



# Zero Waste Update

July 2005 Issue 46

**Mission Statement:** "To encourage and motivate all sectors of New Zealand society to work towards a target of zero waste."

## Isotope fingerprinting will keep tabs on leachate

A new technique for monitoring landfill leachate is being developed by award winning scientist and zero waste proponent, Jessica North.

Ms North, who describes herself as a 'zero waste crusader' recently won the 2005 MacDiarmid Young Scientist of the Year award for her research into a technique to identify contamination of ground water from landfills.

The new technology, still in the development phase, could lead to greater protection of water supplies, and its use may be included in management conditions for landfills.

Ms North is based in Dunedin and is completing her PhD in Environmental Chemistry at the University of Otago.

Using emerging techniques in the field of environmental forensics, she has developed isotope fingerprinting technology to provide conclusive information on whether harmful leachate, which can seep from landfills, is contaminating water supplies and damaging ecosystems in the surrounding area.

Leachate is a toxic liquid produced by landfills as buried rubbish decomposes over time.

The microbes that decompose rubbish in a landfill cause a unique change in the isotope values of the leachate, meaning that its presence in water can often be positively identified when samples are taken to the lab.

Stable isotope technology has been used by geologists for 40 years and is now being adapted for other uses, with Ms North's research putting New Zealand at the forefront of that trend.

At present, leachate monitoring by environmental technicians uses a raft of conventional parameters such as chloride, ammonia, alkalinity, acidity (pH) and chemical tests or analyses.

"In a lot of situations the conventional approach does not give a conclusive answer, because the landfills are in areas with a naturally high background presence of chloride and ammonia, such as in wetlands, or of chloride in marine deposits," she says.

"It also depends on the landfill liner, as clay can absorb chloride, so other components may be getting out, and it skews the results."

This research is still in the development stage, and although results have been positive so far, it has only been used at six test sites.

"I have been sampling six sites, although only four are my 'core' research landfills. One is a closed site, the others are currently active. The sites are located throughout New Zealand," she says. "Due to the logistics involved in sampling, I'm limiting further research to four sites."

Ms North is also trying to improve the ease of the new tests. At the moment sample preparation is complicated. There are four different isotopes to test for and two of them are easy to sample and analyse. The other two are quite complicated to test, and her aim is simplify the process. During her research she has collaborated with Waste Management and its engineering manager – landfills, Bruce Horide says the technology being developed could help to

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*Jessica North with a leachate sample being prepared for isotope testing.*

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## Zero Waste Update

is the newsletter of

**Zero Waste New Zealand Trust**

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### Foundation Suspends sponsorship

Councils interested in buying cigarette butt bins will now have to approach the supply company direct after the Lion Foundation temporarily suspended funding approvals for the Cig Butt Bin.

Auckland City Council and Rotorua District Council have both received more than 150 bins each, sponsored by the Lion Foundation.

Since then, the Foundation has "pulled the pin on applications" says a director of Environmental Innovations NZ Ltd, Colin Henderson.

"The Foundation has said no further applications will be granted meantime and is unsure when the next round of applications might be."

Some Councils are taking their application for sponsorship of the bins to other funders, such as their local pub charity, he says.

The company had offered to supply the Lion Foundation with the bins at a special bulk price of \$150 plus gst, (a reduction of \$48 per bin).

"We have extended this offer to all the councils whose applications are stalled by the Foundation, and we will still apply the individual council logos at that price," says Mr Henderson.

Environmental Innovations gives a percentage of the sale of each Cig Butt Bin to help support the work of the Zero Waste New Zealand Trust. Environmental Innovations can be contacted on 09 4181461 or email [colhend@kiwilink.co.nz](mailto:colhend@kiwilink.co.nz)

## Isotope fingerprinting

*(Continued from page 1)*

positively define and resolve "potentially huge environmental problems in New Zealand".

"Right now if you find contamination in water supplies near a landfill, it's difficult to be sure if it comes from the landfill or other sources such as agricultural or industrial sites. Stable isotope technology gives us much more certainty." He says New Zealand has more than 900 landfill sites around the country, although less than 200 landfills are open and operating, 'and very few have systems to prevent leachate leaking so the potential for damage is significant'.

Mr Horide says many existing tests fail to identify the exact cause of pollution, because the water chemistry profile changes as it flows through soil. "Jessica's technique can pick up the likelihood of leachate regardless," he says.

The technology has already been used in some commercial applications and the Otago Regional Council may become one of the first regulatory authorities in the world to include isotopic fingerprinting as part of the monitoring required when resource consents are issued for landfills.

