



Pampers

**Greenest  
Nappies**

Julia Hailes



## About Julia Hailes

I've been working as an environmentalist for over 20 years – writing books, making speeches and advising companies, including P&G, on what they should be doing. One of the most difficult eco-decisions I've had to make is whether to use cloth or disposable nappies. I chose disposables. Given that I'm a big campaigner on reducing waste this might seem surprising. But my view was that the environmental differences between the two products were not so great – and disposables performed better. I've now had a chance to research this issue in great detail and this paper summarises my conclusions.

[www.juliahailles.com](http://www.juliahailles.com)

One of the most difficult eco-decisions  
I've had to make is whether to use cloth  
or disposable nappies.  
**I chose disposables.**



## Introduction – The Nappy Debate

The environmental debate about disposable nappies can be pretty contentious. On the one hand campaigners and even local authorities appear firmly in favour of reusable cloth nappies, imploring consumers to switch to their preferred 'green' alternative. On the other hand it's recognised that although disposable nappies mean more waste, cloth nappies generally use more energy and water – for washing and drying.

Recent research by the Environment Agency reinforces this line. They concluded that there was little to choose between the environmental impacts of either disposables or reusable nappies. That's OK as far as it goes but their research couldn't consider all the different consumer practices with nappies. Particularly for cloth nappies the actual environmental impact very much depends on parents' behaviour.

It may be rare for parents to use the same cloth nappies on more than one child but if they do both, the costs and impacts will come down. However, washing at too high a temperature, soaking nappies in a sterilising solution and using a dryer – or even ironing them – will significantly increase the impact of reusables.



## Changing Nappies

It's amazing how much nappies have changed in the last 20 years.

Since my eldest son was born in 1995 the weight of a Pampers nappy has reduced by over 40%. P&G, the manufacturers of Pampers have managed to do this by significantly reducing the amount of pulp in a nappy and replacing it with a super-absorbent gel. That means a better performance and better skin conditions for babies.

It's extraordinary to see this being demonstrated with a glass of water being poured onto a nappy – the particles can absorb up to 25 times their weight in urine. They act like blotting paper soaking up the liquid and distributing it around the nappy. And they're extremely effective at keeping moisture away from the baby's skin.

Some people worry that this gel might be harmful either to the baby or to the environment. But the same ingredient is used in the food supply chain – for example in the paper underneath chicken meat in a supermarket. You could actually eat it, although this is definitely not recommended!

Another cause of concern has been the bleaching method used for nappies. Bleaching is apparently needed to remove the impurities, increase absorbency and whiten the fluff. In the past, many companies used a chlorine bleaching process, which has now been dropped – it was feared that harmful dioxins (toxic substances) were being released into the environment.

There are two bleaching technologies currently used – elemental chlorine free, and total chlorine free – and neither of these is considered to be an environmental hazard. Even so, some nappy brands still claim credit for using one rather than the other. I think this is misleading consumers.

### Reusables

Reusable cloth nappies have also been through a transformation in recent years. Gone are the days when you had to fiddle around with safety pins and folding towelling cloths. Nowadays you can get all-in-ones shaped and fitted nappies with an in-built waterproof cover as well as numerous other versions.

### Shrinking Nappies

If current Pampers Active Fit mums in Western Europe switched to new Pampers Active Fit they could together throw away the weight of 782 million less diapers about every 2 ½ years, the time a baby typically spends in nappies! This is because of the reduction in materials used.

## Babies' Bottoms

The most important issue in relation to nappies is how well they work. This appears to be where disposables win hands down.

Nappy rash is very common. Research shows that there are many causes, for example changes in diet or medication. But one of the main causes is wetness, which makes the skin more sensitive to irritation – especially when it is rubbed by material. The mix of urine with poo creates ammonia and the increased pH activates the digestive enzymes. This is what attacks the skin, resulting in a rash.

The increased absorbency of disposables makes them better at keeping the baby dry and therefore reducing nappy rash. With cloth nappies, the wetness is quickly absorbed but not contained, which means the skin is re-exposed to liquid. The baby then needs to be changed more often, which can mean interrupting a night sleep, for continual dryness. Additionally, the evaporation cooling effect due to wetness can make the baby feel uncomfortable, which may then disturb their sleep.

Since my children were babies – they're now in their teens – lotion has been included within the nappy. This largely replaces the

need for the barrier creams that I remember using, and helps protect the baby's skin.

Another problem is leakage. Some designs of nappies are particularly prone to leaking – especially cloth ones with a disposable core. This is not only inconvenient, in terms of changing nappies more often it also means more laundry of both baby clothes and bed-linen.

### Dry nights

Some committed users of cloth nappies switch to disposables at night because of their superior performance.

## Cost and Convenience

One of the most persuasive arguments for cloth nappies is the potential cost savings. But these may not be as substantial as they first appear. With disposables you're paying almost all the costs up-front when you buy the nappies. But with cloth nappies, you also have to consider the costs of electricity, detergent, water and any other materials used for cleaning and drying.

Detailed cost comparisons carried out by a specialized consultant a few years ago concluded that using a nappy service to clean your cloth nappies at that time was by far the most expensive option. And rather surprisingly, that if you used what they call 'high end cloth nappies' you will still be paying more than for using disposables. But for 'low end cloth nappies' you would be saving money – although the performance won't be so good.

