



How genuine are 'natural' products?

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CLEAN AND NATURAL: Brigid Hardy with her BEE range of cleaning products.

They announce themselves quietly in understated packaging, frowning down on the neon hues of their conventional cleaning cousins, but their claims are bold: "Naturally powerful, naturally kind", "no nasty chemicals", "caring for the environment" - and many are unsubstantiated.

Browse any supermarket and you'll find no fewer than a dozen cleaning products labelled eco-this, green-that. Despite the earth-love monikers, this is no hippy cottage industry. This is big business.

Kiwi brand Ecostore's annual turnover is approaching \$30 million. Rival Earthwise sold \$2.2m of eco products in 2011, and its 285 per cent growth in Foodstuffs supermarkets made it the third-fastest-growing cleaning brand, behind Ajax and Dettol.

But with the proliferation of eco products has come a surge in vague green claims. The problem is distinguishing the genuine from the dodgy. And can a cleaning product ever really be environmentally kind? Earthwise's "naturally powerful, environmentally kind" dishwasher powder was last year found to have an illegally high, corrosive pH.

To answer that question it helps to borrow a scientist. Auckland University of Technology environmental chemist John Robertson selects an eco all-purpose cleaner, scans the ingredients and looks up the material safety data sheets:

Alkyl polyglycoside - fatty chain with sugar-based end, pretty good surfactant (soap), breaks down nicely; Ethyl alcohol and acetic acid - bog-standard safe; Food-grade dye - dodgy one, almost certainly going to be a petrochemical and not going to break down that easily; Lemon fragrance - probably contains limonene, comfortable with it being there but it isn't 100 per cent friendly; Filtered water - amusing, who cares about the filtered?

The verdict: OK, as long as you don't worry about the environmental cost of making the ingredients (ethyl alcohol and acetic acid could come from cow's milk whey, and keeping cows is decidedly not environmentally friendly).

He examines a disinfectant from the same eco range. "I don't think that is incredibly friendly actually.

"Disinfectants are by definition going to be hard to break down, because you're trying to kill bugs and it's bugs that break them down."

Robertson views eco products with cynicism, partly because eco means different things to different people, from any product that breaks down quickly and leaves no undesirable residues; to plant or mineral-based products made only from renewable resources and which consider the total environmental cost of production; and back-to-basics DIY cleaning solutions, such as vinegar and baking soda.

The terminology is vague. One of the most common greenwash marketing terms is biodegradable, which is meaningless unless you know how long the process takes and what the end products are.

"When you see things like biodegradability, that's not necessarily a good thing," says Victoria University chemistry professor Kate McGrath.

"What they degrade to can be important."

Take a phosphate-based detergent. As it breaks down, it can release phosphates into waterways, fuelling excessive growth of vegetation, which eventually dies, reducing oxygen levels and killing fish.

Then there's the ubiquitous "natural" and "naturally derived", playing on the pervasive public perception that chemicals are all cancer-causing evils.

Ask a scientist if a natural or naturally-derived product is necessarily better for people or the environment and they are likely to chuckle.

Arsenic anyone? Deadly nightshade? Pine sap distilled to carcinogenic creosote? They are all natural and all thoroughly nasty.

In most cleaning products, the active ingredient is a surfactant, or soap molecule. Its balloon and string-type structure consists of one end that loves water (the balloon) and one end that hates water (the string). Once in water, the molecules congregate in a sphere, with all the balloons on the outside and the strings on the inside. The sphere's interior is a water-free zone which picks up oil and dirt, while the water-loving exterior allows it to be washed away.

Most commercial surfactants are derived from petrochemicals, but those made from plants work the same way, says McGrath, who has spent years studying surfactants. "I think people get swayed by wording like 'biodegradability' and 'naturally derived', but the actual chemistry between the natural product and the synthesised product is very, very similar."

While plant-based surfactants come from a more sustainable source, unless they are derived from palm oil produced by clearing rainforest, they are not necessarily safer, McGrath says.

Take coconut-oil-derived sodium lauryl sulfate. Widely used in "natural" shampoos, it is a known skin and eye irritant and is "extraordinarily toxic" if eaten pure. "The problem is not natural versus synthetic. The problem is understanding the full cycle of a molecule in different environments. A synthetic one may be infinitely better than the wrong choice of natural one."

Landcare Research environmental adviser Chris Bailey points out that one of the worst waterway pollutants is milk.

"People don't tend to pause and think about how being natural applies to the situation and why it makes it better?" he says. "Natural products can be just as deadly as artificial ones."

The National Poisons Centre handles about six cases of cleaning-product-related poisonings a day.

Toxicologist Leo Schep says the brands implicated reflect market share, and there's nothing to suggest natural products are any less toxic.

In fact, the opposite could be true: extracting a chemical from a plant, you potentially get other contaminants along with the active ingredient, as opposed to a pure synthesised product. "From a toxicology point of view, I'd go with the pure product any day of the week."

Cawthron Institute ecotoxicologist Louis Tremblay is researching the soup of contaminants that make it to our sewage-treatment systems.

