



Hu-dot-mus

Humans and humus - an electronic newsletter for those odd few who take some pleasure in returning their personal anthropocentric humic precursor (AHP) and anthropocentric liquid nutrient (ALN) to its rightful home in the amazing ecosystem about us.

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I have been promising this newsletter since late 2004. It has been one of those "must-do-sometime" chores that kept being set aside by supposedly higher priority commitments. Finally it is done.

☺ **Please send me your news, photos, questions, ideas..... for the next newsletter – but please keep them brief and to the point.** ☺

Composting is a natural form of recycling that continually occurs in nature. Composting by humankind is also an ancient practice and is mentioned in the Bible several times and can be traced to Marcus Cato, a farmer and scientist who lived in Rome 2,000 years ago.



Over the last few years I have been involved in advising on composting toilets and greywater treatment system around Canterbury and other regions. This has bought me in contact with a number of keen people who have installed and are operating composting loos on their own property. This newsletter is for these people.



A barrel batch composting loo at **Okuti Garden**, Okuti Valley, Little River. Jim and Jane offer quiet and relaxed homestay/ backpackers/B&B facilities in a magnificent ecological setting – a great place to stay, rest and recreate

As a result of my work and interest in integrating human activities with ecological systems, and more specifically, advocating for "wastes" to be seen as resources requiring the engineering of "waste"

system as closed water and nutrient cycles, I have become increasingly fascinated with the ecology of humus and soils. In future **hu.mus news** I hope to further develop this understanding of **humus ecology**.

I see two primary purposes for this newsletter;

1. To keep those with an interest in compost loos, greywater systems and related matters up to date with useful and interesting developments.
2. To share experiences and learn from successes and failures of those on the **hu.mus news** network.



Compost loo bulking material.

I have been operating a simple urine-separating bucket composting loo for over 2 years. I use a 10L bucket that requires emptying about every week. When I first started using my composting loo I had a good supply of untreated *Macrocarpa* wood shavings and used these as bulking material. These shavings worked really well and produced well aerated, easily handled compost. When I ran out of these shavings I used dried grass lawn clippings. This did not work nearly so well. The clippings created two problems:

- The grass clippings rapidly rotted the biodegradable starch bag lining my bucket within a few days thus making transfer to the compost bin less pleasant.
- The grass clippings seemed to encourage fly larvae within the compost bucket, even with weekly emptying.

I am now using a handful of organic pea straw as the bulking material and this works really well.

I am a fan of using EM (Effective Micro-organism) with composting toilets. I will include some details about this product in the next newsletter.

If you would like more information about my composting system email me and I will send you a brief report.



Urine separating toilet seats

I am keen on urine separating composting loos, for two reasons:

- It reduces the moisture content of the composting solids – making it much more convenient to handle and compost and produces less odour.
- Produces an excellent liquid nutrient for the garden.

Pure urine is sterile. However it may, from time to time, contain pathogens as a result of kidney disease and/or cross contamination with faecal matter, originating in the separating pan. In Sweden, where large scale urine separation and management is being researched, they recommend that urine be stored for 6 months and claim that after this period it is sterile.

I don't see a problem with immediately irrigation of your own urine on-site (I dilute mine down 10:1), on garden or lawn. It is advised that it should not be applied to garden used for root crops. Lewis and Grey (Auckland, <http://www.lewisgray.com/>) have a venturi system for urine management through irrigation. See the photo on right.



I have my own very simple urine separating pan arrangement [Photo (a) below]. I know others have used a plastic urine separating pan, available from Kiwi Bog (www.kiwibog.com/) in Nelson. I asked Shane, who does ceramic art work and is family friend, to make me up a ceramic separating pan as in [Photo (b)]. I have yet to install this, but he now has the mould and could make more if you are interested. In fact if anybody is keen they could have my one for a reasonable cost.



Photo (a) - my simple urine separating pan (using plastic funnel) with lid up



Photo (b) - Shane a ceramics specialist; he is not sure if it is real art but found it an interesting technical challenge making it.



Netherlands showing initiative

In 2000, Sarah West (who at the time worked for Sydney Water) went on an extensive study tour of USA, UK and northern Europe to look and innovations in wastewater management. She sent me her excellent report. In it she referred to some work done by the Centre for Ecological Technology in the Netherlands who developed the Paper Leaf Toilet®. Her account of this follows.

The Paper Leaf Toilet® has been invented at the Centre for Ecological Technology. It is a compact dry composting system in which solid excreta is made odourless and compacted by applying layers of paper to the top. Urine is collected separately and mixed with the household greywater before treatment in a helophyte (marsh plants) filter. Approximately 100 Paper Leaf Toilets have been installed in households in the Netherlands, Belgium and France.

A larger scale pilot project is currently being implemented. The contents of the Paper Leaf Toilets will be collected from urban areas and composted with organic kitchen and garden waste at an existing composting plant, 'Orga-world'. The organic material will be composted at 65° to 70°C for 3 weeks in a tunnel. It is anticipated that at this temperature all pathogens will be eradicated within 2 weeks. The enriched compost will be used in sustainable agriculture.

For pictures and a few more details see:

<http://www.watersaving.nl/English/index%20english.html>



Negotiating the regulatory maze.

It is not easy obtaining the necessary permits and consents to install composting toilets and greywater systems. I refer to just a couple of issues below.