The council's compliance manager, Alison Lane, says the Council is taking a keen interest in Jessica's research 'which has the potential to give us better information and pinpoint the source of contamination'.

"In Otago alone there are over 100 closed landfill sites and many operating landfills, and leachate from these can get into both ground and surface water. We are always on guard for evidence of pollution as the potential impact is particularly dangerous if it gets into surface water supplies."

Ms North says her 'passion' for mitigating the effects of waste dates back to her first year of university study in Thailand.

"I was working for a trekking company and, because I speak Thai, I got to talk to many locals who showed me hillsides littered with rubbish left by tourists."

Since then she has worked in a number of environmental roles for local and central government agencies in Thailand. As well as completing her PhD, she is an environmental consultant for Iso-trace NZ, a stable isotope laboratory offering analysis for environmental, research, forensic and commercial purposes.

### Have your say on waste issues !

Zero Waste's website now has a public forum for online discussion. You can have your say on waste issues by selecting the Waste Forum [link on our home page at www.zerowaste.co.nz](http://www.zerowaste.co.nz)

Once inside the forum you can become a registered user or just visit as a guest. You can comment on any of the topics posted by selecting the 'reply now' button at the bottom of any topic. Or you can start your own topic thread by posting a new topic. We have posted some questions that you might like to comment on, and/or ask your local politicians these questions before the election. We look forward to seeing your comments online.

# Land-banks best option for waste resources

Recyclable materials should be banned from landfills, and other materials sorted and land-banked for future use, says chief executive of the Zero Waste New Zealand Trust, Jo Knight.

“Those plastics that are not recycled at present, should be land-banked. They are a petrochemical product and they can only increase in value as the price of oil goes up.”

“Tipping a mix of waste products into holes in the ground is an out-of-date activity,” says Ms Knight. “It’s the same technique as neanderthal man was using. Apart from leaving a delight for archaeologists in the future, waste companies should no longer be putting recyclables, (including green waste and kitchen waste). into those landfills,” she says.

While the reduction of landfills to less than 100 sites around New Zealand is pleasing, several important issues remain, says Ms Knight.

“Hundreds of closed landfills around New Zealand will require expensive monitoring and maintenance. Leachate ground water contamination and gas emissions remain a risk at these sites – some 900 around the country.

“There are huge costs associated with establishing the large new regional landfills such as Hampton Downs (Waikato) and Kate Valley (Canterbury) which cost \$25 and \$35 million dollars. Hopefully they are among the last we build in New Zealand.

“Mixed landfills, no matter how well designed, are a huge waste of materials,” she says.

“Nothing should be sent to landfill that we can find a recyclable use for - these materials should be land-banked. A lot of the infrastructure and technology for re-use is available overseas, but is not being used here”, she says.

“We need to make reuse and recycling easier than consigning material to the refuse. Recycling needs to become

the normal activity of every New Zealander.

More than half the councils in New Zealand have committed to the goal of Zero Waste, and some councils have done particularly well in reducing their waste and diverting it from landfill. Two examples are the Opotiki district with around 80 per cent diversion and the McKenzie district that has 76 per cent diversion from landfill.

**“What is needed now, is some assistance and leadership to create secondary industries that will use that waste as a resource. These include for example, industries that can convert plastic to diesel, plastics to synthetic wood, and glass to sand,” says Ms Knight.**

“People in these industries often find it difficult to set up and survive. Landfill levies, are an economic instrument which could allow councils to provide cheap land for these industries and interest-free establishment grants to allow purchase or lease of machinery.

“People are frustrated that there is often funding for writing numerous research reports, but there is little finance available for development and implementation, she says.

“This contrasts with the costs of landfill development and the significant costs they incur even after they are closed. As a community we are used to spending significant money on landfills, but don’t fund an organisation to assist in the development of alternative uses, says Ms Knight..

“New Zealand needs a system for recycling the huge amounts of e-waste such as old computers and electronic equipment, all types of batteries ( other than car batteries) and pharmaceuticals. These items are very important as they contain a range of toxic compounds. Materials for which there is no infrastructure or end use at present should be sorted and land-banked for future use.



**Landfills like the \$35 million Kate Valley in North Canterbury (above) are built to take hundreds of thousands of tonnes of waste and resources over the next 35 years.**

# Inorganic waste, junk mail in new bylaw

Waitakere City has passed a new bylaw for its progressive waste minimisation programme.

