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

The coal ash 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 coal ash and blended coal ash to which 'the coal ash exemption 2014' applies. The requirements in this order apply in relation to the supply of coal ash and blended coal ash for application to land in line with the uses described in 'the coal ash exemption 2014'.

1. Waste to which this order applies

1.1. This order applies to coal ash and coal ash blended with other materials (blended coal ash). In this order, coal ash means coal combustion products (CCPs), fly ash or furnace bottom ash from burning Australian black coal. This does not include brine conditioned or treated ash.

2. Persons to whom this order applies

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

2.2. This order does not apply to the supply of coal ash or blended coal ash 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. Generator requirements

The EPA imposes the following requirements on any generator who supplies coal ash.

Sampling requirements

4.1. On or before supplying coal ash, the generator must:

4.1.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the coal ash.

4.1.2. Undertake sampling and testing of the coal ash as required under clauses 4.2 and 4.3 below. The sampling must be carried out in accordance with the written sampling plan and Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent).

4.2. Where coal ash is generated for land application as a soil amendment for the growing of vegetation the generator must undertake the following sampling and analysis:

4.2.1. Where <1000 tonnes of coal ash is generated per year, the coal ash must be sampled by taking 3 composite samples per year. Each sample must be tested for analytes 5 and 12 in Table 1 according to test method 4.8.4 and 4.8.3.

4.2.2. Where >1000 tonnes of coal ash is generated per year, the coal ash must be sampled by taking 3 composite samples per year and an additional 1 composite sample for every 1000 tonnes or part thereof generated. Each sample must be tested for analytes 5 and 12 in Table 1 according to test method 4.8.4 and 4.8.3.

4.3. Where the coal ash is generated for use as an engineering material and is generated as part of a continuous process, the generator must undertake the following sampling:

4.3.1. Characterisation of the coal ash 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. Characterisation must be conducted for coal ash generated and processed during each 2-year period following the commencement of the continuous process; and

4.3.2. Routine sampling of the coal ash by collecting either 5 composite samples from every 10,000 tonnes (or part thereof) processed or 5 composite samples every 3 months (whichever is the lesser); and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1 other than those listed as ‘not required’ in Column 3. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of routine sampling. However, if characterisation sampling occurs at the same frequency as routine sampling, any sample collected and tested for the purposes of characterisation under clause 4.3.1 may be treated as a sample collected and tested for the purposes of routine sampling under clause 4.3.2.

4.4. Where the coal ash is generated for use as an engineering material and is not generated as part of a continuous process, the generator must undertake one-off sampling of a batch, truckload or stockpile of the coal ash, by collecting and testing 10 composite samples from every 4,000 tonnes (or part thereof) generated and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1.

Chemical and other material requirements

4.5. The generator must not supply coal ash to any person if, in relation to any of the chemical and other attributes of the coal ash:

4.5.1. The concentration or other value of that attribute of any sample collected and tested as part of the characterisation or the routine or one-off sampling of the coal ash exceeds the absolute maximum concentration or other value listed in Column 4 of Table 1, or

4.5.2. The average concentration or other value of that attribute from the characterisation or one-off sampling of the coal ash (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 1, or

4.5.3. The average concentration or other value of that attribute from the routine sampling of the coal ash (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 3 of Table 1.

4.6. The absolute maximum concentration or other value of that attribute in any coal ash supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4 of Table 1.

Table 1

Column 1	Column 2	Column 3	Column 4
Chemicals and other attributes	**Maximum average concentration for characterisation** (mg/kg 'dry weight' unless otherwise specified)	**Maximum average concentration for routine testing** (mg/kg 'dry weight' unless otherwise specified)	**Absolute maximum concentration** (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1
3. Lead	25	25	50
4. Arsenic	10	Not required	20
5. Boron	75	Not required	150 for engineering uses 60 for soil amendment
6. Chromium (total)	25	25	50
7. Copper	20	Not required	40
8. Molybdenum	10	Not required	20
9. Nickel	25	25	50
10. Selenium	10	10	20
11. Zinc	35	35	70
12. Electrical Conductivity[1]	NA	NA	NA for engineering uses 4dS/m for soil amendment
13. pH* in non-cementitious mixes[2]	7 to 12.5	7 to 12.5	6 to 13
14. pH in cementitious mixes	NA	NA	NA

[1]Note: while thresholds are not provided for electrical conductivity this must be tested and a record kept of the results.

[2]Note: The ranges given for pH are for the minimum and maximum acceptable pH values in the coal ash.

Test methods

4.7. The generator 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.

4.8. The generator must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the coal ash it supplies 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.

4.8.1. Test method for measuring the mercury concentration:

4.8.1.1 Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated maximum average concentration in Table 1, Column 2 (i.e. < 0.1 mg/kg dry weight).

4.8.1.2 Report as mg/kg dry weight.

4.8.2. Test methods for measuring chemicals 2 - 11:

4.8.2.1 Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils.

