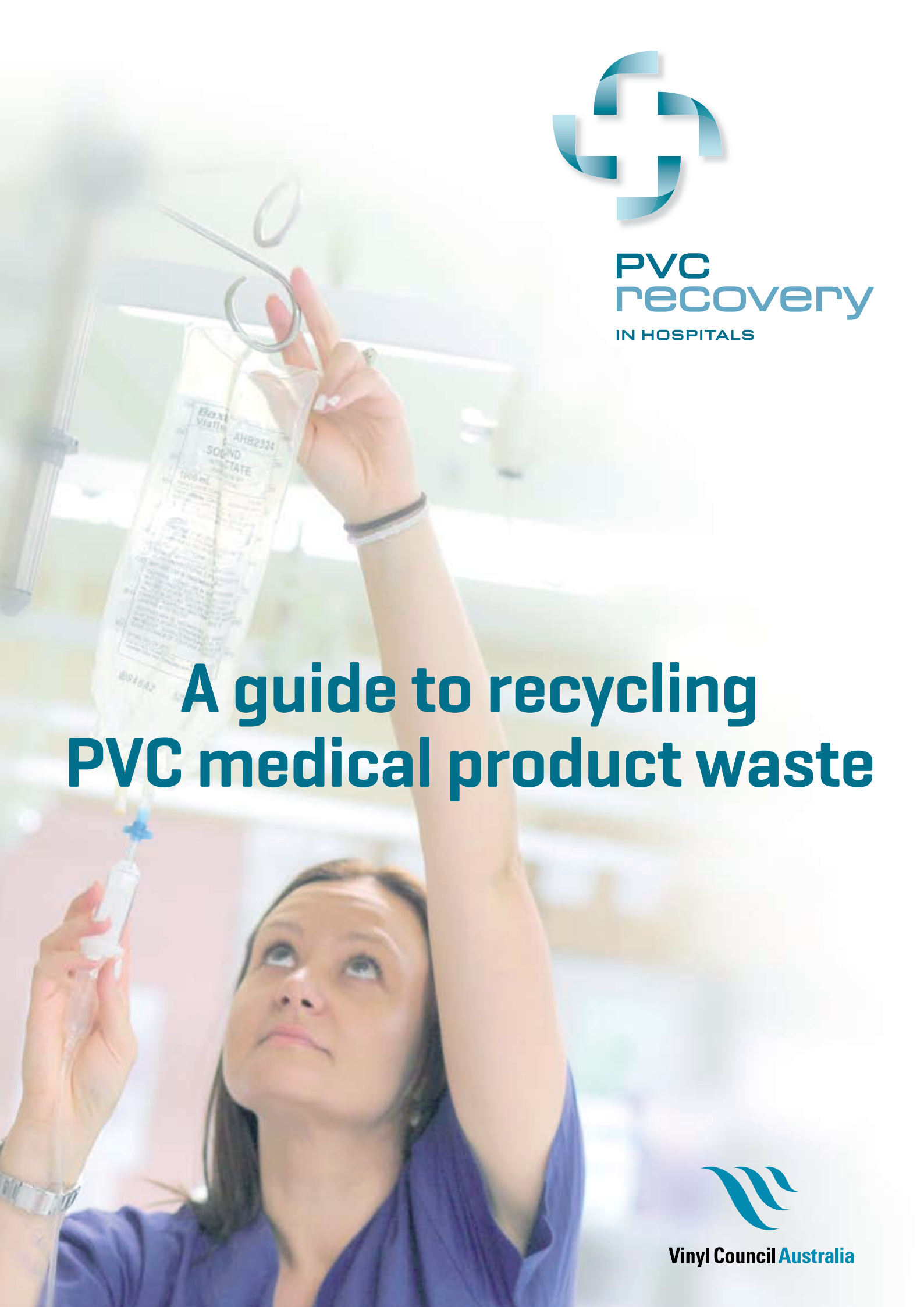


PVC recovery
IN HOSPITALS

A guide to recycling PVC medical product waste

Vinyl Council Australia

PVC Recovery in Hospitals is a resource recovery initiative of the Vinyl Council of Australia and part of its PVC Product Stewardship Program.