It's important to point out though that the costs of cloth nappies will very much depend on the system you use for cleaning and drying them. Other key factors that were not considered were sharing nappies with more than one baby, using a combination of cloth and disposable nappies or the potential costs of having to wash other laundry at a higher temperature along with the nappies.

Most people consider disposables to be the most convenient option, which is presumably why, even with their improved design, cloth nappies are still a niche product.

## Energy & Water

### Carbon Footprint Of Nappies

On average the disposable nappies worn by a baby for 2.5 years will contribute to 550kg of CO2 equivalents and for cloth nappies it's 570kg of CO2 equivalent.

The number of variables when comparing the life cycle energy impacts of disposables and cloth nappies mean that one can only come to some broad conclusions. The first is that if you take the average use of a washer and tumble dryer then more energy is used for reusable cloth nappies than for disposables. But these energy figures are highly dependent on the way the nappies are laundered.

To reduce the amount of energy used by as much as 40% of the average, you would need to do three things: 1. Wash nappies as part of a full load, presumably with other washing; 2. Outdoor line drying all the time; and 3. Reuse nappies on a second child. There may be some people who manage all these things - even with the British

or moderate European climate - but not many. In Southern Europe, with hotter climate, outside drying might prevail, but gains get compensated by higher wash temperature for hygiene reasons.

And you could actually increase the energy impact by as much as 43% if you tumble dry all reusable nappies and a further 31% if you wash at 90C rather than 60C.

More water is used in the life cycle of cloth nappies because of washing, soaking and disinfecting. Dry storage of dirty nappies avoids using sterilising solution and soaking.

The best way of reducing the environmental impact of clothes washing is to **wash at low temperatures – 30 C or even lower**. However, cloth nappies should be washed at 60 C for best hygiene results. Any higher than this is wasteful and unnecessary.

## To Rot Or Not To Rot

Pending the type of nappy, up to 50% of an unused nappy contains biodegradable material, and 80% of a used one. Most people think it would be a good thing to make them more biodegradable. But this is not currently the case. Laws covering landfill sites - where most nappies in Europe will end up - are aimed at reducing the amount of biodegradable waste put into them. This is because the gases released by the rotting process are difficult to capture and will therefore contribute to climate change.

It is technically feasible for nappies to be composted in industrial systems (but not at home), along with food waste. In fact this is done for example in Belgium, where their 'bio-waste' bin includes both nappies and kitchen waste. But in most other countries it seems that this approach would not go down well with waste collectors. They say that nappies are to be composted they'd need to be collected separately. This could be a logistical nightmare and may not be such a good idea from an energy point of view either.

There's also the problem of removing the plastic components of the nappy from the pulp and poo. More or less the same arguments apply to nappies being put into anaerobic digesters (AD), which is like an enclosed composting system, where the gas is collected and used for electricity or fuel.

You may have spotted that there's a bit of a chicken and egg issue here. You don't want biodegradable nappies ending up in landfill sites, so there's no point making them more biodegradable now. But the fact that they're not completely biodegradable means that they're not great for composting or AD systems.

My view is that this must change in the not too distant future. The nappy industry and local authorities need to work together in coming up with a good solution for waste nappies. And I think they should certainly be reclaiming energy in the process.

### Recycling Nappies

A nappy recycling service has been trialled in the US and some European countries. The current idea is to collect used nappies from hospitals and nursing homes and recycle the plastic components into roofing tiles and other products. It has not yet demonstrated that it's either financially viable or environmentally worthwhile.



## Summary

My conclusion is that choosing cloth nappies over disposables is a labour of love – and I'm not convinced it's worth the effort.

To be fair, I should say that if you're prepared to put up with the inconvenience – and perhaps even compromise on performance – you can do better with reusable cloth nappies. But I think this should be looked at in the context of other eco-measures you could make. For example, if you drove a daily average of around 3 miles (nearly 5km) less, you'd reduce your carbon footprint by more than the total amount produced from having your child in nappies.

My biggest concern about disposables is that they do produce more waste than cloth nappies – I'm hoping for some innovative solutions to this problem. They do however win out on the energy stakes and do surprisingly well on cost comparisons.

Further good news for those of us who choose disposables is they're getting more efficient all the time – more light-weight, more absorbent and better for a baby's skin health. And the fact that they're effective throughout the night means that both you and your baby can sleep through.

### Biodegradable Claims

I'm amazed to see the biodegradability claims on supposedly 'eco' disposable nappies. They say things like 'based on biodegradable ingredients' or 'made with more than 50% biodegradable materials and renewable materials wherever possible' or 'they are virtually 100% biodegradable due to the extensive use of eco-friendly materials'.

These claims are hugely misleading and pretty well meaningless. None of them explain in any detail why nearly biodegradable nappies benefit the environment, they just assume they're better and that consumers will think so too.

Given that these nappies along with other disposables will almost certainly end up in land fill sites, you have to consider what happens to them there. The extra biodegradable components will presumably rot and thereby release methane into the atmosphere. This is a potent greenhouse gas – 24 times worse than CO<sub>2</sub>.

The benefits of increased biodegradability can only be had if the nappies are composted or put into an anaerobic digester (see above). This is not happening broadly across Europe, which makes the claims nonsense – and misleading as well.





**Greenest  
Nappies**

Julia Hailes

November  
2010