

Beneficial Use of Organic Materials to Land

What is Changing?

What will it do?

Purpose

- Develop a framework that deals consistently with organic materials
- Recognise commonalities of nutrients, contaminants and end use
- Takes an integrated approach with quality criteria to protect both the environment and public health

What Will it Supersede?:

- 2003 Biosolids Guidelines
- References to 2003 Biosolids Guidelines in:
 - NZS 4454 – Composts, soil Conditioners and Mulches
 - Regional Plans, Bylaws, some agricultural guides, consent conditions?

Steering Group

- Auckland Council and WasteMinz Organic Material Sector Group; George Fietje
- Centre for Integrated Biowaste Research and ESR Limited; Jacqui Horswell
- Greater Wellington Regional Council; Paul Bruce
- Ministry for the Environment; Nigel Clarke
- Ministry of Health; John Harding
- Ministry for Primary Industries; Andrew Pearson
- NZ Land Treatment Collective and Lowe Environmental Impact; Katie Beecroft
- Water New Zealand; Nick Walmsley

BACKGROUND

NZ Biosolids Guidelines 2003

- Defined biosolids as any product that included WWTP sludge and met quality standards
- Included soil replacement quality standards
- Did not consider non-biosolids quality to land
- Tighter default limits from 2013
- Expected to be reviewed within 5 years i.e. by 2008

ISSUES

The Benefits

- Unlike other waste materials, good prospects exist for alternative, beneficial end-use options for organic material if well managed
- To fit the criteria of “beneficial re-use” specified in the Guide the organic material must benefit soil biological, chemical or physical properties
- There has been substantial increase in scientific knowledge in recent years and communities are increasingly interested in sustainable waste management

Note: all organic wastes contain pathogens and other contaminants

SCOPE

What Raw Organic Materials are Covered?

- Household organics (food waste, green waste)
- Paper and cardboard
- Primary sector related organic waste (e.g. agricultural wastes, meat wastes)
- Manures
- Sewage sludge
- Pulp and paper waste
- Biodegradable nappies and sanitary items

SCOPE

What has changed?

- Simpler, less grades to comply with
- No soil limits or mass load calculation
- Nitrogen loading as primary control
- Pathogens;
 - Same list with *enteric virus* replaced by *human adenovirus*
 - Less verification samples required
- Inorganics;
 - Same contaminants and old 'b' grade limits
- Organics;
 - No old historical compounds e.g. dioxins
 - New compounds representing EOCs

QUALITY CRITERIA

Product Standards

Type	Stabilisation Grade	Contaminant Grade
1	A	Compliant
2	B	Compliant
3	A or B	Non-compliant

- Stabilisation Grade A (Type 1) could have a Permitted Activity planning control *
- Grade B (Type 2) could have a Controlled Activity planning control*
- Grade A or B material which is non-compliant for contaminants (Type 3) should be reused under a specific resource consent or safely disposed

*if applied according to the requirements of this Guide

CONTROLS

Nitrogen Loadings

- For continual application $\leq$ average of 200 Kg N/Ha/year over up to two years,
 - based on evidence that the organic nitrogen is eventually mineralised.
 - additional applications should be based on a site specific site and crop assessment (e.g. nutrient management plan)
- Applications to rebuild degraded soil or to refurbish contaminated land should be limited to an application of 150 kg mineral N/Ha.
- Plus soil incorporation and similar management controls to NZ Biosolids Guidelines

QUALITY CRITERIA

Pathogens

Pathogen	Standard
Verification Sampling:	
E. Coli	less than 100 MPN/g
Campylobacter	less than 1/25g
Salmonella	less than <2 MPN/g ((< 1/25g))
human adenovirus	less than 1 PFU/0.25g ((enteric viruses < 1 PFU/4g))
helminth ova	less than 1/4g
Routine Sampling:	
E. coli	less than 100 MPN/g

QUALITY CRITERIA

Stabilisation Grade Sampling Frequencies

Grade	Monitoring type	Sampling regime	Parameters to be monitored
A	Product verification	≥ 7 evenly dispersed grab samples per month for a 3-month period with ≤ 3 failures. If > 3 failures then the 7 following consecutive grab samples must comply.	E. coli Salmonella Campylobacter human adenovirus helminth ova VAR
	Routine sampling	≥ 1 grab sample per week	E. coli VAR
B	Product verification	N/A for pathogen testing	VAR
	Routine sampling	N/A for pathogen testing	VAR

QUALITY CRITERIA

Inorganic Contaminants

Parameter	Concentration limit (mg/kg dry weight)
Arsenic	30
Cadmium	10
Chromium	1500
Copper	1250
Lead	300
Mercury	7.5
Nickel	135
Zinc	1500

QUALITY CRITERIA

Organic Contaminants

Parameter	Concentration limit (mg/kg dry weight)
Perfluoro compounds (PFOS and PFOA)	0.01
Absorbable organic halogens (AOX)	450
Polycyclic aromatic hydrocarbons (PAH sum)	5
Nonyl phenol and ethoxylates (NP/NPE)	25
Phthalate (DEHP)	75
Linear alkydbenzene sulphonates (LAS)	1500
Musks – Tonalide	15
Musks – Galaxolid	10

FORMAT OF THE GUIDE

Volume 1 – the Guide

- Similar management controls to previous
- Similar pathogen and inorganic contaminants
- Totally new organic contaminants to be measured;
 - No longer measure banned substances e.g. Dioxins
 - Measures compounds representative of emerging organics e.g. Herbicides, antibacterials, fungicides
- No soil replacement standards
- Nitrogen loading limits as control

Volume 2 – Technical Support Information

- Technical reports supporting proposed limits, consultation advice, legislation summary,

PROGRAMME

Timing of Development

- Public draft issued shortly
- Open invitation for comments
- Open workshops
- Meetings with specific stakeholders, particularly those for agricultural industry groups
- Publish end 2016/ early 2017?