Major Partner

Baxter

Baxter are the major supplier of IV fluid bags to Australian hospitals and the major sponsor of the PVC Recovery in Hospitals Project.

Program Partners

NSW EPA

Sustainability victoria

State Government Victoria

LIVERPOOL HOSPITAL

PVC Recovery

The PVC Recovery in Hospitals initiative is a program aimed at collecting used PVC medical products for recycling into useful new products.

PVC – polyvinyl chloride: a polymer derived from oil and salt – is a plastic widely used in healthcare. It may be identified on products or packaging by the Plastics Identification Code '3'.

Plastics are a significant share of hospital general waste. It has been estimated that all plastics account for about one third of a hospital's general waste, most of which is sent to landfill in Australia. Of all plastic waste generated by a hospital, PVC medical products such as intravenous (IV) fluid bags, tubing, oxygen masks and blood bags, are estimated to represent about 25 per cent.

PVC is recyclable

PVC, also known as vinyl, can be recycled relatively easily once it is recovered from the waste stream and has been separated from other plastics or materials. Although a number of recycling programs exist for PVC products such as bottles, pipes and cable, until recently medical products have not been recovered in Australia.

Recycling plastics saves energy and conserves valuable raw material resources. A recycled plastic product (including PVC) has approximately one quarter of the embodied energy compared to an equivalent plastic product made with virgin resin.

A pilot PVC recovery program was initiated at Western Health Victoria in 2009 which showed that some PVC medical products can be separated relatively easily by hospital staff; the PVC can be recycled in Australia and the recycle produced can be re-manufactured into useful new products.

The program has been expanded to a number of hospitals, including Liverpool Hospital in NSW.

Recycling PVC diverts waste and useful resources from landfill and reduces the consumption of energy feedstocks in the production of new products.

It's a matter of know-how

Educating and engaging staff in hospitals is crucial to the successful recovery and recycling of PVC medical products. It is through the collective efforts of staff that attitudes towards waste change, the volume of material recovered grows and contamination of the collected PVC is minimised.

These efforts result in a higher quality recyclate for use in new products, some of which may end up being used in hospitals again, for example, as new floorcoverings.

This booklet is designed to help hospitals implement PVC Recovery effectively and efficiently, to encourage recovery of valuable resources and reduce the impact of product consumption on the environment.

3

'Diverting PVC waste from a landfill can be a cost neutral solution for hospitals'

Alex Cockram, CEO Western Hospital

How it works

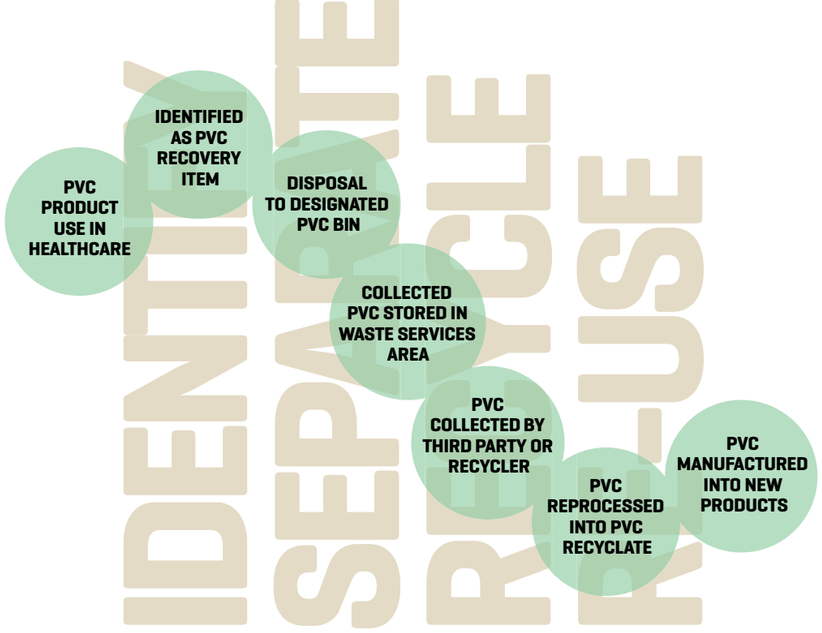
PVC can be recycled relatively easily once it is recovered from the waste stream and has been separated from other plastics or materials.