The council has joined forces with North Shore City to formally address all aspects of the region's waste, including collection and disposal, "scavenging" of inorganic rubbish, the distribution of unsolicited mail, waste management facilities and waste collection operations.

The changes replace the Councils' existing waste bylaw, which they had a statutory obligation to review by 2008.

The main objective of the bylaw is to standardise the city's waste management activities and support a number of national waste initiatives and central government legislation, which include the New Zealand Waste Strategy (a joint effort between the Ministry for the Environment and Local Government New Zealand), Zero Waste policies, the Litter Act, Health Act, and Local Government Act.

"The reasons we have passed this bylaw are obvious," says Councillor Vanessa Neeson, chair of the Council's Planning and Regulatory Committee. "Rubbish is increasing at astronomical rates and so are the environmental consequences of dealing with it. We need to do more to discourage the people who are creating rubbish and littering our streets."

Brief summary what Waitakere City Council's waste bylaw covers and the rationale underpinning each section.

Levies and licenses

§ **Summary:** Businesses and individuals involved in waste collection, transportation and disposal will be required to obtain a license. The councils will enter into consultation early next year to determine what levies may be required.

§ **Rationale:** The aim is to make people more responsible for the rubbish they generate. The user pays for the rising costs of disposing of rubbish.

Inorganic collections & scavenging

§ **Summary:** It will be an offence to remove inorganic waste placed out for collection if: 1) it is repeatedly being taken for the purpose of resale or commercial gain; or 2) it is removed in a manner likely to cause injury; or 3) it is scattered, damaged or broken in such a fashion that it could become a nuisance. **Note:** this part of the bylaw does not apply to licensed waste collectors contracted to Council.

§ **Rationale:** The councils have an obligation to ensure they provide a safe and orderly inorganic rubbish collection service.

**Distributing unaddressed, unsolicited material**

This part of the bylaw will not become operational until July 1, 2006. The Council is working closely with the Marketing Association to develop a national code of practice aimed at regulating the distribution of unsolicited advertising material based on these guidelines. If the outcome of this code meets the council's expectations then this part of the bylaw may be revoked.

§ **Summary:** It will be an offence to distribute or authorise the distribution of any unaddressed or unsolicited material - including newspapers, community newspapers, community newsletters, pub-

lic notices, charity appeal notices and any unaddressed, unsolicited advertising material (e.g. circulars, leaflets, brochures, flyers or magazines) - to a letterbox marked "addressed mail only." If letterboxes are marked "addressed mail and newspapers only," then addressed mail, newspapers, community newsletters and public notices are permitted. If letterboxes are marked "no junk mail," "no advertising material," or "no circulars," then newspapers, community newsletters, public notices, and charity appeal notices are permitted.

§ **Rationale:** The aim is to reduce the significant amount of waste and litter generated as a result of the distribution of unsolicited advertising. Much like central government's proposed anti-SPAM legislation, the council is telling businesses not to distribute their direct advertising to people who clearly indicate they don't want it. A recent analysis of Waitakere City street litter shows that 16.6% is junk mail. The analysis also shows that the junk mail content of litter increases by a massive 33% on the day it is delivered, costing councils tens of thousands of ratepayer dollars to clean up the mess.

**Managing waste at special events**

§ **Summary:** Special event organisers will need to produce a waste management plan when applying for consent to use a public place to host a special event. (Refer to our website for details).

§ **Rationale:** The aim is to make the user address the waste they are responsible for generating.

The bylaw also covers the other areas, including the use of public litter and recycle bins, and the provision of waste management plans for multi-unit properties that have been granted building consent after July 1, 2006.

