

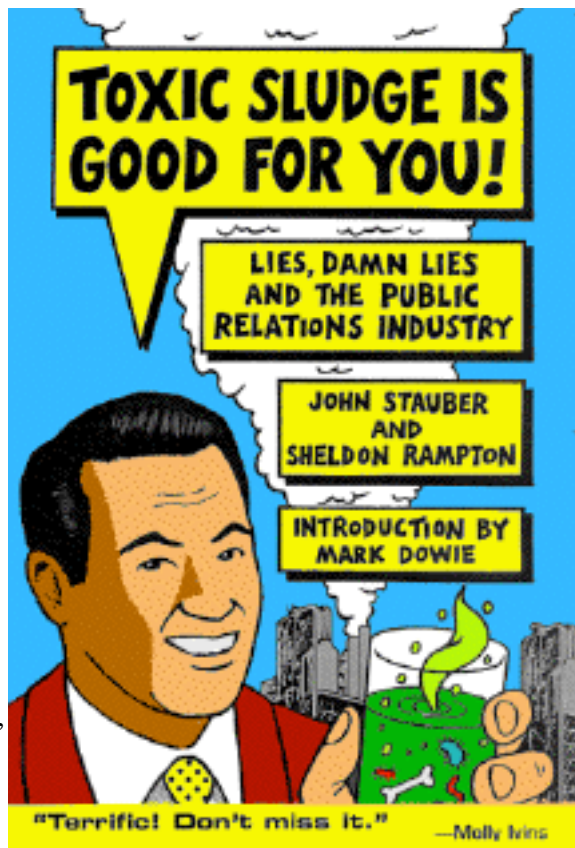
The Sludge (oops, sorry) Biosolids File

Sustainable Wellington Net Editorial- 21 Jul 2000.

This editorial has had minor corrections and changes in response to feedback from Rob Fenwick of Living Earth. We've also published his letter at the end of this editorial.

The disposal of sewage sludge is a chronic problem for urban communities worldwide. The previously widely used method of ocean disposal is now considered environmentally and socially unacceptable (if in fact it ever was). This has raised the problem of what to do with the sludge now. One solution now being widely promoted is land disposal, through the use of the sludge as a fertiliser (either raw or as part of a blended compost).

While superficially this seems a very sensible and attractive plan - returning valuable nutrients to the soil rather than wasting them, the reality is unfortunately rather different. In all industrial countries the sewage system is not just a system for the disposal of human wastes, it is also used to dispose of vast amounts of trade wastes. There are 100,000 or so organic and inorganic chemicals produced and used in industrial countries. A large percentage of these end up in the sewer system and are collected and concentrated in sewage sludge. This trade waste stream includes heavy metals such as cadmium and Mercury, organochlorines such as Dioxins and Dieldrin, halogenated hydrocarbon, aromatic hydrocarbons, etc, etc. The effects of many of these chemicals on the environment have either not been evaluated or are only poorly understood. To complicate the situation further it is estimated that over a 1,000 new chemicals are being produced each year. It is interesting to note that as part of the efforts to promote this method of disposal sewage sludge is no longer called "sewage sludge", it is now described as "biosolids".



Wellington was faced with the problem of what to do with the sewage sludge from the new treatment plant at Moa Point which could no longer be disposed of in Cook Strait. In 1996-97 a series of options were looked at by the Council. The option they picked was the Living Earth Joint Venture (LEJV) proposal to produce compost by treating the sludge and mixing it with green waste to produce compost (the company was a joint venture between Living Earth Company Ltd and Waste Management NZ Ltd). They were granted a Resource Consent in 1997 to build and operate the plant. Several environmental groups at the time were skeptical of the very low figures given for levels of contaminants in the sludge itself and in the compost to be manufactured from the sludge. A skepticism that later events would show was well founded.

