vinyls has adopted a conservative X16 incident threshold of 1 ppm for 1-hour exposure.

To minimize risk, we have a drum unloading-booth to capture X16 vapour released during transfer of X16 from drums to our storage tank. X16 levels in X16 handling areas are also monitored by Snoop, the plant’s gas detection system.

The Laverton Safety Case identified that, in worst-case environmental conditions, harmful levels of X16 vapour from an untreated spill could reach residential areas. Accordingly we have ensured our staff have been trained and are equipped to rapidly respond to and contain the vapour from any X16 spills.

During the reporting period there were no spills or elevated X16 results for the X16 booth discharge point. There were also no exposures above the adopted incident threshold. Total X16 emissions to air in 2002-03 were 57 kg, or 0.46 g/tonne of PVC produced (October 2001- June 02:- 0.57 g/tonne).

Resource conservation

Energy consumption

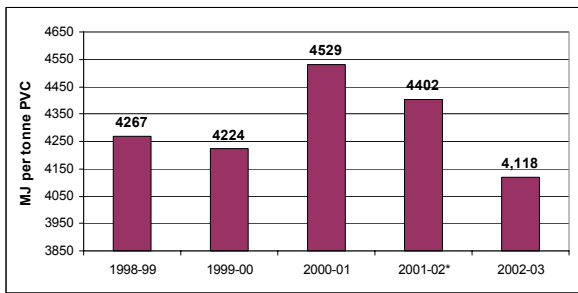
The Laverton plant purchases all its electricity and Natural Gas requirements from the Victorian energy market. While the actual energy consumed was higher due to significantly higher production, the plant electricity and gas consumption rates per tonne of PVC produced were 8% and 5% lower than in 2001-02 respectively and below the targets set out in last years SH&E Report.

The combined plant gas and electricity consumption per tonne of PVC (Chart 4) is at an Australian Vinyls record low of 4,118 MJ per tonne PVC produced.

Table 2 – 2002–03 Plant Energy Consumption

Energy consumed	Actual	Target
Electricity kWh/tonne of PVC	296	305
Natural Gas GJ/tonne of PVC	3.05	3.08
Total electricity and gas GJ/tonne of PVC	4.1	4.3

Chart 4: Total energy per tonne PVC



* Nine month reporting period from October 2001 to June 2002

Plant consumption rates during 2002-03 were reduced by:

- lowering cooling tower operating temperatures;
- reducing steam usage rates in the strippers (resulting in both energy and water savings); and
- addition of an end stop chemical to the reaction to stop polymerization once optimum reaction has occurred. This reduces fouling downstream of the reaction process and improves productivity and efficiency.

Australian Vinyls is committed to minimizing resource consumption and associated greenhouse gas emissions. Accordingly, Laverton has adopted the following targets to further reduce energy consumption in 2003-04, based on budgeted production levels of 130,000 tonnes:

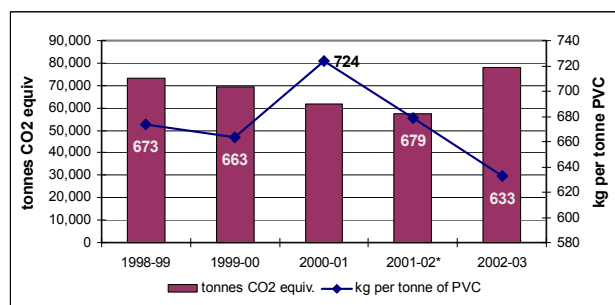
- Electricity : ≤ 0.287 kWh/tonne by 30 June 2004
- Natural Gas: ≤ 2.92 GJ/tonne by 30 June 2004

Greenhouse Gas emissions

Our Greenhouse Challenge commitment was to reduce consumption of Natural Gas and electricity in our plants by 25% and 12% respectively from 1998 levels by 2003. Based on a total output in 1998 of 181,749 tonnes and the 2002-03 budget output of 130,000 tonnes, these targets were equivalent to a target of 652 kg CO₂-equivalent per tonne of PVC produced (including minor contributions from consumption of diesel and LPG and a factor for VCM emissions).

