

A large, blue-tinted image of a hand holding the Earth from space. The hand is on the left, with fingers spread, holding the globe. The Earth is on the right, showing continents and clouds. The background is dark space with some red and blue streaks.

Balance means the **world** to all of us

To demonstrate our dedication to helping our customers understand and manage the environmental impact of both single-use and reusable surgical products, we'd like to present you with a balanced view of the facts



Kimberly-Clark

*Trusted Clinical Solutions**



Demands for higher levels of patient health care and staff safety – plus continuing cost pressures – are increasing the use of single-use products in hospitals. These products are purpose-designed to provide higher levels of professional health care and safety for patient and staff alike, at minimal cost.

Savings to health care through lower costs

The total cost of single-use products (including disposal) can be less than the total cost of cleaned, sterilised and reused alternatives. This means increasing the use of single-use items in hospitals can reduce costs, while improving performance and safety.

Environmental effects of single-use and reusables

Single-use and reusable medical items, including surgical drapes, gowns, sterile wrap and other personal protective equipment, have different environmental effects when fully assessed on comparable products. So there can be little to choose between them¹.

When assessing these effects, key environmental issues and “compartments” are scrutinised:

- Water use – plus wastewater to oceans or rivers
- Fossil fuel energy – greenhouse emissions into the air
- Solid waste – to landfill

Reusable products may at first seem preferable if judged on the single issue of landfill, because of lower amounts of solid waste being sent to landfills or incinerators.

But reusable products have other significant impacts on the environment: high water use and wastewater discharge, high energy use, and greenhouse gas emissions.

These negative impacts, different to those of single-use items, are substantial and cannot be ignored.

To facilitate a true comparison of the effects of single-use and reusable surgical drapes or gowns, a hospital laundry service provided the amounts of water, energy and chemical use for washing and drying reusable fabric products².

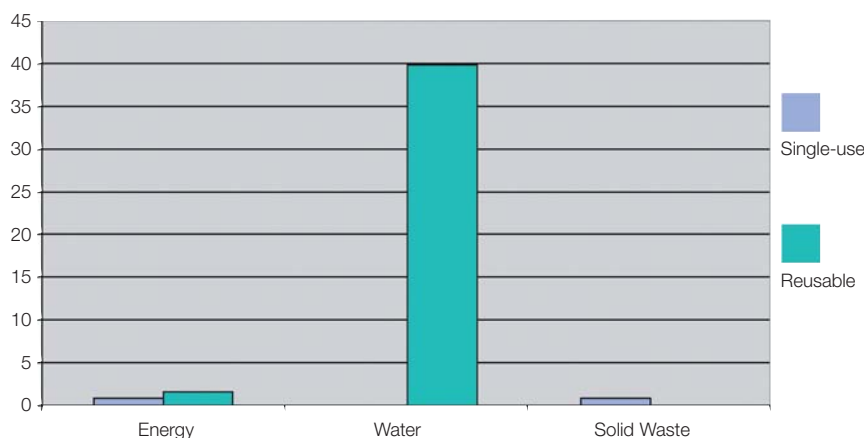
In the comparison 1 kg of single-use product was measured against 2.1 kg of reusables, as reusable drapes and gowns weigh on average about 2.1 times more than single-use¹.

The comparison shows that laundering of reusables uses 40 litres of water and 68% more energy, than the use of 1 kg of equivalent single-use products. The single-use product produces just 1 kg of inert waste in landfill.

Amount of Product & Environmental “Outputs”	Single-use	Reusable assumes 50 uses
Product weights for comparable use	1 kg (= reference)	2.1 kg (equivalent to 1 kg of single-use)
Solid waste to landfill	1 kg	0.04 kg
Water used, waste water	negligible	40 litres
Energy used	1 unit (= reference)	1.68 units in laundry

Single-use versus Reusables²

Environmental Aspects Energy & Water Used, Solid Waste Generated





Resources are everyone's concern

When weighing up the various environmental effects of single-use and disposable products:

- neither single-use nor reusable products are “better”
- each consumes resources and generates wastes.