Building Act

Under the Building Act, (G1 Section 5) composting toilets are to be located 3 m from the home. If the toilet has been certified by a recognized agent (e.g. BRANZ) they may be installed indoors. As it turns out there are not too many “certified” composting toilets in NZ. If you have an indoor composting loo, well done – just don’t ask too many questions.

Obtaining a Resource Consent under the RMA

Most people prefer that their toilet/greywater system would qualify as a **permitted activity**. If it does, this means you do not have to apply for a resource consent (saving about \$1100) and that you can install your system as of right. To qualify as a permitted activity there are a number of rules to satisfy. These rules relate to such matters as separation distances between the discharge area and boundaries, groundwater wells, water courses and wetlands. It also depends on where and how you dispose your compost. Within the Canterbury region the rules are specified by Canterbury Regional Council (Environment Canterbury, ECan). At the moment, it is a quite confusing because there are two sets of rules. These are:

- The Transitional Regional Plan (TRP) – which is operational
- The proposed Natural Resources Regional Plan (NRRP) which was notified in July 2004.

The advice I have on the status of these two documents is that the TRP has legal status while the NRRP has technical status. In other words, the rules in the TRP are legally binding and the rules within the NRRP are considered technically binding – does this make sense? In reality Ecan is saying that your toilet/greywater system must satisfy the rules specified in both the TRP and the NRRP if it is to be granted **permitted activity** status. If it doesn’t then you will have to apply for a Resource Consent.

Under the NRRP, rules for permitted activity status for greywater systems and compost toilets are specifically mentioned (rules WQL10 and WQL13 respectively). However if you add urine or compost leachate to the greywater then WQ10 does not apply and instead the rules in WQL8 apply – and these are more stringent. Are you still with me? It gets better. In the TRP there is no specific mention of greywater systems and compost toilets. So you are most likely going to need a consent to bury that nice stable 2 year old humus. Actually, it has just occurred to me as I write this that if we call it stabilized humus – does it need a consent and is it consider a contaminant? Is it any different to disposing of a few kgs of dirt? Furthermore if you are storing the compost for 2 years, the actual “discharge” event, 2 years hence, is likely to occur when the NRRP is operative and hopefully the activity status is permitted. Hmmm - I might pursue these queries with the Council and report next newsletter. This aside, I have had a recommendation from Ecan that, in terms of the TRP, *the discharge of greywater is permitted by the General Authorisation for Sewage Tank Effluent Disposal Greywater as it can be considered to fit the TRP definition of domestic wastewater.*

It may be some time before the NRRP becomes operative and replaces the TRP, so until then it is going to be rather bureaucratically messy.



Book review: *Lifting the Lid*:

In April this year I was fortunate enough to be able to call into the Centre for Alternative Technology (CAT), Machynlleth, Wales, where I bought the book *Lifting the Lid: An ecological approach to toilet systems*. This is excellent and very readable book was written by Peter Harper and Louise Halestrap both from CAT. (Published by C.A.T Publications, ISBN 1-898049-79-3, www.cat.uk).

This practical how-to-do-it book with enough science, covers topics ranging from biological processes on composting toilets, designing dry toilets, ways to conserve water and design of greywater systems. It has an interesting section on using urine (for those with urine separating loos) and also introduces the straw bale urinal.

The book provides the following characteristics for human faeces and urine. Just thought you may like to have this information to share with your friends over the dinner table.

Per adult per day	Faeces	Urine
Quantity	135-270 g/day (wet mass)	1 – 1.5 kg/day (wet mass)
	35 – 70g/day (dry mass)	50 -70 g/day (dry mass)
Water content	66 – 80%	93 – 96 %
Contents	Typical daily yield, g per person	Typical daily yield per person
Nitrogen	3	8
Phosphorus	2	2
Potassium	1	2
Calcium	2	2
C:N ratio	8 : 1	1:2
Pathogens (cfu/100mls)	100 to 400 billion coliforms, enterococci, streptococci	None in normal circumstances

In the foreword George Monbiot notes that the conventional toilet is an environmental disaster. I am not sure that I would agree with this rather extreme view. The conventional flush toilet has served a vital service and prevented a lot of serious disease and death in urban areas throughout the world, however the demand and impact conventional sewage and sanitation systems are now placing on water resources and the disruption they are now causing to natural water and nutrient cycles should not be denied. *Lifting the lid* offers some ecologically sound practical alternatives to healthy management of human wastes for the enthusiasts like you and me. In future **hu.mus news** editions I will include some more extracts from this delightful book. It is a good read and useful reference book.



Websites

- Books: <http://www.ecowaters.org/products.html>
- Urine separating toilet seat: <http://www.ecovita.net/privy.html>
- If you have time and want to be amused (and may get some ideas) see toilets of the world: <http://www.cromwell-intl.com/toilet/Index.html>
- If you are interested in large scale composting, Ian Mason, who is doing his PhD research in the Civil Engineering Dept, Canterbury University, has an excellent website at: <http://www.civil.canterbury.ac.nz/compost/> Ian refers to the very good Cornell University website for details on the basic principles of composting.



Your input is invited for the next edition of *hu.mus news*

I am aware of more than 10 domestic composting loos that are either installed or about to be installed in the Canterbury region. I am hoping that some of you would be willing share your experiences with others through this newsletter. The type of information that I would like to include, if you are willing, is a brief description of your type of composting toilet and greywater system, successes and problems, solutions to problems, management issues, and any other relevant information. If you are willing to include your name, I am sure others would be interested, however this is up to you. This newsletter is intended for those who use composting loos and/or greywater system, intend to or have a genuine supportive interest in such systems.