Australian Vinyls met both these absolute usage targets and the adopted target of 652 kg CO₂-equivalent per tonne of PVC by June 2003.

Chart 5: Greenhouse Gas emissions



Notes: *Nine month reporting period from October 2001 to June 2002. The adopted greenhouse gas emission figures and targets relate to plant consumption only. We are currently investigating inclusion of transportation emissions in future targets.

Water usage

At Australian Vinyls, we primarily use water to suspend the PVC during the reaction process, to generate steam in the boilers, and to replenish water evaporated from the cooling towers.

2002-03 again saw an improvement in water consumption per tonne of PVC produced, with a reduction in consumption rates of over 10% compared to the previous period. The plant usage rate for 2002-03 was 5.4 thousand litres (kl) per tonne of PVC compared to 6.0 kl/tonne PVC in the nine months from Oct 01 to Jun 02 and our target of 5.9 kl/ tonne PVC.

Reductions were achieved primarily by using less steam in the stripping columns and increased plant throughput.

Water recycling

Australian Vinyls has committed to a major project to recycle water within the plant. It is estimated the project will reduce water consumption by 10 kl/hour.

Studies have identified the recycling of centrate from the dryer centrifuges as a potentially cost-effective and resource-efficient option for further water recycling. This is still under investigation as part of a wider project to increase plant output.

Trade Waste discharge

Since 1998-99, we have reduced the rate of trade waste discharged from the Laverton site by 12% to 4.3 kl/tonne PVC in 2002-03. During 2002-03 the total quantity discharged was 534,380 kl.

In 2002, we conducted a waste water audit for the Laverton plant in conjunction with City West Water. Further opportunities to reduce trade waste loads are currently under investigation.

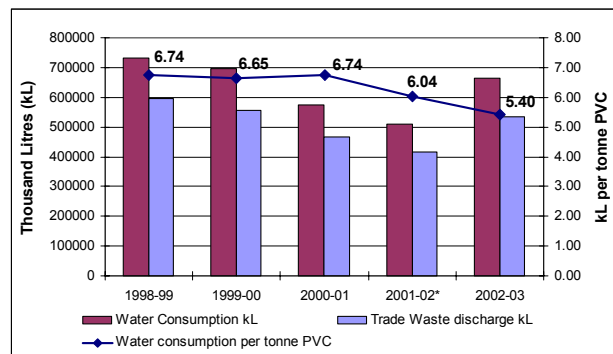
Installation of new effluent cooling towers during 2002-03 has significantly reduced peak temperatures at the point of discharge to sewer. This avoided the need to suspend discharge due to temperature throughout the 2002-03 summer period.

City West Water visits the site approximately every three weeks to test the trade waste discharge. The plant's TWA limit for VCM is ≤ 0.5 mg/litre 80% of the time and no more than 1.5 mg/litre at any time.

During the year there was one recorded period with more than 80% of VCM results between 0.5 and 1.5 mg/litre, one instance where trade waste volumes exceeded the TWA limit and one dioctyl phthalate result above the TWA limit of 1 mg/litre.

The company finds these breaches unacceptable and is committed to reducing the likelihood of similar events.

Chart 6: Water use and effluent discharge



* Nine month reporting period from October 2001 to June 2002.

Emissions to stormwater

Since the plant began operations in 1979, there have been no recorded incidents of water contamination in the Laverton Creek channel. Measures are in place to contain leaks and spills at the plant to minimize the risk of stormwater contamination. These measures include a settling pond to remove any PVC from stormwater runoff from the PVC handling areas.

Waste management

At Australian Vinyls, we recognize that the community has a strong interest in the disposal of industrial wastes and expects us to reduce the amount of waste sent to landfill. The main volume of industrial waste from the Laverton site is paper packaging with some residual contamination. However "rogue polymer" that collects in the reaction process is the biggest contributor by weight (22 tonnes during 2002-03). Both these waste streams present a low to very low environmental hazard.

Smaller waste oil and other liquid waste streams are collected and sent for treatment prior to disposal to landfill and/or the sewer system. During 2002/2003, 43 m³ of water from the cleaning of cooling towers were also sent for off site treatment and disposal.