Potential nasties range from drug and caffeine traces to triclosan, an antimicrobial agent found in toothpaste and antibacterial soaps which can kill good bugs in sewage-treatment systems and is at present under Food and Drug Administration review in the United States because of animal studies showing it alters hormone regulation.

One thing to watch out for in eco ranges, Tremblay says, is shampoos and liquid soaps, because they usually contain antimicrobial agents.

While the most environmentally friendly options are back-to-basic cleaners, such as baking soda and vinegar, eco products are usually a step up from mainstream brands, he says. "At least they bring the culture of people should think before they buy."

In the case of most eco cleaning products, "natural" means that the ingredients are derived from plants or minerals instead of petrochemicals.

But it's far from a case of taking a bit of plant stalk and squeezing out some detergent.

"It's a chemical process," says Ecostore founder Malcolm Rands.

"We actually talk about nasty chemicals. We don't say no chemicals, because even water is a chemical. It's very clever hi-tech chemistry. It's not something you can mix up in a bathtub out the back."

Rands agrees that some petrochemical products are benign and biodegrade well, whereas some plant-derived ingredients are toxic. Like McGrath, he cites sodium lauryl sulfate. "There's a big misconception that everything that is plant-based is all lovey-dovey. No way. It has to be done chemical by chemical."

Ecostore uses plant-based ingredients not because they are necessarily safer, but because the source is more sustainable than petrochemicals which, after all, were also plants once.

Niche eco brand BEE liberally sprinkles "natural" through its marketing material. However, founder Brigid Hardy acknowledges that even her plant-derived products are still best described as "household cleaning chemicals", and being naturally derived does not make an ingredient safer.

Take d-limonene, an extract from citrus and a powerful solvent. Before launching her range, Hardy had it as the key ingredient in her surface cleaner. Then she found out it was banned by accreditation programme Environmental Choice, because it's an irritant and can be toxic to fish. "Something like that is counterintuitive for a consumer who might be looking for a safe product and think that a natural product is going to answer that. The area is very complex and consumers are very vulnerable."

Earthwise director Jamie Peters, however, appears not to have given the issue much thought.

Asked why Earthwise focuses on plant and mineral-derived ingredients, rather than selecting the most environmentally responsible option, synthetic or naturally derived, his response is: "I don't really understand the question. It's about us as a company. That's what we do. It's about choice. It's about our view on how we think the product should be made. It's about the environment. It's Earthwise."

The fact that natural isn't necessarily better doesn't mean that genuine eco products aren't kinder to the environment. It just makes it harder to separate the legitimate from the dubious.

For the conscientious consumer, the influential Environmental Working Group's Skin Deep cosmetics database provides comprehensive analysis and toxicity ratings for a wide range of ingredients. In the absence of a rent-a-chemist personal shopper, the easiest guide to credibility is third-party accreditation, but even that can be confusing, because there is no single eco label encompassing everything from sustainability of ingredient source to manufacturing energy efficiency to toxicity of factory and detergent waste.

Within Ecostore's range there are three different eco certifications - Environmental Choice, Enviromark and EU Ecolabel.

Government-backed Environmental Choice accreditation is the best indication that any individual product is "environmentally preferable". It also checks that the product actually works. Tellingly, its specifications do not consider whether an ingredient is naturally derived.

"Natural, in itself, I believe, is meaningless," says Environmental Choice GM and Global Ecolabelling Network chairman Robin Taylor. "We are looking at ingredients and their specific impacts, and minimising those impacts. In some cases, our manufacturers use natural and synthetic ingredients, because they happen to be the best and safest in terms of formulation."

He is also careful to point out that "nothing is actually environmentally friendly".

"If you start claiming things are good for the environment, it's greenwash."

But even Environmental Choice can be inconsistent, allowing phosphates, which are banned in many

countries, in its laundry and machine dishwashing detergents, partly because phosphate levels in New Zealand are driven by agriculture, rather than household discharges. Which sounds a lot like New Zealand saying that there is no point trying to reduce its greenhouse gas emissions, because China's will always be far worse.

Does buying green make a difference anyway? British environmental commentator George Monbiot calls green consumerism "a pox on the planet" - a way for the middle class to assuage their guilt instead of taking political action to spur real change.

BEE founder and former human rights lawyer Brigid Hardy strongly disagrees. Her company is negotiating a possible deal to sell to United States megachains Walmart and Target.

"I see quite the opposite - this is a call to action. Money is what makes the world go round.

"When you really look at who is making the decisions, Walmart is more powerful than the UN. Have an impact with Walmart and you'll make more difference in everyday life."

THE GREEN PLAYERS

NZ MADE

BEE (Beauty Engineered for Ever): Brand claims: "Kind/gentle/good to the environment"; "natural ingredients".

Launched in 2003 by Harvard law graduate and former human rights lawyer Brigid Hardy.

Only brand with full range (six products) certified by Environmental Choice from day one.

Primarily plant and mineral-based ingredients. No ingredient details on website - available on request.

DOWN TO EARTH: Brand claims: "Biodegradable", "caring for the environment", "for a cleaner world".

Dishwash and laundry products. Owned by PZ Cussons, which also makes conventional cleaners Morning Fresh and Reflect.