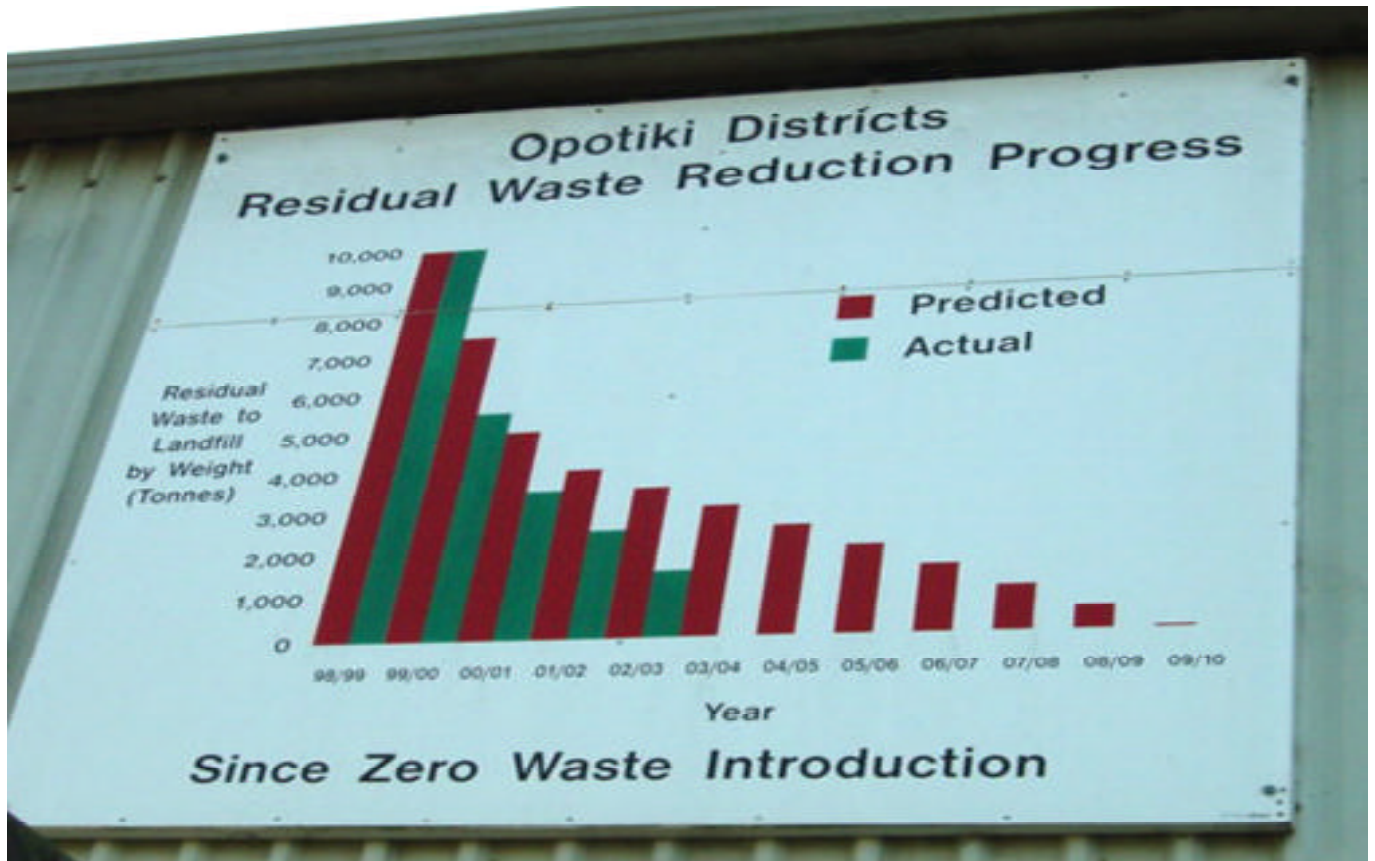
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## Combined rate for Tasman

A new combined refuse and recycling charge is proposed by the Tasman District Council in response to ratepayer protests.

The \$55 combined charge combines the contentious refuse collection rate, and the kerbside recycling charge. Earlier, a suggested targeted \$21.55 refuse collection was opposed by ratepayers and commercial refuse collectors, and was criticised in hundreds of the submissions to the council's annual plan.

The proposed new 'refuse recycling charge will cover both the kerbside recycling (previously \$50) and the refuse collection service. The council will also drop the price of its refuse bags from \$1.35 to \$1.10. The combined service will be available to 16,000 homes (80 per cent of the district), and the single target rate would mean more efficient administration, says the council's engineering manager, Peter Thomson. The council's rubbish and recycling service, provided by contractor Streetsmart, was the only integrated one available, he said.



## Green Ribbon award for scrap metal recycling

An Auckland recycling company has won a Green Ribbon sustainable business award for its environmental protection work.

Scrap Metal Recyclers of Onehunga won the award for the work it does to protect the environment from the effects of its business. The company takes a multi-faceted approach to protecting the environment from the effects of their business.

Their approach includes using alternatives to the traditional smelting operations that require less energy and do not produce air pollution; using presses and cutting equipment that reduce the need for gas cutting of steel; recycling scrap metal and plastics; in-house recycling of paper and glass; and collecting waste oils.

The Green Ribbon citation says "the company leads by example, providing a model for the development of a code of practice for the scrap metal recycling industry."

