

Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The organic outputs derived from mixed waste order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of organic outputs derived from mixed waste (organic outputs) to which the 'organic outputs derived from mixed waste exemption 2014' applies. The requirements in this order apply in relation to the supply of organic outputs for application to land as a soil amendment.

1. Waste to which this order applies

1.1. This order applies to organic outputs. In this order, organic outputs means the pasteurised and biologically stabilised organic outputs produced from the mechanical biological treatment of mixed waste.

2. Persons to whom this order applies

2.1. The requirements in this order apply, as relevant, to any person who supplies organic outputs, that has been generated, processed or recovered by the person.

2.2. This order does not apply to the supply of organic outputs to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land) or clause 40 'waste disposal' (thermal treatment) of Schedule 1 of the POEO Act.

3. Duration

3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Processor requirements

The EPA imposes the following requirements on any processor who supplies organic outputs.

General conditions

4.1. On or before supplying organic outputs, the processor must:

- 4.1.1. ensure that the organic outputs do not contain contaminants that will degrade land or present a risk of harm to human health or to the environment.
- 4.1.2. ensure that the organic outputs do not contain sharp pieces of glass, metal or plastic of a size, shape (e.g. glass shards), or type that might cause damage or injury to humans, animals, plants or soil.
- 4.1.3. ensure that the organic outputs do not contain any asbestos.
- 4.1.4. ensure that it provides effective pre-sorting mechanisms to remove lead-acid batteries and other sortable lead containing wastes.
- 4.1.5. ensure that all practicable measures have been taken to remove (i) glass, metal and rigid plastics, and (ii) light, flexible or film plastics, so that they are not present at unacceptable levels (including in particle sizes less than 2 mm and 5 mm respectively) in the organic outputs.

Sampling requirements

- 4.2. On or before supplying organic outputs, the processor must:
 - 4.2.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the organic outputs.
 - 4.2.2. Undertake sampling and testing of the organic outputs as required under clause 4.2.3. The sampling must be carried out in accordance with the written sampling plan. Testing must occur within 25 working days from the date of sampling.
 - 4.2.3. Undertake characterisation sampling of the organic outputs by collecting 20 composite samples of the waste and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of characterisation. A maximum of 2 composite samples may be collected per month. Characterisation must be conducted for the organic outputs generated and processed during the 1-year period following the commencement of the process. Note: Routine sampling requirements will be determined on review of the results of characterisation testing.

Chemical and other material requirements

- 4.3. The absolute maximum concentration or other value of that attribute in any organic outputs supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 2 of Table 1. Note that while limits are not included for attributes 16 – 20 in Table 1, these must be tested in each sample and records kept of results.
- 4.4. The processor must not supply organic outputs to any person if, in relation to any of the chemical and other attributes of the organic outputs, the concentration or other value of that attribute of any sample collected and tested as part of the characterisation of the organic outputs exceeds the absolute maximum concentration or other value listed in Column 2 of Table 1.

Table 1

| Column 1 | Column 2 |
|--|---|
| Chemicals and other attributes | Absolute maximum concentration (dry weight in mg/kg unless otherwise specified) |
| 1. Mercury | 4 |
| 2. Cadmium | 3 |
| 3. Lead | 420 for mine sites 250 for plantation forestry use, non-contact agricultural use and broad acre agricultural use ^{1,2} |
| 4. Arsenic | 20 |
| 5. Chromium (total) | 100 |
| 6. Copper | 375 |
| 7. Nickel | 60 |
| 8. Selenium | 5 |
| 9. Zinc | 700 |
| 10. DDT/DDD/DDE | 0.5 |
| 11. Other pesticides ³ | 0.2 |
| 12. Polychlorinated Biphenyls (PCBs) | ND ⁴ |
| 13. Glass, metal and rigid plastics > 2 mm | 2.5% for mine sites (as % dry matter on weight/weight basis) ¹ |
| | 1.5% for plantation forestry use, non-contact agricultural use and broad acre agricultural use (as % dry matter on weight/weight basis) ¹ |
| 14. Plastics – light, flexible or film > 5 mm | 0.25% for mine sites (as % dry matter on weight/weight basis) ¹ |
| | 0.2% for plantation forestry use, non-contact agricultural use and broad acre agricultural use (as % dry matter on weight/weight basis) ¹ |
| 15. Maximum particle size | 16 mm (particle size) |
| 16. Other metals ⁵ | N/A |
| 17. Total Polycyclic Aromatic Hydrocarbons (PAHs) ⁶ | N/A |
| 18. Phthalates ⁷ | N/A |
| 19. Pesticides (non-scheduled) ⁸ | N/A |
| 20. Monobutyltin | N/A |

Notes and Definitions for Table 1

1. Future contaminant levels will be set after considering the outcomes of research and trials that are to be conducted as well as the other considerations outlined in the notes to this Order.

