



## Ask Leo

### Your ethical dilemmas sorted

**Which programme on my washing machine is more economical with energy: the quick one, which washes at 50c and lasts 32 minutes, or the delicate one, which washes at 30c but takes 80 minutes?**

**Janet Goldman, London**

As a general rule, the lower the temperature setting of the washing programme, the less energy will be required, even if the cycle takes a bit longer. A typical 6kg load uses about 17 litres of water during the washing cycle and, as most machines are now cold-fill only, this water must be heated up by the machine itself (which is more energy efficient than using a hot-fill machine partly because modern machines know exactly how much hot water they require).

According to a government-sanctioned test conducted last year, an average "A"-rated washing machine will use 1.22kWh during a 90C cycle, 0.94kWh during a 60C cycle and 0.56kWh during a 40C cycle. Most of this energy will be used up heating the water to the required temperature, as opposed to rotating and spinning the washing. With washing machines being used on average 270 times a year, it is

easy to see their significance in terms of domestic energy use.

But there are some variables to consider. The same test also found that there are easy ways to further increase the efficiency of your machine. These include always filling the drum to its capacity (but not overloading it), and not using half-load settings as these almost always use more than half the energy. (Conversely, "fast wash" or "intensive" programmes are normally more energy efficient.)

Using the correct dosage of detergent is also important. "Underdose" and you might need to rewash your load. "Overdose" and the machine will need to perform an extra rinse. If the load is heavily soiled, it is better to use a suitably higher temperature to prevent the need to rewash the clothes.

And if you are air-drying your clothes outside, use a gentle spin cycle to save energy. It will also mean that less ironing is required. If, however, you are air drying indoors using heat from a radiator, or - gulp - using a tumble dryer, then a high-velocity spin is the more efficient way to extract the water from the load.

**Leo Hickman**

## The green room

### Sarah Beeny, TV presenter

**What is your biggest guilty green secret?**

Plastic bags have to be among the most damaging forms of environmental pollution. I feel guilty about using them.

**Do you know your carbon footprint?**

It's probably quite big as I'm on the road a lot - although I nearly always take public transport. I recycle where possible and try to buy and use less.

**What was the last green thing you did?**

I spent Sunday with my children in London's Battersea Park, then planted three new trees at home. I'm helping with the Big Green Challenge, a £1m prize fund for communities that find the best ways to tackle climate change.

**What is your favourite green habit?**

I use as few cleaning and beauty products as

possible and I try to avoid using bleach.

**What wakes you up in a sweat in the middle of the night?**

My children. I also worry about the speed at which we seem to be damaging the environment. The fact that environmental issues often appear to be used as a way to make money rather than to improve our effect on the environment makes me fume.

**What skill do you have for a post-oil world?**

Through my job, I see many houses where people are fitting insulation and energy-saving appliances. But some people are not yet getting it. I hope I can help them see the difference that taking a little action can make.

**What would you save, apart from your family and friends, come the floods?**

My photo albums - I am a sentimentalist!

Sarah Beeny presents Channel 4's Property Ladder and is supporting the National Endowment for Science, Technology and the Arts' Big Green Challenge ([www.biggreenchallenge.org.uk](http://www.biggreenchallenge.org.uk))

entire world's excreta had been turned into fertiliser for our crops in 2000, it would have been worth (using 1975 prices) \$18.67bn. (It was reported this week that some farmers in Zimbabwe have started to use human excrement as fertiliser because of shortages of ammonium nitrate.) Moreover, when it is collected and sealed up so that it undergoes anaerobic digestion, it also produces biogas as a side product. Biogas can be used to fuel cooking stoves and heating systems. It can even be used to power cars.

The world is slowly coming round to Jenkins' way of thinking. By 2010, China aims to have 50m households operating biogas systems, which harvest excreta and turn it into biogas and fertiliser. In Uganda, farmers are being taught how to make biogas using human excreta along with other organic waste, and in Sweden they already make an extra strong version, which includes biogas from rotting animal carcasses, and they even run trains on the stuff. There is no place for squeamishness in the brave new world.

