

Red Hill Waste Management Facility- Supplementary notes for contaminated waste disposal



**Contact an Environmental
Adviser at the EMRC**

PHONE: 9424 2222
FAX: 9277 7598



TEL (08) 9424 2222 FAX (08) 9277 7598 EMAIL mail@emrc.org.au WEB www.emrc.org.au

This is printed on recycled paper.

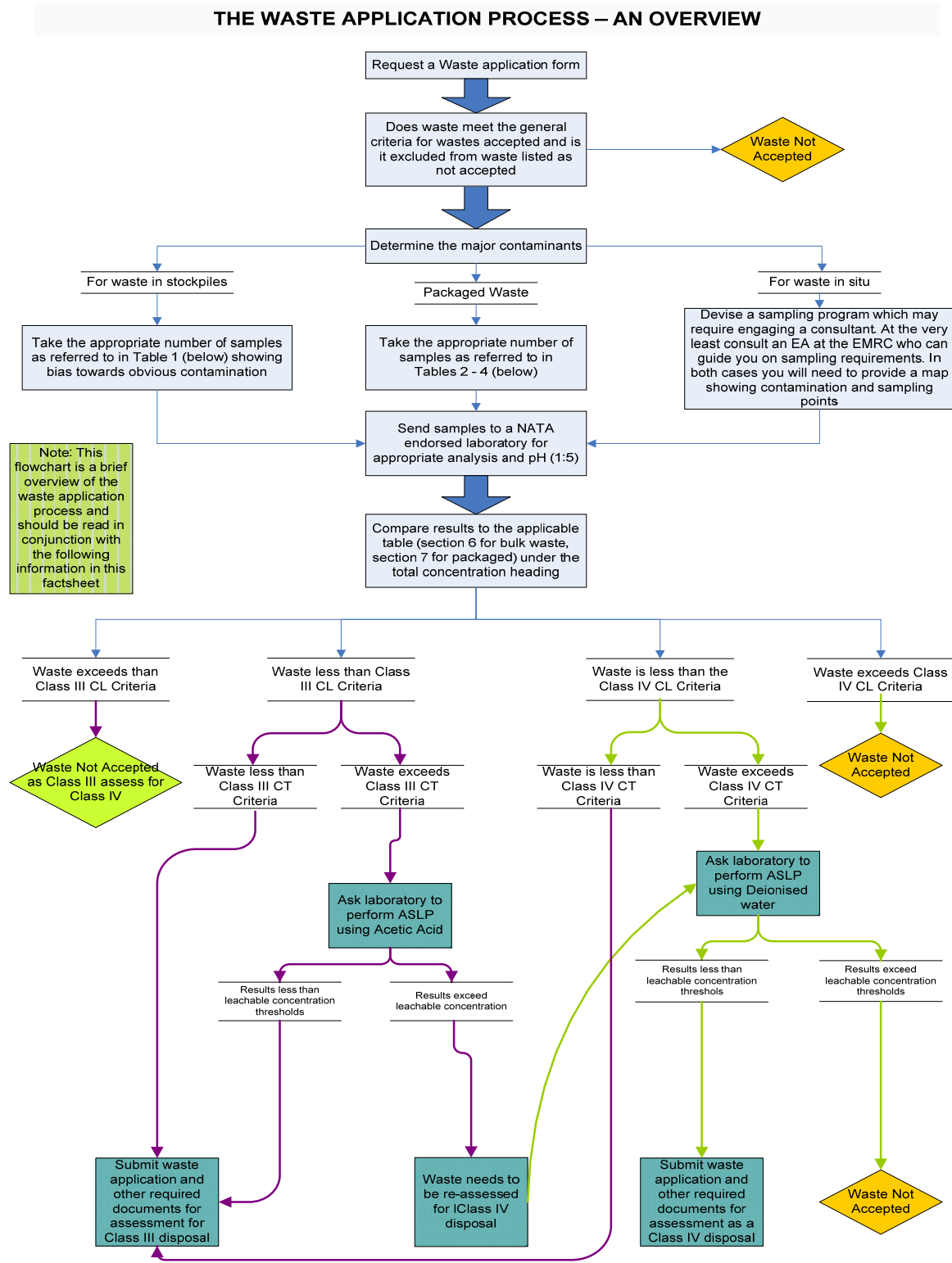
| | |
|---|-----------|
| Table of Contents | i |
| 1 Introduction | 1 |
| 2 Waste Acceptance | 2 |
| 2.1 Waste Application Process | 2 |
| 2.2 Wastes Accepted..... | 3 |
| 2.3 Wastes Not Accepted..... | 3 |
| 2.4 Waste Application Process | 3 |
| 2.5 Waste Application Form | 4 |
| 3 Sampling of the Waste | 4 |
| 3.1 How to take Samples..... | 4 |
| 3.2 How Many Samples Need to be Taken | 5 |
| 3.2.1 Bulk Waste | 5 |
| 3.2.2 Packaged Waste | 5 |
| 3.2.3 Insitu Waste..... | 7 |
| 4 Laboratory Analysis of Waste | 7 |
| 4.1 Getting Samples Analysed | 7 |
| 4.1.1 What Contaminants do I test for? | 7 |
| 4.1.2 Getting the Samples Analysed | 8 |
| 4.1.3 Holding Times | 9 |
| 4.1.4 Interpretation of results | 10 |
| 5 Exceptions to the Landfill Criteria | 11 |
| 5.1 The PPE Requirements of Class III | 11 |
| 5.2 Asbestos Contaminated Soil..... | 11 |
| 5.3 Asbestos Products..... | 11 |
| 6 Consequences for the incorrect classification of waste | 12 |