Hospital waste is routinely separated into general and infectious (regulated/clinical) streams. In Australia, infectious waste is defined as materials or solutions containing or contaminated with blood or tissue or arising from patients with certain defined infections. Generally, about 30 per cent of waste within operating theatres and intensive care units is infectious; the remainder is dealt with as general waste and sent to landfill.

Under the PVC Recovery program, the proportion of general waste sent to landfill can be reduced. After use, flexible PVC medical products identified for recovery – such as IV bags, tubing and oxygen masks – can be disposed of in dedicated PVC Recovery bins located in the areas of the hospital that use high volumes of these products.

The bins are collected and transported to a PVC recycler who washes and granulates the material. It is then processed at high temperature and extruded into a new product, or heated, extruded and pelletised so that it is in a form that can be bagged and sold to a product manufacturer for re-use.

This type of recovered PVC produces a relatively high quality recyclate as the original products are generally clear rather than coloured. The recycled material cannot be re-used in new medical products for quality assurance reasons; however it can be recycled by Australian manufacturers into industrial hose, garden hose and floor coverings.



'Sustainability is core business for hospitals, just like patient care, from the wards to the Executive Team'

A/Professor Anthony M. Schembri, General Manager, Liverpool Hospital

Getting involved

Hospitals

It is important for each hospital to identify which areas of the hospital will be most effective in recovering PVC medical waste. For example, surgical waste could be reduced markedly by recovery of material for recycling. Recycling within operating suites, day procedure units and intensive care units is particularly important given the large volumes of waste generated with a high proportion of plastic.

A pilot project has demonstrated that staff, particularly nurses, have been keen to recycle PVC products, as they see it as a tangible way to reduce waste.

To consider joining the PVC Recovery program, it may be valuable to engage with these areas of the hospital to understand their willingness and ability to commence a recycling program:

- Management
- Environmental Services or waste management team
- Sustainability officers, teams or committees
- Infection Control monitors
- Occupational Health and Safety departments
- Hospital staff of the operating suite, day procedure unit and intensive care unit, or other departments with relatively high volume use of the products to be collected.

Waste collectors and recyclers

Third party waste collectors and recyclers will be required to take any collected PVC medical waste from the hospital.

There are a number of PVC recyclers in Australia who specialise in sourcing and reprocessing PVC product waste for recycling into new products manufactured in Australia.

Depending on hospital location and size, these companies may arrange collection of the waste directly from a hospital or may engage a waste haulage company to collect and transport it to their reprocessing plant.

PVC medical waste recyclers include:

SRM Plastics Pty Ltd
03 9791 2088

Envorinex
03 6382 1844

CryoGrind Australia Pty Ltd
03 9794 6608

Refer also to the list of PVC recyclers at www.vinyl.org.au/find-a-pvc-recycler

Alternatively the hospital's existing waste contractor may be able to partner with a PVC recycler to provide collection, haulage and storage services. A key factor to verify is whether the collected material will be sold to a local recycler for use in Australian manufacturing in preference to exporting the recovered material overseas.

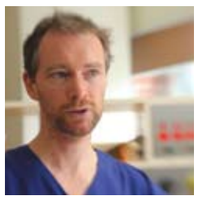
End uses of recycled PVC

PVC medical waste recovered under this program can be recycled into useful new products such as industrial and garden hose, PVC compound, vinyl flooring and carpet backing.

It is estimated that Australia consumes at least 2,500 tonnes per annum of PVC in the most common medical products. Each tonne of recycled PVC produced will replace about one tonne of virgin PVC compound used in new products.

'We all work together to make this recycling program a real success'

Forbes McGain, Anaesthetist and recycling advocate, Western Health



Recovering PVC

LEAVE OUT

Contaminated material
Regulated wastes
Products with multiple plastic parts
Gloves
Non-PVC IV fluid bags
Metal clips
Elastic straps
Hard plastic inserts

Oxygen masks and tubing, intravenous fluid bags and suction tubing are the major medical PVC items identified as suitable for recovery and recycling. These products tend to be generated in higher quantities in theatres, recovery wards, intensive care units and day procedure units, in discrete intervals which aids the collection process and volumes.