2. The effectiveness of mechanisms implemented by each facility in clause 4.1.4 in reducing the levels of lead present in the organic outputs will be evaluated. The maximum lead concentration may be amended following this review.
3. **Other pesticides** mean Aldrin, Dieldrin, Chlordane, Heptachlor, Hexachlorobenzene (HCB), Lindane and Benzene Hexachloride (BHC).
4. No detected individual PCB Aroclor at a limit of detection of 0.2 mg PCB Aroclor/kg.
5. **Other metals** mean antimony, beryllium, boron, cobalt, manganese, molybdenum, tin, and vanadium.
6. **PAHs** means the following 16 USEPA priority pollutant polycyclic aromatic hydrocarbons (with CAS registry numbers): Acenaphthene (83-32-9), Chrysene (218-01-9), Acenaphthylene (208-96-8), Dibenzo(a,h)anthracene (53-70-3), Anthracene (120-12-7), Fluoranthene (206-44-0), Benzo(a)anthracene (56-55-3), Fluorene (86-73-7), Benzo(a)pyrene (50-32-8), Indeno(1,2,3-cd)pyrene (193-39-5), Benzo(b)fluoranthene (205-99-2), Naphthalene (91-20-3), Benzo(ghi)perylene (191-24-2), Phenanthrene (85-01-8), Benzo(k)fluoranthene (207-08-9), and Pyrene (129-00-0).
7. **Phthalates** means (with CAS registry numbers): Di-2-ethylhexylphthalate (DEHP) (117-81-7) and Dibutylphthalate (DBP) (84-74-2).
8. **Pesticides (non-scheduled)** means the following pesticides, herbicides, fungicides and insecticides (with CAS registry numbers): Brodifacoum (56073-10-0), Chlorpyrifos (2921-88-2), Cypermethrin (52315-07-8), Dichlofluanid (1085-98-9), Emamectin benzoate (137515-75-4 & 155569-91-8), Permethrin (52645-53-1), Profenofos (41198-08-7), Simazine (122-34-9), and Tebuconazole (107534-96-3).

Test methods

- 4.5. The processor must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.
- 4.6. The processor must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the organic outputs supplied are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.
 - 4.6.1. Test method for measuring the mercury concentration:
 - 4.6.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold-vapor technique), or an equivalent analytical method with a detection limit < 20% of the stated absolute maximum concentration in Table 1, Column 2.
 - 4.6.1.2. Results must be reported as mg/kg dry weight.
 - 4.6.2. Test methods for measuring metals 2 – 9 and 16:
 - 4.6.2.1. Sample preparation by digestion - USEPA SW-846 Method 3050B acid digestion of sediments, sludges, soils, and oils, or using an equivalent digestion method.
 - 4.6.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of the stated absolute maximum concentration in Table 1, Column 2.
 - 4.6.2.3. Results must be reported as mg/kg dry weight.
 - 4.6.3. Test method for measuring 10, 11, 17 and 18:

- 4.6.3.1. Analysis using USEPA SW-846 Method 8270D Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), or equivalent.
- 4.6.3.2. Results must be reported as mg/kg dry weight.
- 4.6.4. Test method for measuring PCBs:
- 4.6.4.1. Analysis using USEPA SW-846 Method 8082A Polychlorinated Biphenyls (PCBs) By Gas Chromatography (GC), or equivalent.
- 4.6.4.2. Measure the following PCBs: Aroclor 1016 (CAS Registry No. 12674-11-2), Aroclor 1221 (CAS Registry No. 11104-28-2), Aroclor 1232 (CAS Registry No. 11141-16-5), Aroclor 1242 (CAS Registry No. 53469-21-9), Aroclor 1248 (CAS Registry No. 12672-29-6), Aroclor 1254 (CAS Registry No. 11097-69-1), Aroclor 1260 (CAS Registry No. 11096-82-5).
- 4.6.4.3. Results must be reported as mg/kg dry weight.
- 4.6.5. Test method for measuring physical contaminants (13 and 14):
- 4.6.5.1. Analysis using Australian Standard AS4454-2003 Composts, soil conditioners and mulches, "Appendix H - Method For Determination Of Moisture Content And Level Of Visible Contamination".
- 4.6.5.2. Results must be reported as % contamination on a dry mass basis.
- 4.6.6. Test method for measuring maximum particle size:
- 4.6.6.1. Analysis using Australian Standard AS4454-2003 Composts, soil conditioners and mulches, "Appendix F – Method for Determination of Particle Size Grading".
- 4.6.6.2. Results must be reported as % by mass retained on a sieve with 16 mm apertures.
- 4.6.6.3. The entire sample must pass through the sieve.
- 4.6.7. Test method for measuring pesticides (non-scheduled):
- 4.6.7.1. Analysis using USEPA SW-846 Method 8270D Semivolatile Organic Compounds By Gas Chromatography/Mass Spectrometry (GC/MS) for all pesticides (non-scheduled) or equivalent, except for the following:
- (a) Analysis of Dichlofluanid – AOAC method 2007.01 Pesticide Residues in Foods by GC/MS.
- (b) Emamectin benzoate – acceptable analytical methods for the determination of emamectin benzoate include high-performance liquid chromatography (HPLC) with fluorescence detection.
- (c) Brodifacoum – acceptable analytical methods for the determination of brodifacoum include high-performance liquid chromatography (HPLC) with fluorescence detection such as AOAC International 18th Edition, Method 983.11 and *Journal of Chromatography A*, 1985, Volume 321, Pages 255-272.
- 4.6.7.2. Results must be reported as mg/kg dry weight.
- 4.6.8. Test method for measuring monobutyltin:

4.6.8.1. Analysis using International Organization for Standardization ISO/DIS 23161.2:2007 Selected organotin compounds – Soil quality by Gas-chromatographic method (GC), or equivalent.

4.6.8.2. Results must be reported as mg/kg dry weight.

Notification

4.7. On or before each transaction, the processor must obtain a written statement of compliance in accordance with clauses 7.18 of 'the organic outputs derived from mixed waste exemption 2014'.

4.8. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the organic outputs:

- a written statement of compliance certifying that all the requirements set out in this order have been met;
- a copy of the organic outputs exemption, or a link to the EPA website where the organic outputs exemption can be found; and
- a copy of the organic outputs order, or a link to the EPA website where the organic outputs order can be found.

Record keeping and reporting

4.9. The processor must keep a written record of the following for a period of six years:

- the sampling plan required to be prepared under clause 4.2.1;
- all characterisation sampling results in relation to organic outputs supplied;
- the quantity of any organic outputs supplied;
- the name and address of each person to whom the processor supplied the organic outputs;
- the location(s) where the organic outputs are applied, including the address and paddock or plot identification;
- the rate(s) at which the organic outputs are applied to the land at each location as defined above; and
- the date(s) upon which the organic outputs are applied to the land at each location as defined above.

4.10. The processor must provide, on request, the most recent characterisation results for organic outputs that are supplied to any consumer of the organic outputs.

4.11. The processor must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.6.

5. Definitions

In this order:

animal waste means dead animals and animal parts and any mixture of dead animals and animal parts.

AOAC International 18th Edition means Dr. William Horwitz and Dr. George Latimer, Jr. Editors. "Official Methods of Analysis of AOAC International", 18^h Edition Revision 2 (2007), AOAC INTERNATIONAL, Gaithersburg, MD, USA.