No indication of independent certification. No ingredient information on packaging or PZ Cussons website. Listed brand website does not exist.

EARTHWISE: Brand claims: "Naturally powerful, naturally kind"; "environmentally kind".

Founded in 1964 by Tom Robinson, whose sons still work for Earthwise.

Plant and mineral-based ingredients - no phosphates, nitrates, chlorine or ammonia.

In August, Consumer magazine testing found dishwasher powder had a pH of 13.2 - above the maximum of 12.5 required by the Cleaning Products (Corrosive) Group Standard. Director Jamie Peters says they were pH testing at the wrong time and the problem has been fixed.

Despite a story last July saying Peters was signing off packaging featuring the Environmental Choice logo, Earthwise is still working towards certification. "It's taken longer than it should have," Peters says. The final audit is due this month.

Vague ingredient descriptions (no chemical names). Peters says new packaging will have full ingredient disclosure.

NEXT GENERATION: Brand claims: "No phosphates", "biodegradable", "caring for our environment".

Parent company Quantum Pacific, established in 1999 by Barry and Leanne Robertson.

Website states "use of synthetic chemicals has increased over the years, so have illnesses such as cancer and asthma and many experts see a clear connection between the two". But Quantum Pacific also makes non

"eco" products Ceraclen cooktop cleaner and Active dishwash products.

Vague ingredient descriptions on website (no chemical names). Green Tick certified "sustainable".

Barry Robertson did not respond to interview requests.

ECOSTORE: Brand claims: "No nasty chemicals".

Founded in 1993, by Malcolm Rands. Grew out of a mail-order business run out of a Tutukaka ecovillage.

Plant and mineral-based ingredients.

Factory is Enviromark Diamond certified. Some products certified by Environmental Choice (hand dishwash liquid; machine dishwash powder and rinse aid; laundry powder, liquid and stain remover).

In 2010, laundry powder found to have pH of 11.8 - above level requiring childproof packaging; product was reformulated.

Full ingredient disclosure online.

FROM OFFSHORE

GREEN WORKS: Brand claims: Global packaging now says "naturally- derived", but New Zealand packaging still claims "natural".

Made by global conventional cleaning manufacturer Clorox. Claims ingredients are plant and mineral-based, renewable, biodegradable and petrochemical-free. New Zealand website includes vague ingredient descriptions; US website contains detailed ingredient lists.

Certified by US Environmental Protection Agency's Design for the Environment programme.

ECOVER: Brand claims: "Powered by nature".

Founded in 1980 in Belgium. First producer of phosphate-free laundry powder.

Plant and mineral-based ingredients. Uses "green" electricity and living factory-roof insulation.

THE GREEN POLICE REVIEWED

ENVIRONMENTAL CHOICE: Established in 1992, Environmental Choice is government owned and operated by the New Zealand Ecolabelling Trust and is a member of the Global Ecolabelling Network.

Generally recognised as New Zealand's most comprehensive and robust product-focused certification, it certifies cleaning products from 10 companies.

It focuses on the lifecycle of individual products, with detailed specifications spanning the toxicity of ingredients, waste and energy management, consumer information and packaging. Products are also tested for effectiveness.

The certification process involves extensive product testing, third-party on-site audit, review of paperwork and processes. Compliance is audited annually.

Weaknesses: For cleaners, it doesn't test whether ingredients come from a sustainable source. Specification inconsistencies - phosphates are excluded from hand-dishwash detergents and general-purpose cleaners, but not from laundry detergents or machine dishwashing detergents. Specifications are developed with the industry, so the bar is set at what is considered commercially achievable.

ENVIROMARK: Based on the British programme, launched in New Zealand in 2001, owned and managed by Crown Research Institute Landcare Research.

Focuses on process - how the company assesses and manages its environmental impact. Lifecycle

approach, considering all inputs, such as the sustainability of raw materials and energy use, and outputs, such as the safe disposal of waste. Assessed by third-party auditors.

Divides international environmental management system assessment standard ISO14001 into five parts, certified as bronze, silver, gold, platinum or diamond.

Weaknesses: All company products can be labelled with the Enviromark logo, but individual products are not specifically tested. Five-step certification can be misleading - Enviromark bronze just means a company is considering environmental impact and complying with the law; measurable improvements are not required until the gold level.

GREEN TICK: Launched in 2001 by Wellington couple Susan and Ashley Harris, part-owned by Far North Mayor Wayne Brown.

Products are assessed against 20 criteria based on lifecycle, legal compliance, waste reduction and disposal programmes, and raw material source. Random sample of products assessed for resource use, product origin and labelling, and to ensure the product quality meets "legal and/or industry best practice". Assessed by third-party auditors, including site visit; assessment reports are available online. Certification is valid for two years.

Certifies cleaning products from one company.

Weaknesses: Largely focuses on company process and policies. Limited product testing - no ingredient specifications. Products not individually certified - Green Tick awarded across product range. Not a product performance test. Ecostore was the first Green Tick-certified brand, but founder Malcolm Rands says it left because "the bar was way too low - it was almost greenwash". Principal scientist Susan Harris says those concerns were never raised with her.

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