The Living Earth Joint Venture (LEJV) discovered in 1998 that there had been major miscalculations of the volume of dewatered sludge that would be produced by the Moa Point plant - the actual amount was substantially less than predicted (LEJV spent over a million dollars on the resource consent application yet they miscalculated on a point as basic as this). This meant excess capacity at the new compost plant. As well as the problem of excess capacity, the contaminant levels in the resulting sludge were also higher than forecast. In October/November 1998, without any public notification, the Wellington City Council and the Wellington Regional Council considered and granted changes to LEJV's resource consents to allow the company to truck sludge in from other sources in the Wellington Region including the Hutt Valley. Unfortunately because of the greater number of industrial operations in the Hutt Valley the sludge from there is likely to have an even higher level of contaminants than the sludge from Moa Point (if the application to change the resource consent had

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been publicly notified this rather obvious fact would have been investigated more fully). As a footnote to this, there were several competing tenders for the processing of the Hutt Valley sludge. Composting was rejected, as was anaerobic digestion. Instead heat drying was selected. In 1999 the Living Earth Joint Venture applied for a variation of the original Resource Consents to increase the maximum allowable levels of Cadmium, Mercury and Dieldrin in the compost, this application was granted. You would think that the easiest way to deal with the problem of the higher levels of contaminants in the sludge would be to increase the ratio of Green Waste to sludge in the compost mix to further dilute the sludge. Or have LEJV also made major miscalculations on the available amounts of Green Waste?

Note: During mid 1999 Waste Management NZ purchased 50% of the Auckland and Christchurch operations of the Living Earth Company. A renamed company - Living Earth Ltd replaced the LEJV in Wellington as well as the composting operations in Auckland and Christchurch. This change in company ownership has not resulted in any significant changes in either the production process or the end product.

The following article by Bob Tait and Mike Ennis looks in detail at this compost. There are serious questions that need to be asked about the long term use of this compost and its impact on things such as soil microbial systems, soil fertility, the contamination levels of agricultural land and human health. Particularly in light of Living Earth's determination to use the Wellington operation as a showcase to market this process to other Local Bodies around NZ. There is a real danger that once there is a financial and organisational commitment to operations such as this there will be ongoing pressure to erode national standards for levels of contaminants in soil as is happening in the US.

Get Involved!

There is still a chance to do something about this, a key thing you can do is to contact Wellington Regional Councillors expressing your concern and asking them to revise downwards the consent conditions on maximum allowable levels of contaminants in the compost. Also urge them to have a look at this editorial.

These are the e-mail addresses and fax numbers of Wellington Regional Councillors:

Wellington Constituency

Margaret Bonner. Fax 389 7026
Mike Gibson. Fax 475 7145
Chris Laidlaw. E-mail chrisl@the.net.nz
Terry McDavitt. E-mail tmcdavitt@compuserve.com
Euan McQueen. Fax 479 5585

Lower Hutt Constituency

Jim Allen. E-mail j.allen@clear.net.nz
Rosemarie Thomas. E-mail thomas@paradise.net.nz
Dick Werry. E-mail dwerry@xtra.co.nz

Porirua Constituency

Robert Shaw. E-mail robert.shaw@xtra.co.nz
Margaret Shields. E-mail marg.shields@xtra.co.nz

Wairarapa Constituency

Ian Buchanan. E-mail buchanji@xtra.co.nz
Rick Long. E-mail rlong@voyager.co.nz

Upper Hutt Constituency

Stuart Macaskill. Fax 526 7160

Kapiti Constituency

Chris Turver. E-mail cturver@clear.net.nz

Further Information

[Civilization and Sludge <http://www.cqs.com/sewage.htm>](http://www.cqs.com/sewage.htm) and [The Sludge Story <http://www.cqs.com/esludge.htm>](http://www.cqs.com/esludge.htm)

CQS is a software and public service environmental consulting firm in the US which has these two sites which give good background information on the problems of sewage sludge.