1 Introduction

The following information is provided to assist customers completing the waste application process for the Red Hill Waste Management Facility. We encourage you to contact an Environmental Advisor from the Waste Management Section of the EMRC before lodging an application to ensure you are going to meet all requirements needed for a successful application and all the likely contaminants are identified.

2 Waste Acceptance

2.1 Waste Application Process



2.2 Wastes Accepted

EMRC's Red Hill Waste Management Facility is a Class IV facility and is licensed by the Department of Environment to accept Class 1-IV waste which includes a range of domestic and residential waste, contaminated wastes and asbestos waste. Contaminated waste includes contaminated soils and waste from industrial processes.

2.3 Wastes Not Accepted

Certain wastes are not acceptable for disposal at Red Hill due to varying chemical and physical characteristics that do not meet DEC landfill guidelines, licence requirements or Red Hill's standard operating procedures. These include:

- Liquids and sludges e.g. material with greater than 20% moisture content.
- Waste that has a **pH** that falls outside the acceptable range of **3.5-10.0**.
- Corrosive waste e.g. metal wastes, lead assay slags.
- Reactive waste e.g. pool chlorine (strong oxidiser).
- Flammable waste e.g. high sulphur wastes > 20 w/w%
- Radioactive waste.
- Infectious material (clinical and medical waste).
- Scheduled organochlorine pesticide waste.
- Explosives such as fireworks, ammunition or marine flares.
- Wastes which are dangerous when contacted with water e.g. bromine trifluoride, calcium carbide, sodium metal.
- Highly odorous waste (except where special arrangements are made with the Site Manager at Redhill) e.g. dead or rotting animal waste, biosolids, tannery waste and highly contaminated hydrocarbon waste.

2.4 Waste Application Process

If you wish to dispose of contaminated waste at the Red Hill Waste Management Facility you will need to submit an application form which will be assessed by the Environmental Staff at the EMRC. Information to be provided includes:

- A full description of the waste;
- Estimated quantity;
- Physical characteristics;
- Origin;
- Sampling procedure; and
- A copy of your NATA approved laboratory analysis

Prior to disposal at Red Hill, contaminated waste must be analysed to determine the total concentration of contaminants (measured in mg/kg) and their leachability. Following analysis, the contaminated waste is assessed in accordance with the DEC Landfill Waste Classification and Waste Definitions (1996).

Waste approvals are valid for one a month period and must be handed to the Weighbridge Attendant on arrival at Red Hill. Contaminated waste transported to Red Hill without a waste acceptance approval or controlled waste transport documentation will not be accepted.

2.5 Waste Application Form

A common mistake made by applicants is that not enough information is provided on the characteristics of the waste and the process generating the waste. At a minimum, a short paragraph explaining how the waste was created and the physical description plus any other relevant background information should be provided. The Environmental Advisor can then make an informed assessment and be confident that all contaminants have been identified.