The net effect of these depends on individual and community values. If all external environmental costs – landfill disposal, waste water treatment and energy – are factored into each product, the lower cost product is arguably preferable. It provides the function at lowest cost. It is most efficient.

Water is a valuable and scarce resource

Water is precious in Australia, and usage restrictions apply to most of the population. So it's vitally important to save water and reduce wastewater treatments and discharge.

In addition to the higher volume of water needed to process reusable products, harsh chemicals are also released into the waste water. Plus reusable linen items may sometimes be reprocessed without being used, e.g. washed linen returned to sorting with a high lint burden or unacceptable staining, requiring another wash.

Landfill space is abundant

There is no shortage of landfill space in Australia; this is not an issue. Old quarries are commonly available and used. However, siting and management can raise political interest, like any major new development.

Segregate to minimise waste costs

Around 75% of hospital waste goes in to “general waste”, just like your waste at home³. This costs hospitals around 5 cents / kg for disposal. But “contaminated waste” costs 10 to 20 times this – from 50 cents to \$1.00.

Responsible segregation of solid wastes in hospitals is the best way to save on waste management. Segregating wastes keeps costs down so more funds can go to direct patient care. Wherever possible, wastes if not recycled should be directed into the low cost, general waste stream.

When wastes such as drapes or gowns are soiled with blood or other body fluids, they are treated as contaminated waste, or equivalent, for disposal. For details on classifying wastes, refer to the ANZWIG Code⁵. Each State has its own specific regulations – Queensland has eight excellent guidelines on “Clinical & Related Waste”, which are clear, detailed and generally applicable⁶.

Sterile wraps, drapes and surgical gowns in waste streams

Kimberly-Clark surgical drapes, gowns, sterile wrap and other personal protective equipment are made of polypropylene, an inert polymer derived from petrochemicals. It is rather like candle wax and does not react with water, allowing easy and responsible disposal by all methods.

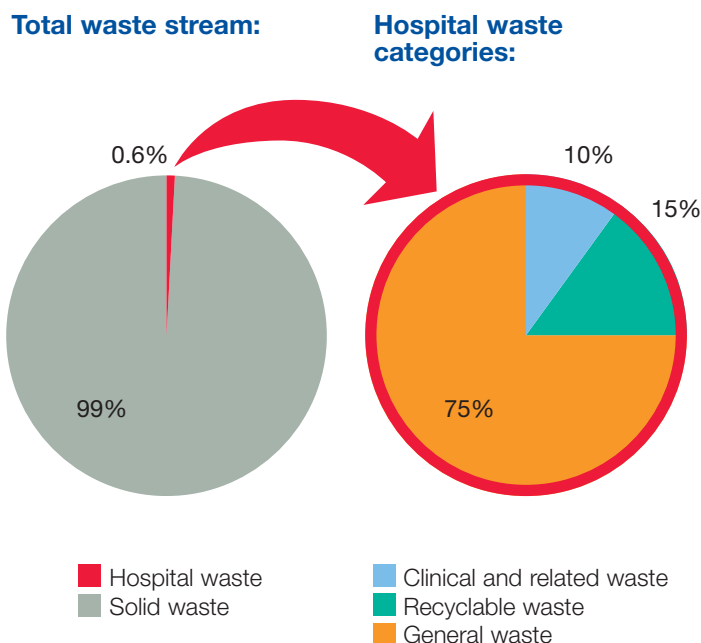
General waste in landfill

When Kimberly-Clark's polypropylene products are not contaminated they can normally be disposed of in general waste. The low cost of this is preferred to help conserve the health care dollar. In the OR, segregation prior to surgery ensures the items are uncontaminated.