[CWMI Sludge Page <http://www.cfe.cornell.edu/wmi/sludge.html>](http://www.cfe.cornell.edu/wmi/sludge.html)

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A very good site with a wealth of information at the Cornell Waste Management Institute at Cornell University in New York, US.

[#644 Excrement Happens \(Part 1\)](http://www.rachel.org/bulletin/bulletin.cfm?Issue_ID=1299&bulletin_ID=48) <http://www.rachel.org/bulletin/bulletin.cfm?Issue_ID=1299&bulletin_ID=48> and [Part 2](http://www.rachel.org/bulletin/bulletin.cfm?Issue_ID=1303&bulletin_ID=48) <http://www.rachel.org/bulletin/bulletin.cfm?Issue_ID=1303&bulletin_ID=48>

[Rachel's Environment & Health Weekly](http://www.rachel.org/bulletin/index.cfm?St=1) <<http://www.rachel.org/bulletin/index.cfm?St=1>> have also published a number of bulletins on the sludge issue.

[PAN Submission.txt](#)

Submission to the Hearings Committee by Alison White, Co-ordinator, Pesticide Action Network NZ on the "Application from Living Earth Joint Venture to change conditions of Discharge to Land Permit WGN 970210", October 1999.

[Sewage Sludge Homepage](http://www.enviroweb.org/issues/sludge/) <<http://www.enviroweb.org/issues/sludge/>>

A brilliant collection of links including a chapter from the book *Toxic Sludge Is Good for You*.

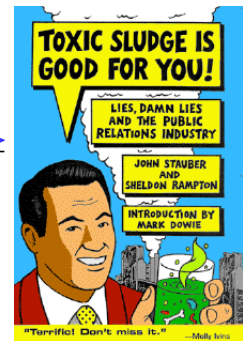
[Southern Environment Sub.pdf](#)

Extracts from the submission from Southern Environmental Association regarding LEJV's application for changes to the conditions of their Resource Consent to permit an increase in the maximum allowable levels of mercury, cadmium, and dieldrin in the compost produced from sewage sludge.

Toxic Sludge Is Good for You

An excellent expose of the selling of Biosolids to the American public. It's available from:

- [Common Courage Press](http://www.commoncouragepress.com/) <<http://www.commoncouragepress.com/>> in the US of A (their website is well worth having a look at - they publish some really interesting books).
- [FlyingPig](#) in New Zealand. We're a member of FlyingPig's affiliate program - if you purchase the book through this link, we'll receive a 15% commission.



[Turning Sewage Into Soil](http://www.herald.co.nz/storyprint.cfm?storyID=145198) <<http://www.herald.co.nz/storyprint.cfm?storyID=145198>>

An extensive article in the New Zealand Herald that echoes many of the concerns raised in this editorial, 22 Jul 2000.

[The Utilization of Sewage Sludge \("Biosolids"\)](http://www.science.murdoch.edu.au/teaching/m234/recycle30.htm) <<http://www.science.murdoch.edu.au/teaching/m234/recycle30.htm>>

There is also this good site at Murdoch University in Australia with many useful links.

Our thanks to [Common Courage Press](http://www.commoncouragepress.com/) <<http://www.commoncouragepress.com/>> for giving us permission to use the cover picture of *Toxic Sludge Is Good for You*.

Sludge and Compost

19 May 2000

By Bob Tait and Mike Ennis

An updated version of articles appearing in the Friends of the Earth December and April 'EARTH' bulletins. The sidebars have been added by Sustainable Wellington Net.

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Following the London Dumping Convention, sewage sludge is now prohibited from being dumped at sea as it is deemed to be too polluting. New Zealand now faces a national push to have sewage sludge composted and sold for use on suburban and agricultural land. Leading this push is the Living Earth Joint Venture.