We committed to exploring re-use and recycling alternatives to disposing of waste in secure landfills by 30 June 2003. Our target is to reduce the total quantity of Prescribed Waste sent to landfill by 20%. We have lodged an application with the Victorian EPA to allow recycling of the two clean packaging waste streams. The EPA is considering this at the time of this report.

We are also investigating options to purchase materials in bulk to reduce the number of drums requiring treatment or recycling. We recently switched one product to bulk and have a project underway to shift another from drums to

one tonne containers. The number of drums removed from the site for recycling or re-use during 2002/2003 (1,237) was increased by removal of a stockpile of empty drums on site at the beginning of the year.

During the year, equipment modifications were also made to reduce the quantity of rogue polymer formed in the PVC reactors. These modifications were extremely successful, resulting in reduced cleaning of the autoclaves thereby reducing both the quantities of rogue polymer produced and VCM emissions to air. During 2002-03 these improvements were offset by an abnormal contribution to rogue polymer from a polymer lump that formed in a reactor following mechanical failure of its agitator assembly.

In addition to Prescribed Waste, Australian Vinyls generates significant quantities of general waste, mostly office paper and 'clean' outer packaging waste. Bins are provided to collect office paper for recycling. All other general solid waste is disposed of through weekly clearance of rubbish skips. These waste streams are not currently weighed. The volumes reported in the Table 3 reflect the number and size of bins provided and the number of collections during the year, whether full or not.

The company has set a target of a 10% reduction in recyclable general waste sent to landfill by 2004, and will introduce new measurement processes to monitor progress.

Table 3: Laverton Site Waste ¹

Category	1999-00	2000-01	2001-02 ²	2002-03
Prescribed Industrial Waste				
Waste sent to landfill - m ³	267	245	8	6
- tonnes		1	12	44 ³
Waste sent for treatment / landfill - m ³	6	17	3	57 ³
- tonnes				0.47
Waste sent for recycling / re-use - tonnes	4	7	6	22
Waste sent for energy recovery m ³				0.16
Non Prescribed Waste				
Waste sent to landfill - m ³	927	915	705	1050
- tonnes		2		

Notes: 1. Total waste is the combination of the volume and weight reported.

2. The 2001-02 period is the 9 months from October 01 to June 02.

3. Removal of water from the cleaning of Cooling Towers for off-site treatment and disposal, removal of a stockpile of empty drums for recycling / re-use and disposal of the polymer lump that formed in a PVC reactor as a result of agitator failure increased waste during 2002/2003.

Product Stewardship

Australian Vinyls actively contributed to the development of a voluntary, PVC industry Product Stewardship Commitment. The Commitment, prepared by the Vinyl Council of Australia in consultation with Environment Australia, sets out public commitments for enhancing the environmental performance of the industry in Australia. The commitments relate to aspects of PVC's life cycle from manufacturing resin, through conversion to products, to end-of-life. The Commitment was launched by the Commonwealth Minister for the Environment and was signed by members of the industry, including Australian Vinyls, in November 2002.

Website reference www.vinyl.org.au

Post consumer recycling

We continue to be strongly involved in the Vinyl Cycle bottle recycling program through our action plan under the National Packaging Covenant. About 5 - 7% of PVC consumption in Australia is used in flexible and rigid packaging. Most PVC is used in long life products in the building and construction sector where little is yet available for recycling.

Currently, much of the PVC waste collected in Australia is sent for recycling offshore. This is in spite of greater demand for recycled PVC than supply. PVC recyclate is used in PVC pipe fittings and vinyl floor coverings. We are now consulting with major sorters, waste service suppliers and authorities to lift the sorting rate and to improve the flow of PVC waste to users of PVC recyclate.

This year, the recycling rate of PVC cordial bottles collected from kerbsides was 64% (i.e. of those put out for recycling, 64% were recycled). This accounted for 19% of the annual consumption of PVC bottles. See the Vinyl Council website for details (www.vinyl.org.au).

Environment Improvement Plan

We signed the Laverton plant's second Environment Improvement Plan (EIP) in June 2003 (the first was issued in August 2000). The 2003 plan was prepared in consultation with members of the local community, as well as representatives from the local council, the Victorian EPA, WorkSafe Victoria and City West Water. The EIP reviews the environmental aspects of our operations and commits us to a series of actions over a three-year period. These actions will enhance the plant's environmental performance.