General waste is normally landfilled in Australia. Polypropylene does not react with water, so does not contribute to landfill “leachate”, and is stable so avoids settling problems and assists in early reuse of the site.

Organic materials such as food and paper products generate leachates and landfill gases, requiring careful management. By comparison, polypropylene health care products are a “non-issue” in landfills, just like bricks or building rubble.

Hospital waste accounts for only 0.6% of the landfill waste stream³. And the contaminated waste category is about 10% of all hospital wastes⁴.





Contaminated waste

The main treatments for contaminated wastes (clinical and related wastes) are:

- high temperature incineration
- grinding and decontamination – chemical or thermal – before landfill

Health care facilities generally use the closest clinical waste facility and this determines the kind of process used.

Incineration

This traditional method is expensive and usage is decreasing. Kimberly-Clark's polypropylene products can be safely incinerated in the contaminated waste stream. Complete combustion of Kimberly-Clark polypropylene base fabric generates heat (similar to oil or candlewax, about 44 MJ/kg) and forms primarily water vapour and carbon dioxide. Incinerator operators value the high energy content of polypropylene as it helps combustion with wet wastes. Polypropylene does not contain chlorine, which can be of concern in incineration.

Grinding and decontamination before landfill

An increasingly common method of treating contaminated wastes, grinding makes the waste unrecognisable and helps the treatment work. Chemical solutions can be used to decontaminate it. Thermal deactivation, using steam or microwave, is also used.

Kimberly-Clark sterile wraps, drapes and gowns are effectively inert and readily processed. After a wet process, they hold limited water due to their waxy, water-repelling properties.

Weighing up waste quantities

Hospitals as a whole produce only a small part of society's wastes – about 0.6% of "urban solid waste" in Australia³. As already noted, around 10% or less of total hospital waste is treated as contaminated waste.

Hospitals produce wastes which can be recycled – and possibly sold – such as waste paper and board, aluminium and plastic beverage containers. Active hospital recycling programs can reduce hospital waste costs and volumes sent to landfill.

A balanced view of all the facts

Environmental impact is an issue that needs to be kept in perspective when making purchase decisions. Correct segregation and treatment of hospital waste can mean significant cost savings and should be included in all hospitals' education programs.

A single-use product system is no more harmful to the environment than a reusable system – environmental effects can be minimised by practical waste segregation and recycling where practical.

There are advantages and disadvantages to both reusable and single-use systems. When making decisions, it is most important to balance the considerations of barrier properties and effectiveness, safety for patients and personnel, infection prevention issues, and the environment⁷.

After considering all the evidence on environmental impacts, remember – the primary reason for choosing single-use products should always be their exceptional ability to protect patients and staff.

1. H Wright, KCA, 21 Apr 2005, "Comparison of resources used and waste products for single-use and reusable surgical drapes and gowns"
2. H Wright, KCA 4 Oct 2000, "Laundry – Energy, Water and Chemical Use"
3. Survey for Medical Industry Association of Australia, by P Clarey & T Thornton, "The Status, Classification and Amount of Biomedical Waste Generated in Australia", Apr 1994; and pers comm. (Apr 05) on hospital waste practices and data from Stericorp Ltd and Australian and New Zealand Clinical Waste Management Industry Group
4. G Warren, personal communication Aug 2005, independent waste contractor. Surveys of wastes at 9 large Perth hospitals.
5. Australian and New Zealand Clinical Waste Management Industry Group, 2004, "Industry Code of Practice for the Management of Clinical and Related Wastes". Download copy from www.wmaa.asn.au/anzcwmig/home.html
6. Queensland has eight Guidelines on Clinical and Related Wastes; e.g. see "Defining Clinical Waste" at <http://www.epa.qld.gov.au/publications?id=786>
7. Barbara J. Gruendemann, RN, MS, FAAN, CNOR, "Taking Cover: Single-use vs. Reusable Gowns and Drapes" – Infection Control Today, Mar 2002.



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