Mt Roskill MP Phil Goff visited the site recently and congratulated the company for the initiatives that have heavily reduced its environmental impact. The company ships the compacted metal overseas, for reprocessing using technology that meets strict environmental standards.

The company also has a zero waste target of its own and recycles its non-metal products such as plastic, paper and glass, as well as recycling its waste oils. Its drainage system has retention pits to prevent runoff into storm water drains while the premises has been concreted so that contaminants can be swept up and disposed of before they become harmful to the environment.

*This graph on the side of Opotiki's Resource Recovery Centre (above) shows the rapid increase in the district's waste diversion from landfill with progress ahead of expectations. Opotiki was one of the stops on the Zero Waste Bus Tour of the Northern North Island in May.*

## Sustainability Conference October 12-13

More than 350 representatives from business, academia, government, media and other NGO's are expected to converge at the Aotea Centre in Auckland for the third New Zealand Sustainable Business Conference & Expo on **12 & 13 October 2005**.

This biennial two-day event provides a platform for people to explore key issues and challenges, share ideas and experiences and to strengthen relationships, visions and practices for sustainability.

This year's theme 'Sustainability is core business : getting in step' will showcase latest knowledge and practical examples of businesses that are making decisions using sustainability criteria aimed at redefining business. The conference is hosted by the Sustainable Business Network (SBN).

To coincide with the Conference, SBN will be launching in Auckland for the first time, its innovative exhibition *GreenStreet*.

Themed to represent a sustainable community, it will showcase New Zealand's leading suppliers of sustainable products and services. In order to foster sustainable development to a wider audience, the Expo will be open to the public throughout the two days. For more information go to [www.sustainable.org.nz](http://www.sustainable.org.nz)



*It was all aboard the Zero Waste train at Ashburton in April when overseas speakers Terry McDonald, Ian Gulland, Gerry Gillespie and Mal Williams joined Zero WasteNZ Trust's Don Riesterer and Jo Knight at Wastebusters Trust Canterbury's 10 year celebrations.*

## **Zero Waste Questions to ask your local politicians**

In view of New Zealand's successful tourism industry and the use of promotions highlighting clean, green, New Zealand and 100%pure, at a cost of \$55 million a year ...

### **Q1 How much do we spend maintaining this image ?**

Some councils with a small rating base have over a million visitors each year. Apart from water and sewage these councils have to provide for the waste. Container deposit legislation will enable a small surcharge on an item, that can be refunded when that container is returned to the retailer. In some countries, this results in an 80-90 per cent return rate.

### **Q2 Are you in favour of container deposit legislation to assist with recycling ?**

To date approximately five local body councils have introduced some form of waste levy. A national levy, linked to waste initiatives, infrastructure and education would produce some national leadership, infrastructure and planning.

### **Q3 What is your view on a national waste levy ?**

Industries such as plastic lumber, and plastic to diesel already exist.

### **Q4 What is your view on burying plastic, (a high energy petrochemical) ?**

### **Q5 Would you plan to encourage these industries with financial incentives and land-bank the remaining resources ?**

There is now a mixture of councils, regional councils and the Ministry for Environment responsible for monitoring waste here. In Australia and America, they have an Environmental Protection Authority.

### **Q6 How do you think we should monitor waste in New Zealand ?**

In Australia, South Africa, Ireland, Bangladesh, and Canada, they have all managed to control the use of plastic bags, and their harmful effect on the environment.

### **Q7 Why hasn't New Zealand controlled the use of plastic shopping bags, and what would you do?**

The change to three month prescriptions by Pharmac has lead to more pharmaceutical waste (anecdotally). As part of this change a collection system by hospital boards was promulgated. We can find only three areas where any attempt to collect prescribed medicines has been put in place for the general public. Drugs are long lived and harmful to the environment.

### **Q8 What action would you advise here ?**

The Waikato and Canterbury areas have just opened large new landfills.

### **Q9 Would you be in favour of land-banking materials instead of opening large landfills ?**

### **Q10 What would you promote to encourage people towards minimising waste ?**

# Wairarapa taking responsibility

A Wairarapa community leader who took part in the Zero Waste Bus Tours this year is now extolling the benefits of waste minimisation.

Wairarapa resident, Michael Blundell is head of Waste Management Wairarapa, and was delighted with the outcome of their recent workshop, entitled "Our Rubbish – Our Responsibility".

The workshop, held in Masterton, was to discuss what waste reduction schemes have worked in other parts of the country and how Wairarapa would tackle the issue now that landfills are no longer considered to be environmentally or economically sustainable.