3 Sampling of the Waste

3.1 How to take Samples

We would generally ask that the samples be taken from the most contaminated areas to give the worst case scenario. For in-situ sampling you will need to provide specific details on your sampling regime, which should include a map detailing the distribution of the contamination and the locations from which the samples were taken. If you have limited experience in this area you may wish to engage an environmental consultant to provide advice. A list of consultants can be found at www.eca.org.au

Soil samples should be stored with no head space in a glass jar with a PTFE lined cap which can be supplied upon request from most laboratories. Samples should be kept refrigerated and transported to a laboratory within 24hrs of sampling.

3.2 How Many Samples Need to be Taken

3.2.1 Bulk Waste

For bulk wastes the following table should act as a guide for the sampling requirements.

Table 1: Sampling requirements for bulk waste

| Bulk Waste (Stockpiled) | Quantitative Assessment |
|---|---|
| <100m ³ | 3 samples |
| 100m ³ to 200m ³ | 4 samples |
| 200m ³ to 500m ³ | 6 samples |
| 500m ³ to 1,000m ³ | 8 samples |
| 1,000m ³ to 2,000m ³ | 11 samples |
| 2,000m ³ to 3,000m ³ | 15 samples |
| 3,000m ³ to 4,000m ³ | 18 samples |
| 4,000m ³ to 5,000m ³ | 20 samples |
| 5,000m ³ to 10,000m ³ | 24 samples OR Take a minimum of 12 samples and follow Procedure D – Determining the 95% Upper Confidence Limit (Contaminated Sites Sampling Design Guidelines, NSW EPA, 1995) |
| > 10,000m ³ | Take 24 samples for volumes 5,000m ³ to 10,000m ³ , plus 4 more samples for each additional 10,000m ³ OR Take a minimum of 12 samples and follow Procedure D – Determining the 95% Upper Confidence Limit (Contaminated Sites Sampling Design Guidelines, NSW EPA, 1995) |

3.2.2 Packaged Waste

For packaged waste the number of samples is determined by the amount of information that is known regarding the source of the waste and the contaminants. The sampling requirements outlined below are taken directly from the DEC *Landfill Waste Classification and Waste Definitions 1996 (As amended)*. Sufficient information will need to be provided to justify the scenario on which your sampling is based.

Table 2: Sampling requirements when contaminants unknown or no previous sampling has been conducted

| Number of Containers | Sampling Requirements | Value to be compared with waste classification criteria |
|-----------------------------|--|--|
| 1 to 3 | Three per container – one from the top, one from the middle and one from the bottom of each container | The average of the analysis results. |
| More than 3 | Three containers selected randomly and sampled as for 1 to 3 containers above. One sample from each other container, with depth selected randomly | The average plus the standard deviation of the analysis results. |

Table 3: Sampling requirements for known contaminants or when some previous sampling has been conducted

| Number of Containers | Sampling Requirements | Value to be compared with waste classification criteria |
|-----------------------------|--|---|
| 1 to 3 | One per container – with sampling depth selected randomly | The average of the analysis results. |
| 3 to 6 | Four containers selected randomly and one sample taken from each at a depth selected randomly. | The average plus the standard deviation of the analysis results*. |
| > 6 | Three containers selected randomly and one sample taken from each at a depth selected randomly. One sample from each set of three (or part thereof) remaining containers, with containers and depths selected randomly. | The average plus the standard deviation of the analysis results*. |

* The DEC *Landfill Waste Classification and Waste Definitions 1996 (As amended)* currently lists the value to the average of the sample results. This, however is an error carried over from the previous version of the guidelines.

Table 4: Sampling requirements for Homogenous Process Waste

| Number of Containers | Sampling Requirements | Value to be compared with waste classification criteria |
|-----------------------------|--|--|
| <10 | Two containers selected randomly and one sample taken from each at a depth selected randomly | The average of the analysis results. |
| 10 – 20 | Three containers selected randomly and one sample taken from each at a depth selected randomly. | The average plus the standard deviation of the analysis results. |
| > 20 | Three containers selected randomly and one sample taken from each at a depth selected randomly. One sample from each set of twenty (or part thereof) remaining containers, with containers and depths selected randomly. Eg. 45 containers = 5 samples 90 containers = 7 samples 105 containers = 8 samples | The average plus the standard deviation of the analysis results. |

3.2.3 Insitu Waste

For in-situ wastes please contact an Environmental Advisor in the Waste Management Section at the EMRC, as an appropriate number of samples will need to be determined on a case by case basis.