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or

- filling, raising, reclaiming or contouring the land.

biological stabilisation means a process whereby mixed waste undergoes a process of managed biological transformation for a period of not less than a total of 6 weeks of composting and curing, or until an equivalent level of biological stability can be demonstrated. Any such alternative process must be clearly defined in writing and validated by a suitably qualified person prior to claiming compliance with this exemption. A written record of the validation report must be kept for a minimum period of three years.

biologically stabilised means the mixed waste that has undergone biological stabilisation.

broad acre agricultural use means application to land where the land is used for agriculture. This does not include the keeping and breeding of poultry or pigs, food root crops, vegetables or crops where the harvested parts touch or are below the surface of the land.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply, organic outputs to land.

food waste means waste from the manufacture, preparation, sale or consumption of food but does not include grease trap waste.

garden waste means waste that consists of branches, grass, leaves, plants, loppings, tree trunks, tree stumps and similar materials, and includes any mixture of those materials.

manure means faecal matter generated by any animal other than humans and includes any mixture of animal faecal matter and biodegradable animal bedding such as straw or sawdust.

mine site means land disturbed by mining on which rehabilitation is being carried out by or on behalf of:

- (a) the holder of an authority under the *Mining Act 1992* pursuant to an approved rehabilitation plan, or
- (b) the State of NSW.

mixed waste means:

- (a) residual household waste that contains putrescible organics and/or
- (b) waste from litter bins that are collected by or on behalf of local councils.

It may only be mixed with any one or more of the following:

- (i) waste collected from commercial premises by or on behalf of councils as part of its kerbside household waste collection service,
- (ii) commercial waste sourced from restaurants, clubs, pubs, hotels, motels, resorts, offices, schools and shopping centres that is similar in composition to household waste (but may include a higher proportion of food waste),
- (iii) manure,
- (iv) food waste,
- (v) animal waste,
- (vi) grit or screenings from sewage treatment systems that have been dewatered so that the grit or screenings do not contain free liquids,
- (vii) up to 20% source separated household garden and food waste.

It must not contain any other waste. For example, it must not contain:

- (a) any special waste, hazardous waste, restricted solid waste or liquid waste as defined in clause 49 of Schedule 1 to the Act; or
- (b) any source separated recyclable household waste other than those set out in (vii) above.

N/A means not applicable.

non-contact agricultural use means application to land where the land is used for the growing of fruit or nut trees or vines but not where fallen produce is or may be collected off the ground. It does not include application to land where the land is used for grazing or for any other cropping purpose.

pasteurisation means a process to significantly reduce the numbers of plant and animal pathogens and plant propagules. Pasteurisation requires that the entire mass of organic material be subjected to either of the following:

- (a) Appropriate turning of outer material to the inside of the windrow so that the whole mass is subjected to a minimum of 3 turns with the internal temperature reaching a minimum of 55°C for 3 consecutive days before each turn. Where materials with a higher risk of containing pathogens are present, including but not limited to manure and food waste, the core temperature of the material mass should be maintained at 55°C or higher for 15 days or longer, and during this period the windrow should be turned a minimum of 5 times.
- (b) An alternative process that guarantees the same level of pathogen reduction, and the reduction of plant propagules as in (a). Any such alternative process must be clearly defined in writing and validated by a suitably qualified person prior to claiming compliance with this exemption. A written record of the validation report must be kept for a minimum period of three years.

pasteurised means that the mixed waste that has been subject to a process of pasteurisation.

pathogen means a living organism that could be harmful to humans, animals, plants or other living organisms.

plantation forestry use means application to an area of land on which the predominant number of trees or shrubs forming, or expected to form, the canopy are trees or shrubs that have been planted (whether by sowing seed or otherwise) for the purpose of timber production.

processor means a person who processes, mixes, blends, or otherwise incorporates organic outputs into a material in its final form for supply to a consumer.

source separated recyclable household waste means household waste from kerbside waste collection services that has been separated for the purpose of recycling.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of organic outputs that is not repeated,
- in the case where the supplier has an arrangement with the recipient for more than one supply of organic outputs the first supply of organic outputs as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies organic outputs should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of organic outputs remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet.

Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Research program

The goal of the Resource Recovery Order and Resource Recovery Exemption for organic outputs is to facilitate the resource recovery of fit for purpose organic outputs by minimising the amount of physical and chemical contaminants.

Trials and research will be conducted to examine the environmental and human health impacts of contaminants in the organic outputs.

The EPA intends to extend the RRE for agricultural uses following a review of the results of the research and trials. The nature of the extended RRE for broad acre agricultural use, non-contact agricultural use and plantation forestry use will be determined taking into account:

- trials that are to be conducted in collaboration with the processors of mixed waste,
- the goal of the exemption,
- the environmental, agricultural and human health impacts of the use of organic outputs,
- the technological capabilities of AWT facilities including the adequacy of pre-sorting processes, and
- community acceptance of the use of organic outputs.