Masterton's landfill is due to close in 2006 and negotiations are underway to transport waste out of the area and north to Bonny Glen landfill near Wanganui – a distance of more than 150 kilometres. This is expected to cost \$90 to \$100 per tonne of rubbish, so the group is looking at diverting as much waste as possible beforehand.

Mr Blundell was pleased that everyone at the workshop agreed the commitment to diversion would have to be shared by all the community.

**"As the chairman, in the beginning I couldn't get a bulldozer fast enough to dig a hole for a new landfill," he said. Now he is committed to achieving Zero Waste by 2015.**

"We need something to aim for. The most important thing now, is that we have a consensus to find a solution," said Mr Blundell who took part in the Southern North Island Zero waste Bus Tour in March.

Another WMW group member, Jill Greathead, said the region needed to get behind the initiative because small councils simply could not afford to run landfills anymore. "The role of councils is to encourage waste minimisation and it was agreed we need to work as a region on this." The group needed to educate both the public and businesses, she said.

## Community worm farm for Remuera

A Remuera resident is making her worm farm available to local residents to learn about the benefits of vermiculture.

"I want to create a sustainable garden using natives, water features, organic vegetables and companion planting", says Sudesh Mittal who is passionate about making New Zealand a greener and healthier place to live.

The garden will have aesthetic value and be a place for children, seniors and all to visit and connect to the natural beauty in a residential urban environment, she says.

She has had a builder to construct an 8m<sup>3</sup> worm composting bin in her urban garden. Recycled materials have been sourced from the Waitakere Transfer Station including wood, wire mesh and cardboard egg cartons.

The initial organic material was delivered free of charge from a local arborist, and Sudesh and her assistants worked hard to sort the wood and green material ready for composting. She says that hedge clippings are the ideal size for easy decomposition. Carbon material such as paper and cardboard are also used.



## Glass Study on website

The feasibility study on uses for waste glass in the South Island that was done for the Zero Waste New Zealand Trust will be on our website soon. The study, funded by the Department of Labour, looks at the volumes of glass going to waste and potential secondary industries. A range of other options and activities were looked at including glass crushing for drainage and sand production, a quality kitchen surface, glass tiles, and other glass works.

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A stainless steel cigarette butt bin is shown. It has a keyhole on the side and a price tag that says "JUST \$198 +GST & Freight". The bin has a lid with a keyhole and a small logo. The background is a gradient of purple and blue.

# New Charities Commission affects NGOs

If you are one of the 35-40,000 charitable organisations in New Zealand, you will be affected by the newly formed Charities Commission that came into being on July 1.

Registration with the commission is voluntary, **but** if you want to retain your tax free status with the IRD you will have to be registered.

Registration will be required by 1<sup>st</sup> April 2007, to achieve tax free status for that entire year.

When registering, organisations will need to;

- Submit a copy of their rules, constitution etc
- Provide information about their current and proposed activities
- Name officers and provide a declaration that officers are not disqualified from holding office
- Provide specified information

Acceptance of registration will be focused on **activities rather than aims**.

The likely focus for groups involved in waste will be **public benefit**. It is unclear how this will apply to small self-help groups. Other traditional areas of charitable activity are relief of poverty, religion and education.

If charities receive gifts, that gift will be exempt if **at the time of the gift** the charity is registered.

Several related charities can register as a group, but they will have to report their finances as one entity.

You may have a letter of comfort from the IRD confirming your tax free status. These will no longer be provided, and will become redundant.

Registered charities will have to pay an annual fee and file an annual return. Work is ongoing with the IRD to achieve a one-stop shop approach to minimize compliance costs.

There is development going on in the kind of financial reports needed. Available from the Ministry of Economic Development is 'Review of Financial Reporting Act 1993' ISBN 0 478 26361 9 which was issued in November 2004.

The government has determined that registration will be free, and that annual return fees will initially be \$50 for online filing and \$75 for paper based filing of returns.

There is a provision for an exemption from all fees for a small registered charity (under \$10,000 income). The real cost could be in time needed for the preparation of accounts and reports. For further details visit [www.charities.govt.nz](http://www.charities.govt.nz), [www.ird.govt.nz](http://www.ird.govt.nz), and [www.med.govt.nz](http://www.med.govt.nz)



*Worm farmer Robbie Dick from Central Wormworx near Cromwell explains his vermicast operation to South Island Zero Waste Bus Tour participants (above). Some of the worms at work on orchard waste (below).*



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