Reporting

The 2001-02 SH&E Report has been available to the community since January 2003. It is published on the company's website at:

www.av.com.au/envroper/envrep.html.

Other SH&E performance measures

Safety Case

WorkSafe Victoria issued an unconditional 5-year Major Hazard Facility licence for the Laverton plant in June 2002. During 2002-03, removal of liquid chlorine and LPG tanks resulted in an 85% reduction in the Major Incident risk profile for the site as described in the site Safety Case.

Critical Events

Australian Vinyls has adopted a measure called 'Critical Events' to provide feedback on the critical equipment and procedures used to prevent major incidents and their associated monitoring programs. This provides an early warning sign to detect and allow problems to be corrected before

incidents occur. Many of the events we are now evaluating as a result of this measure may previously have been considered to be sufficiently minor or infrequent as to not require follow-up.

Of the 17 critical events recorded during the reporting period, four related to detection of faults or calibration drift during routine checks on "critical" equipment. Four events related to equipment found to be incorrectly set up after maintenance and three related to detection of "in-service" equipment failures.

Response to the other critical events has led to improvements to the autoclave temperature control system, replacement of fire water piping, improvements to the communication of recipe changes and a review of critical alarms.

Environmental incidents

There were eight reportable environmental incidents during the year, including three trade waste breaches, three point-source exceedences and one residual VCM in slurry exceedence. Two of these incidents resulted from significant plant upsets:

- In one case, a 20-tonne lump of PVC formed in a reactor when the agitator was stopped due to a bearing failure. Short stop chemicals were not added, as it was incorrectly judged that the batch was cool enough to prevent PVC formation. The Victorian EPA was notified and an exemption obtained before the lump was removed.
- In the second case, approximately 40-50 kg of VCM was emitted into the atmosphere from a dryer stack when power to sections of the plant was inadvertently 'tripped'. When power was restored, the strippers produced only partially stripped slurry, resulting in the emission.

Australian Vinyls is committed to preventing such incidents and, as detailed below, has taken steps to minimise the risk of such incidents in future.

Regulatory compliance

Australian Vinyls submits an annual report to the Victorian EPA outlining our compliance with various licence conditions. The EPA conducted an audit of the site in June 2003 that found the plant had complied with all licence conditions.

The audit did express concern at the number of incidents being reported. In part this concern stemmed from the additional reporting of "Critical Events", however formation of the PVC lump in a reactor, loss of PVC stripping control following tripping of instrument power and upsets resulting from trials of reduced steam usage in the Stripping Columns also contributed to this concern.

Australian Vinyls is committed to preventing such incidents and has changed the short stop agent used to respond to loss of reactor agitation and has assigned an engineer to improve the control of both Stripping Columns.

No WorkSafe improvement notices were issued to the company during the year.

VCM transportation

VCM, our main raw material, is transported to the Laverton plant in road tankers from Geelong. Each operating tanker is checked for VCM leaks on a daily basis. There were no VCM transport incidents during the reporting period. We will explore inclusion of transportation in our energy and greenhouse gas measurements from the beginning of the next Greenhouse Challenge period – commencing 2004.

Legionella regulations

We have two cooling towers registered with the Building Control Commission for monitoring and controlling Legionella. Risk Management Plans have been prepared for both cooling towers. Bacteria test results have all been below Department of Human Services notification levels.

Ozone depleting substances

R11 is an ozone depleting substance used in the plant's refrigeration unit. During the year, approximately 180 kg were consumed due to a small, slow leak in the system. The R11 lost was replaced from existing stock. Under the plant's Environment Improvement Plan, a program is being developed to replace R11 use, targeted for 2005.

NPI reporting

Australian Vinyls also reports emissions to the National Pollutant Inventory published by the Commonwealth Department of Environment and Heritage. Based on plant throughput, we are required to report emissions of fuel combustion products, total Volatile Organic Compounds (VOCs) and VCM.

The reported emissions are given in Table 5.