### Whey

You wouldn't imagine that cheesemakers and floor contractors would have much in common, but some thoughtful food scientists have changed all that. A team at the University of Burlington in Vermont has developed a method of using whey, a waste product from cheese, as a floor covering. The whey protein is apparently a perfect binding agent, which means that it can replace the highly toxic solvents usually used in wood floor coverings.

Andrew Meyer, who runs Vermont Natural Coatings, the company that has been selling this floor covering for just under a year, has had good feedback from his customers. "I've had floor contractors, who have been using one particular product for many years, try this out, and they've said that when they finish the day now they don't have the usual headache, or the usual agitation. There's much less off-gassing with this product, you don't have to move out if you want to varnish your floors."

The farmers are happy, the environmental officers are happy, and the floors are gleaming. What more could you ask?

### Road power

It is kind of a vicious circle, but at least Dutch company Road Energy Systems is deriving some benefit from heavy traffic. It has developed a road that has an asphalt layer (which is very effective at conducting heat) on top of a system of water-bearing pipes. The water absorbs heat generated by vehicles on the road surface and from the sun. It is then piped away and stored thermally until needed. It is then piped to buildings, where it is used to heat the air. There is already one system in operation that powers four office blocks in Scharwoude in the Netherlands, but whether it will be used more widely remains to be seen. ●

Share your radical ideas for recycling waste at [guardian.co.uk/environment](http://guardian.co.uk/environment)



PHOTOGRAPH ODD ANDERSEN



If London follows Stockholm, crowded platforms might be used to provide energy

Body warmth to power heating. Trucks that run on chocolate. Floors coated with cheese. **Bibi van der Zee** looks at new ways of turning our waste to good use

# Crazy idea, but it might just work

## Body heat

In Stockholm, they are going to capture the body heat generated by all the passengers at the central train station to heat water, which will be piped to the next-door office and used to heat the building.

It is an inspiration in terms of lateral thinking, but it was also done with such ease and lack of discussion and argument that it feels as if it should be contravening some obscure unitary development agreement, or some other typical obstacle to common sense. Karl Sundholm, of building managers Jernhusen AB, explains: "We were just sitting in a meeting, chatting and drinking coffee, and the idea popped up. Someone pointed out of the window to the railway station and said, 'What about all that heat over there?' We did a couple of drawings and that was it."

They have finished the design stage, and are now finalising the details. Work is due to start in the autumn. The predicted cost is about £23,000, and they expect that it will reduce their heating bills by about 15%. "It's not so complicated," says Sundholm. "Just a couple of

pipes and water pumps. Actually, I'm surprised no one thought of it before."

## Chocolate

Chocolate, of course, has always been one of the major forces for good in this world, so news that waste chocolate is being turned into a carbon-neutral fuel, thereby solving all our problems, should be no surprise to anyone.

Chocolate factories produce a lot of waste, equivalent to 5-10% of their total output, which usually goes into animal feed or straight to landfill. But now Ecotec, a UK bio-diesel firm, has worked out how to turn it into fuel. Biofuels from purpose-grown crops are looking increasingly problematic for the environment, whereas biofuels made from waste products are, quite simply, a good thing.

A little chocolate goes a long way, too, as Ecotec discovered when it recently powered a truck all the way across the Sahara. Although it took four tonnes of refined chocolate waste to power the trip, that is just a small percentage of the UK's annual chocolate waste.

Ecotec is also looking into other forms of

food waste. As far as carbon neutral transport goes, nothing will ever beat your own feet, or a bicycle. But chocolate power has got to be better than any fossil fuel.

## Human excrement

Fecophobia, an irrational fear of human excrement, is incredibly common in the modern world. In his cult 1995 book *The Humanure Handbook*, Joseph Jenkins (who gave the phobia its name) tried to get us to face up to this absurdity, pointing out that in the west we take for granted the idea that "you take your dump into a large bowl of drinking water, then flush it". Why do we believe this to be the civilised thing to do, he asked. And what a waste.

He went on. "Where does the flushed material go? What would happen if everyone in the world crapped in their drinking water supplies? Why doesn't any other land mammal defecate deliberately in water? Why do we?"

Human excreta, or "night soil" as it is known in some cultures, is actually a potential goldmine, he said, calculating that if the