This joint venture includes the composter The Living Earth Company Ltd and Waste Management N.Z. Ltd. Living Earth promotes the compost through its role as a major sponsor of the television programme "Maggie's Garden Show". Viewers of the show might be surprised by what they have not been told regarding the makeup of the Wellington biosolids compost.

Wellington's sewage sludge is mixed with other organic matter such as garden wastes and sawdust and composted by the Living Earth Joint Venture. Information obtained from the Living Earth Joint Venture states that their compost is made from a daily input of up to 100T of dewatered sludge, mixed with a further 42T of green waste. Thus their product could be over 70% sludge and yet they are paid high amounts to both *receive* the sludge and to retail their final mixture.

It is important here to mention the term "biosolids". No more sludge, we now have "biosolids". The whole industry has adopted the biosolids euphemism, which appears to be designed to facilitate public acceptance of the composting of sludge.

The Living Earth Joint Venture recently applied to the Wellington Regional Council for consent to "increase the maximum allowable contaminant levels in the biosolids compost in respect of cadmium (Cd) from 3 mg/kg to 4 mg/kg, mercury from 1 mg/kg to 2 mg/kg and dieldrin from 0.02 mg/kg to 0.05 mg/kg". They also sought to double the maximum allowable biosolids compost application rate to agricultural land.

Heavy Metals in Soil			
	Currently Accepted Limit	Proposed Biosolids Allowance	Percentage Over Limit
Cadmium	3 mg/kg	4 mg/kg	33%
Dieldrin	0.02 mg/kg	0.05 mg/kg	150%
Mercury	1 mg/kg	2 mg/kg	100%

To appreciate the significance of these increases a few quotes from the NZ Department of Health "Public Health Guidelines for the Safe Use of Sewage Effluent and Sewage Sludge on Land" (1992) may be helpful:

"Metals that are both toxic and bioaccumulating like arsenic, cadmium, lead and mercury present serious threats to the environment" (p. 29).

"Studies have shown a clear linear relationship between cadmium concentrations in sludge amended soils and those in crops. Monitoring of heavy metal levels in the tissues of animals fed from sludge amended pasture revealed that cadmium was present in the highest levels most often" (p. 30).

"It is estimated that a cow eats about 800 kg of soil per year" (p. 29).

"All composted sludges must be ploughed into the soil" (p. 52).

"For salad crops, fruit, other crops for human consumption which may be eaten unpeeled or uncooked... there should be a waiting period of at least one year before crops are sown" (p. 52).

"For pasture etc. and for crops which will be peeled or cooked before being eaten, fruit etc. should not be harvested or pastures grazed for at least 6 months after composted sludge application" (p. 53).

"For forest, tree lots, bush and scrubland, public access should be restricted for one year. The buffer zones should be fenced and signposted." (p. 53).

"Any composted product to be sold or given away that includes sewage sludge as a constituent must be accompanied by a statement notifying users of the percentage of sewage sludge in the product and the treatment that it has undergone." (p. 55).

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"The Department of Health does not intend to sanction the possible development of contaminated sites by condoning the use of sewage sludge with 'high' heavy metal contents" (p. 51).

Accordingly, the Department of Health states the recommended limit for heavy metals in soil as 3 mg/kg for cadmium and 1 mg/kg for mercury. These limits are comparable to limits in Australia, the U.K. and the European Community. Therefore the increases sought by Living Earth would result in compost which could exceed N.Z. and international contamination limits for soil. The latest New South Wales EPA limits for dieldrin in agricultural soil are only 0.02 mg/kg (the cadmium limit is only 1 mg/kg) which is much less than Living Earth's proposed increase.

Despite opposition from a number of groups, the Wellington Regional Council granted the resource consent. Southern Environment Inc., a Wellington environmental group, lodged an appeal to the Environment Court. Action for the Environment and Toxins Action Network applied to become parties to the appeal.