Community Issues

Community complaints

We did not receive any complaints from the community during the reporting period. There has only been one public complaint registered for the Laverton site since Australian Vinyl was formed in 1997 (relating to noise from contract high pressure water cleaning in 2000).

Community support

Australian Vinyls contributed seed funding to the Laverton Community Centre Link Project, a local initiative designed to develop education programs and facilities in local schools and pre-school centres.

Table 5: NPI Report

Reported NPI Emissions	2002-03 (kg)
Combustion Products:	
- Arsenic & compounds	0.03
- Beryllium & compounds	0.00
- Cadmium & compounds	0.17
- Carbon monoxide	14955.83
- Chromium III compounds	0.15
- Chromium VI compounds	0.06
- Cobalt compounds	0.01
- Copper & compounds	0.14
- Lead & compounds	0.08
- Manganese	0.06
- Mercury and compounds	0.04
- Nickel and compounds	0.33
- Oxides of nitrogen	15949.08
- Particulate matter 10 micron	1198.85
- Polychlorinated dioxins and furans	0.00
- Polycyclic aromatic hydrocarbons	0.11
- Sulphur dioxide	99.35
- Zinc	4.46
- VOC's from combustion	1063.50
Total Volatile Organic Compounds (VOC's)	2645.68
Total VCM to air *	1461

* Total quantity of VCM to air includes allowances for fugitive emissions and 248 kg arising from replacement of stack readings where VCM was not detected above the lower limit of detection of the analysers.

Training

Regular operational training sessions are rostered into the shift cycle every five weeks. Training includes new skills development, workplace practices and procedures and refresher courses in areas such as first aid training, manual handling techniques and confined space work.

During the reporting period:

- Employees were trained in emergency response, including containment and clean up of gas/liquid leaks. Australian Vinyls now has approval to conduct emergency exercises with MFESB.
- Employees were trained in the site electricity, Natural Gas, compressed air, steam and water systems resulting in work practices that promote cleaner production.

- We conducted an education program on the impact of operations on the environment. This included training in the stormwater system and our impact on greenhouse gas emissions and visits to the Western Treatment Plant at Werribee and the Brooklyn Pumping Station.

Our chemists and engineers are currently running a series of “refresher” training sessions on the reaction process chemistry and how it is controlled. A range of additional SH&E training programs have been scheduled for 2003-04.

Table 4: Training Data

	Oct 01 – Jun 02		2002-03	
	Operator hours	Support Staff hours	Operator hours	Support Staff hours
AV Training Days	1248	424	2075	1074
Other Courses	132	936	205	1314
Total Hours	1380	1360	2280	2388
Additional “on-the job” learning / reassessment	1140*	240*	1008*	280*

* *Estimate only*

2003-04 SH&E Commitments

Table 6: 2003-04 SH&E Commitments

Indicator	Commitment
Health and Safety:	
- Injury	< 2 Recordable Cases
- VCM exposure	< 8 exposures > 1ppm < 5 ppm
	No exposures > 5 ppm
Environmental:	
Environmental incidents	No significant incidents
VCM emissions	<10 g/tonne (including fugitive emissions)
X16 emissions	No spills or exposures above TWA limit
Energy Consumption	≤ 4.0 GJ/tonne PVC
Water Consumption	≤ 4.9 kl/tonne PVC
Waste management	20% reduction in Prescribed Waste sent to landfill 10% reduction in Non-Prescribed Waste sent to landfill
Product Stewardship	Meet relevant PVC Industry Product Stewardship Commitments
Post consumer recycling	Continue progress towards 25% recovery rate for PVC bottles by end 2003

In addition to implanting specific EIP actions during 2003-04, the plant will focus on the following key areas:

- Reduction of water consumption – we are currently implementing a major project to recycle water used in a scrubber.
- Greenhouse impact – we are continuing to focus on projects to reduce steam consumption in the Stripping Columns and have identified improvements to reduce electricity consumption.
- Waste management – we are liaising with our waste service provider to investigate recycling opportunities and to help us reduce both Prescribed Waste and general waste volumes.

For more information on Australian Vinyls, or its environmental performance, please visit our website at www.av.com.au, e-mail us at environment@av.com.au or call us on 03 9368 4800.