Place these items in dedicated, clearly marked PVC Recovery bins, handily located in the areas generating high volumes.

Separating PVC products from non-PVC products at the source of waste generation leads to a higher volume of waste being diverted from landfill. It produces a higher quality of PVC recyclate since contamination by other material has been minimised.

Improving the result

The following steps reduce the risk of contamination of the PVC material by non-PVC materials and greatly improves the recyclability of the waste:

> Remove elastic straps and metal clips from oxygen masks

> Drain IV solutions from bags before disposal and remove hard plastic inserts

> Even where the main part of a product is PVC, if there are numerous components made of hard plastics and other materials, such as in giving sets, do not include it in the PVC Recovery bins

Once PVC waste is being separated and recovered, there may be opportunities to divert the remaining mixed plastics waste for recycling by another party. Discuss with the hospital's waste contractor if this is feasible at your hospital.

Start with good planning

The decision to recycle PVC medical waste will involve many people within and outside the hospital (see Getting Involved). Here are some simple steps to commence the process:

1. Identify the PVC products used in high volumes and the areas of the hospital where this occurs. Reviewing purchase records may help to understand the amount of waste that may potentially be recovered and diverted from landfill.
2. Discuss with the hospital's waste management team the existing waste collection and recycling activity. Explore the availability of space in appropriate areas for dedicated PVC Recovery waste bins.
3. Identify a waste / recycling partner who will collect and recycle the PVC recovered (refer to Getting Involved for contacts).
4. Engage and collaborate with staff in the relevant clinical areas. Continuous education will be essential. Arrange to share this booklet, the accompanying fact sheets and video with them.
5. Appoint a key coordinator/champion for the project who can monitor progress and success in keeping contamination low and measure the volumes of waste recovered.
6. Arrange for the necessary resources: dedicated, clearly identifiable and marked PVC Recovery bins, posters and bin stickers.

Need help?

Register your interest in commencing PVC Recovery at www.vinyl.org.au/PVCRecovery.

Email any questions and inquiries to the Vinyl Council of Australia at info@vinyl.org.au or contact Baxter at ANZ_SHS_Sustainability@baxter.com.

'Ongoing staff education ensures a reliable, uncontaminated supply of PVC for recycling'

Catherine O'Shea, Sustainability Officer, Capital Development, Western Health

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'We recycle so much at home – let's do it in the hospital. It's so easy with the bins provided'

Jessica Andrews, ANUM Recovery, Western Hospital

GUIDE FOR STAFF IN CLINICAL AREAS

Plan

1. Are staff interested in recycling waste and willing to take the necessary action?
2. Who is/are the project champion(s)?
3. Which departments of the hospital will be included?
4. Which PVC products will be recovered?
5. What volume of these products is usually consumed in these areas?
6. Is space available for PVC Recovery bins to be readily at hand?

Share this information with the waste management team and discuss how to commence an initial trial.

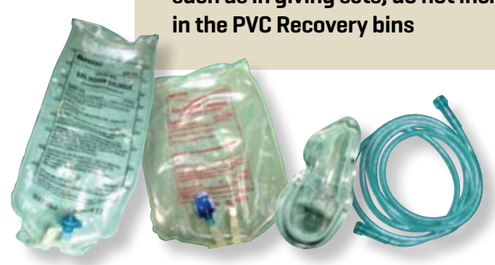
Education and engagement

Implementing a recycling program at any place of work and at home requires education to change behaviours. People have been used to doing things in a certain way for a long time and it will take time for people to adjust to a new system. Therefore a process of continually engaging staff in how to implement the PVC Recovery program will be required. Repeated short presentations at staff meetings and staff inductions using the PVC Recovery video will help to remind people how to recycle PVC waste effectively.

The video and copies of this guide are available online. Education may be reinforced with feedback on progress, celebrating success and recognising waste champions.