Unfortunately, changes to the RMA introduced in the RMA Amendment Act 1996 allow plaintiffs to seek the granting of orders for security of costs against appellant groups. The Living Earth Joint Venture, being well aware of this new clause in the RMA, sought (through their solicitors Chapman Tripp) an order of security of costs against Southern Environment Inc. of \$50,000.

On 6th December 1999 Environment Court Judge Kenderdine decided, solely on the basis of Living Earth's evidence, that Southern Environment Inc. had to post a security of \$30,000 (payable to the Environment Court by 13th December). Not surprisingly, Southern Environment Inc. did not have the funds to pay this security and the deadline of just 7 days meant that it was not practicable to try and fundraise the money, so they had to drop their appeal.

"Southern Environment was asked to post a security of \$30,000 before they could appeal to the Environment Court"

The actions of the Living Earth Joint Venture are about a millimetre away from the typical U.S. corporate practice of using what are referred to as SLAPP Writs (Strategic Lawsuits against Public Participation). So much for the RMA facilitating public participation in environmental decision making!

The seriousness of this issue can be appreciated by referring to the Australia New Zealand Environment and Conservation Council "Guidelines for the Assessment and Management of Contaminated Sites" (1992) which sets levels of contamination that, when found, would initiate an environmental investigation. The level for cadmium is 3 mg/kg and the level for mercury is 1 mg/kg. Therefore the proposed increased mercury level in Living Earth compost could be *double* the level that would prompt an environmental investigation of a contaminated site. Typical background soil levels are cited as between 0.001 and 0.1 mg/kg.

"The proposed mercury level in Living Earth compost could be double the level that would prompt an environmental investigation of a contaminated site"

Friends of the Earth understands that Living Earth is planning a large biosolids composting plant at the Mangere waste treatment plant site. The plant's operator, Watercare, have stated that their plant's sludge production will increase to 300 tonnes *per day* over the next 10 years. At the recent Water 2000 Conference (March, Auckland), the Living Earth information stand contained an information sheet by the Living Earth Joint Venture which stated that their Wellington compost "contamination levels and application rates that were approved may well become the basis of future national standards". Friends of the Earth will vigorously oppose any further departure from national guidelines and good environmental practice. The Wellington decision needs to be appealed and the public should be better informed on this issue through the media.

It is crucial that any compost that is going to be spread on residential or agricultural land or any land that could be used for these purposes in the future, should not have contaminated levels that could prove damaging to human health or the receiving environment. Such safeguards have been

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incorporated into the New Zealand Department of Health guidelines and, in our view, must be adhered to.

Rather than raising limits above current guideline levels, there needs to be a *reduction* of toxic materials entering the system. This reduction should occur *before* sludge is processed into compost. It is sensible to return useful nutrients to the soil, but not when they may be accompanied by significant levels of heavy metal contaminants.

For further information contact Friends of the Earth:
P.O. Box 5599, Auckland;
Phone/fax 09 303 4319;
e-mail foenz@kcbbs.gen.nz

Feedback

In August Rob Fenwick of Living Earth sent through some corrections and comments on this editorial. We've published his letter and authors' response here.

Bob Tait & Mike Ennis: In fairness we have published Mr Fenwick's letter in full, this is the response from Bob Tait and Mike Ennis. We apologise for the delay in publishing this, but because of other commitments Bob Tait was delayed in providing his comments on Mr Fenwick's letter.

Rob Fenwick raised a number of points in his e-mail and we will address these in turn. We thank Rob for drawing to our attention some minor errors, which have now been corrected. It is gratifying that Mr Fenwick found so little to seek to correct in the Biosolids editorial.