4.8.2.2 Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of stated maximum average concentration in Table 1, Column 2 (i.e. 2.5 mg/kg dry weight for lead).

4.8.2.3 Report as mg/kg dry weight.

4.8.3. Test methods for measuring the electrical conductivity and pH:

4.8.3.1 Sample preparation by mixing 1 part coal ash with 5 parts distilled water.

4.8.3.2 Analysis using Method 103 (pH) and 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.8.3.3 Report electrical conductivity in deciSiemens per metre (dS/m).

4.8.4. Test method for measuring boron in coal ash for land application as a soil amendment:

4.8.4.1 Water soluble boron using a calcium chloride extractable method 12C1 or 12C2 in Rayment, G.E. and Lyons D.J. 2011 Soil Chemical Methods - Australasia, CSIRO Publishing (or an equivalent analytical method with a detection limit for water soluble boron <10% of the stated absolute maximum).

4.8.4.2 Report as mg/kg dry weight.

Notification

4.9. On or before each transaction, the generator must provide the following to each person to whom the generator supplies the coal ash:

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

Record keeping and reporting

4.10. The generator must keep a written record of the following for a period of six years:

- the sampling plan required to be prepared under clause 4.1.1;
- all characterisation, routine and/or one-off sampling results in relation to the coal ash supplied;
- the quantity of the coal ash supplied; and
- the name and address of each person to whom the generator supplied coal ash.

4.11. The generator must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for coal ash supplied to any processor or consumer of the coal ash.

4.12. The generator must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.8.

5. Processor requirements

The EPA imposes the following requirements on any processor who supplies blended coal ash.

5.1. The processor may blend the coal ash with materials that are the subject of a Resource Recovery Exemption and Resource Recovery Order if that material complies with all of the chemical and other material requirements under its Resource Recovery Order, and is able to be applied to land under its Resource Recovery Exemption for the following purpose(s) described in clauses 5.2.1 to 5.2.3.

5.1.1. as a soil amendment for the growing of vegetation;

5.1.2. in cementitious mixes such as concrete; and

5.1.3. in non-cementitious mixes such as an engineered fill in earthworks or for roadmaking activities as follows:

(a) pipe bedding material,

(b) selected backfill adjacent to structures,

(c) road pavement, base and sub-base structures,

(d) composite filler in asphalt pavements,

(e) rigid and composite pavement structures,

(f) select layers which act as working platforms at the top of earthworks,

(g) fill for reinforced soil structures (including geo-grid applications).

5.2. Where the pH of the coal ash received is below 6 and it is intended to be supplied for use in non-cementitious mixes, the processor must undertake the following before supplying the coal ash to a consumer for use as in 5.1.3:

5.2.1. blend the coal ash at a rate of 20% or less with lime, natural quarried rock, coal washery rejects, recovered railway ballast, crushed concrete, blast furnace slag, steel furnace slag and/or electric arc furnace slag; and

5.2.2. sample the mix by taking the same number of samples as required to be taken under clause 4.3 or 4.4 and testing the pH of those samples. The test results for each composite sample must be validated as compliant with the requirements listed in row 13 of Table 1.

Notification

5.3. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the blended coal ash:

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

Record keeping and reporting

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

- the quantity of any coal ash received from the generator and the generator's name and address;
- the quantity of any blended coal ash supplied; and
- the name and address of each person to whom the processor supplied the blended coal ash.

5.5. The processor must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for coal ash that it received from the generator.

6. Definitions

In this order:

brine conditioned ash means coal ash that has been conditioned or treated with brine concentrator waste from process water treatment.

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.

blast furnace slag means material that meets the chemical and other material requirements for blast furnace slag which are required on or before supply of blast furnace slag under 'The blast furnace slag order 2014'

cementitious mixes means either coal ash or blended coal ash which has been mixed with general purpose cement, lime and other activators for use in bound applications, where the materials must be chemically bound together.

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, coal ash or blended coal ash to land.

continuous process means a process that produces coal ash on an ongoing basis.

crushed concrete means waste concrete that has been processed into an engineered material, and meets the conditions of a resource recovery exemption.

electric arc furnace slag means material that meets the chemical and other material requirements for electric arc furnace slag which are required on or before supply of electric arc furnace slag under 'The electric arc furnace slag order 2014'

non-cementitious mixes means either coal ash or blended coal ash that is not mixed with general purpose cement, lime and other activators or used in bound applications.

non-processing supplier means a person who supplies, causes, or permits the supply of cementitious mixes to a consume and who does not undertake any processing of coal ash.

processor means a person who processes, mixes, blends, or otherwise incorporates coal ash into blended coal ash for supply to a consumer.

steel furnace slag means material that meets the chemical and other material requirements for steel furnace slag which are required on or before supply of steel furnace slag under 'The steel furnace slag order 2014'

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of coal ash that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of coal ash the first supply of coal ash 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 and 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 coal ash 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 coal ash 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.