REMEMBER

- **Remove elastic straps and metal clips from oxygen masks**
- **Drain IV solutions from bags before disposal and remove hard plastic inserts**
- **If there are numerous components made of hard plastics and other materials, such as in giving sets, do not include it in the PVC Recovery bins**



Issues to be aware of

The key challenges in implementing recycling programs are generally behaviour, storage space for waste and bins and the logistics of moving waste. Good planning, ongoing education and liaison with the hospital's waste management team and contractors may overcome these; however the following issues may also need addressing:

INFECTION CONTROL

Infection control from medical waste is usually well managed in hospitals and staff are trained in medical waste handling. Clearly no material which is potentially infected should be placed in recycling bins. If there is any doubt about a waste PVC product, it should not be placed in the recycling bin.

RESISTANCE TO CHANGE

Some staff may not be interested in recycling, despite several education sessions. It is preferable that these staff place their 'waste' into the general bins rather than contaminate the recycling bins and the effort of other staff.

CONTAMINATION BY OTHER MATERIALS

It only takes a few non-PVC items in the recycling bin to result in the whole bin of material being non-recyclable. Continually engaging staff in implementing good recycling practices will minimise this risk.

IF IN DOUBT, LEAVE IT OUT!

If there is any doubt about the product type or the plastic type, do not place it in the PVC Recovery bin.

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GUIDE FOR HOSPITAL WASTE MANAGEMENT TEAMS

Plan

1. What volume of PVC product waste is expected to be recovered?
2. How many bins will be required (allowing for full/empty rotations)? Who will supply them? Some waste contractors supply bins, or hospitals may order their own. Choose a specific bin colour so that the PVC Recovery bins are clearly identifiable and instantly recognisable by staff.
3. Is space available for PVC Recovery bins to be readily at hand?
4. Is space available to store collected PVC until transported off-site? Is compaction and/or bulk storage available? Does it need to be considered?
5. Which waste contractor/recycler will be engaged? Have they confirmed the waste will be sent to a local recycler?
6. Will the contractor take only the waste or the full bins?
7. Have PVC Recovery bin identification stickers been ordered? Contact Baxter Healthcare, your recycler or the Vinyl Council of Australia.
8. Has the waste/recycler contractor been asked to measure and provide data on collections?

Share this information with the PVC Recovery team and discuss how to commence an initial trial.

Issues to be aware of

The key challenges in implementing recycling programs are generally behaviour, storage space for waste and bins and the logistics of moving waste.

INSUFFICIENT BINS AVAILABLE

The amount of PVC recovered and diverted from landfill will be limited by the number of bins available for waste collection, the effort of staff and the frequency of bin rotations and collection. Because implementing this program requires behaviour change by staff in disposing of waste, it is important to provide sufficient bins and appropriate frequency of bin rotations through the collection areas to avoid a “stop-start” program which would discourage staff in their efforts.

STORAGE OF WASTE

Depending on the volume of collections and the hospital location, full bins may need to be stored for 2-4 weeks before collection, or bins emptied into bulk bags or storage. Discuss the collection and transportation options with waste/recycling contractors.

No manual handling of the material should occur after the PVC items enter the bins.

Good planning, ongoing education and liaison between hospital’s waste management team, staff in clinical areas and contractors may overcome these challenges.

Support

For any inquiries or assistance in arranging collection and recycling of PVC medical waste, please email the Vinyl Council of Australia info@vinyl.org.au or Baxter at ANZ_SHS_Sustainability@baxter.com.

Register

Register your PVC Recovery Program with the Vinyl Council at www.vinyl.org.au/PVCRecovery or by emailing info@vinyl.org.au.

Vinyl Council Australia

Phone 03 9368 6171
Email info@vinyl.org.au
www.vinyl.org.au/PVCRecovery

Major partner

Baxter

Phone 0409 819 029
Email ANZ_SHS_Sustainability@baxter.com
www.baxterhealthcare.com.au/news_sustainability/sustainability/index.html

Program Partners

NSW EPA

Phone 02 9995 5000 Environment line 131 555 (local) or 02 9995 5555 (from outside NSW)
Email info@environment.nsw.gov.au (Please include what you are inquiring about in the subject line.)
www.environment.nsw.gov.au/epa/

Sustainability victoria | State Government Victoria

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