Rob Fenwick: 1. Waste Management NZ has bought out Living Earth Company. These two companies own 50:50 a joint venture - Living Earth Limited which undertakes composting operations in Auckland, Wellington and Christchurch. The shareholders of Living Earth Company include Roger Wark (a pioneer of organic waste composting in New Zealand who launched the Devonport composting plant in the 1970s); Ron Albrecht (a member of the editorial board of the leading US recycling journal BioCycle) and Rob Fenwick (a director of Landcare Research, Environmental Defence Society, WWF, a founding member of the NZ Business Council for Sustainable Development and a member of the Government's recently formed National Waste Strategy Committee). The joint venture was the first major undertaking by Waste Management after New Zealand shareholders bought out its major American owner earlier this year.

B&M: Rob is quite correct in pointing out our mistake on the ownership issue. The statement in the editorial was correct about the situation in 1997, but that has subsequently changed and Living Earth is now 50% owned by Waste Management NZ. We do appreciate the correction on this minor point.

What we are concerned about in our editorial is the product being produced at the plant, any changes in ownership have not resulted in significant changes in either the production process or the end product. The question of who owns the plant is essentially irrelevant - we are concerned about the product not the producer.

RF: 2. Environmental groups were sceptical about contaminant levels following the granting of Living Earth's 1997 consent. In fact several environmental NGOs including WWF, Forest and Bird and Maruia gave evidence in support of Living Earth's composting project. Their evidence centred on the net environmental gains of returning organic waste to soils and the overall sustainability of the project.

B&M: To quote the article on Living Earth in the NZ Herald, Rob is "a Trustee of WWF, a member of Forest and Bird and closely aligned with Maruia Society kingpin Guy Salmon, with whom he founded the now-defunct Progressive Greens political party in 1996."

Further, the end product we are discussing in our editorial is different to that which these groups supported in 1997. As far as we are aware none of these groups supported Living Earth's application for a variation of the Resource Consent to increase the maximum allowable levels of Cadmium, Mercury and Dieldrin in the end product compost. It is also worth noting that a remit was passed at the Environment Conservation Organisation (ECO) AGM this year opposing sewage sludge composting. ECO is a national umbrella group of environment/conservation organisations with approximately 70 member groups.

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RF: 3. LivingEarth spent over \$1m on consent applications and yet miscalculated the volume of biosolids produced by Moa Point. LivingEarth has nothing to do with the production of biosolids from Moa Point. That is the business of Wellington City Council and Anglian Water.

B&M: We agree that LivingEarth has nothing to do with the production of sludge from the Moa Point site. The key point that is of concern to us is that highly paid consultants just accepted the figures provided on the tonnage of sludge that would be supplied. These figures should have been checked and verified, or if they could not, then LivingEarth should have made allowance in its planning for a possible shortfall in the quantity of sludge supplied.

There is a further question of why LivingEarth did not compensate for the problems in the sludge supply by simply increasing the percentage of green waste input. We find it hard to understand why this easy and environmentally friendly solution was not chosen.

RF: Sadly your article offers no solutions to what is a major environmental problem for urban New Zealand - What do we do with our sewage waste in an island nation where, for decades, we have blithely used the ocean as a toilet?

B&M: Your statement that we offer no solutions is simply specious and totally avoids the points of concern we are raising about the sludge compost.

RF: Either we dump this precious organic resource in landfills, which I hope Sustainable Wellington Net agrees is not sustainable, or we get it back to the soil where nature intended it to go.

The most useful comment from your unbalanced editorial comes from Bob Tait and Mike Ennis when they conclude there needs to be a reduction in toxic material entering the trade waste. This is surely where your editorial should have concentrated.

LivingEarth is determined to reduce contaminants in the Wellington trade waste so that it can produce cleaner compost for its customers. (LivingEarth compost in Auckland and Christchurch is BIO GRO certified).

B&M: You state, quite correctly, that LivingEarth compost in Auckland and Christchurch are Bio Gro certified. We agree that LivingEarth produces some very excellent products, we do not have a problem with these products, and we do not mention these products in our editorial. Our editorial is about one specific product the compost produced from sewage sludge in Wellington. To state that "LivingEarth compost in Auckland and Christchurch is Bio Gro certified" without making it clear that these are quite different products to the one we are talking about in our editorial is at best misleading.

We do not object to the use of sewage sludge compost per se. We do believe that:

- A. It should not be used on any land used for agricultural production without strict controls.
- B. It should not be allowed to be sold for unrestricted use by home gardeners without comprehensive explanatory labelling and information on the contaminant levels in the compost.
- C. Compost made from sewage sludge should be treated as if it were soil and should be subject to the same guidelines for maximum allowable levels of contaminants.

RF: Here's what LivingEarth has achieved already with Mercury. What is SWN going to do?

Reducing mercury levels in Wellington City Council trade waste

1. Levels of mercury from some Wellington trade dischargers exceed the trade waste limit (0.1 ppm Hg - Wellington influent by-law). This can result in LivingEarth garden waste/biosolids compost containing Hg levels higher than the Department of Health guidelines. (Although the prevailing Hg limit has been consented by Wellington Regional Council in 1999.)
2. In an effort to bring the Hg level down, Wellington City Council and LivingEarth is working with the NZ Dental Association to reduce the amount of Hg that enters the sewer.
3. WCC data indicates that significant quantities of Hg enters the sewer from many of the 65

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dental practices in the city. Up to 300 times the allowable amount of mercury has been observed coming from these premises, while some are below the limit.

4. The WCC trade waste consents officer has met with NZDA executive to discuss how NZDA would partner WCC to reduce Hg to sewer.
5. NZDA has proposed to introduce the Australian Code of Practice which requires the installation of centrifugal suction systems and carbon filters. This code also addresses issues such as the safe handling and proper disposal of mercury in their surgeries.
6. If universally adopted it is expected that these measures could reduce the amount of mercury to trade waste by 90% and would therefore significantly reduce the amount mercury finally discharged.
7. WCC is currently circulating application forms to dentists to consent the installation of suction units required by the new code.
8. WCC is also identifying potential recycling operators interested in collecting captured mercury from dentists and returning it to the marketplace. It is hoped this integrated approach will reduce the costs of recycling mercury.
9. Living Earth and WCC expects the new code will result in a 50% reduction of Hg in sewage sludge. In turn this will result in Hg levels the finished compost product to drop to well below the DoH guidelines.

B&M: Regarding your extended exposition on your efforts to lower mercury levels in Wellington, while we do approve of this we feel very strongly that this should have been done BEFORE the compost was produced and marketed not AFTER. It is also a little misleading to state "here's what Living Earth has already achieved" - as far as lowering mercury levels are concerned your points detail what you EXPECT to achieve not what you HAVE achieved. You also fail to provide any information on proposed measures to reduce the Cadmium and Dieldrin levels.

What disturbs us about this whole situation is that Living Earth are marketing this sludge composting to other local bodies around New Zealand. If they can't meet specified levels using sludge as relatively clean as Wellington's how will they manage with heavily contaminated sludge from plants like Mangere?

There are other options for the disposal of sludge, as other local bodies such as the Kapiti District Council and the North Shore City Council (NSSC) have decided. Mr Fenwick's stress on the irretrievable loss of "this precious organic resource" can best be answered by the report on produced for the NSSC. This report noted that "The rapid worldwide increase in the practice of applying biosolids to land has been driven more by the need to find an economic disposal method for sewage sludge than by the value to be gained from returning the nutrients and organic matter to the soil. The chief proponents of this practice tend to be waste management organisations and their Local Body customers".

Dilbert: Nature is so wonderful... they say we don't leave the planet to future generations, we borrow it from our children.

Dog: It's even better than that. We don't have any children, so we're borrowing the planet from complete strangers! And there's no collateral. We can use up the planet, have great lives and leave an empty smoking shell to strangers. I tell you, people have completely overlooked the positive side of this environment situation.

Dilbert: But someday I want to have children.

Dog: Let's hope they're not as selfish as you.