4 Laboratory Analysis of Waste

4.1 Getting Samples Analysed

4.1.1 What Contaminants do I test for?

Based on the source of the waste you should be able to identify the likely contaminants, however it is recommended that you speak to an Environmental Advisor (Waste Management Section) at the EMRC who can provide guidance on the necessary analysis to be conducted for your particular waste.

Regardless of the type of waste you will always be required to provide the pH (1:5) of the material. If you are required to test for hydrocarbons it is necessary to ask the laboratory to report the aromatic and aliphatic results separately. When analysing for chromium, it is

necessary to provide the hexa-valent chromium speciation. If the average result plus the standard deviation of the total concentration exceeds the contaminant threshold given in the table in sections 6 and 7 of the applications form, a leaching procedure (ASLP) will need to be carried out on the sample. For Class III waste the ASLP will need to be carried out using acetic acid. It is important that the laboratory determines the correct acetic acid leaching fluid using 1:20 pH measurements as per the Australian Standard Leaching Procedure, it may be necessary to tell the laboratory to conduct the ASLP using the leaching fluid as determined by them in accordance to the ASLP method. For Class IV waste the ASLP will need to be carried out using deionised water as the leaching fluid.

4.1.2 Getting the Samples Analysed

Analysis must be performed by a NATA (National Association Testing Authority) approved laboratory. Details of approved laboratories can be found at www.nata.com.au or by calling NATA on (08) 9451 0883. It is important to ensure that the laboratory of choice is NATA accredited for the actual tests required, and ask the laboratory to display their NATA accreditation on the laboratory reports to be submitted to the EMRC. Under no circumstances will a preliminary report be accepted. It is required that you request all Quality Control data associated with the samples to be included in the laboratory report. A chain of custody detailing the transfer of samples from the sampling stage to being accepted at the laboratory also needs to be submitted to the EMRC with your application.

4.1.3 Holding Times

You will need to ensure that samples are analysed within the appropriate holding times for the analysis required. Results obtained that are determined outside the holding times will not be accepted. This may be of high importance if additional analysis required, and may result in some cases the need for re-sampling to perform the additional analysis. The following tables give the maximum holding times for total concentrations and leaching procedures:

Table 5: The maximum soil sample holding times for total concentrations sourced from AS4482.1-1997

MAXIMUM SAMPLE HOLDING TIMES (DAYS)

| Analyte | Maximum sample holding time prior to sample extraction, days |
|--|--|
| Inorganics | |
| Metals and metalloids other than mercury and hexavalent chromium | 180 |
| Mercury | 28 |
| Hexavalent chromium | 28 |
| Cyanide | 7 |
| Organics - Semivolatiles | |
| Polynuclear (polycyclic) aromatic hydrocarbons (PAHs) | 14 |
| Pesticides, organochlorine (OCs) | 14 |
| Pesticides organophosphate (OPs) and herbicides | 14 |
| Polychlorinated biphenyls (PCBs) | 14 |
| Petroleum Hydrocarbons | 14 |
| Phenols | 14 |
| Phthalate Esters | 14 |
| Other Semivolatiles | 14 |

NOTES:

- 1 Table modified from ANZECC Guidelines for the laboratory analysis of contaminated soil—August 1996.
- 2 All samples for organics, hexavalent chromium, mercury and labile analytes should be kept at 4° C and forwarded to the laboratory as soon as possible.

Table 6: The maximum holding times for leaching procedures (ASLP) on soil samples sourced from AS4439.3-1997

| MAXIMUM SAMPLE HOLDING TIMES (DAYS) | |
|---|---|
| Analyte | Maximum sample holding time prior to bottle leaching days |
| Inorganics | |
| Metals (all) | 28 |
| Anions (Cl ⁻ , F ⁻ , I ⁻ , SO ₄ ²⁻ , S ²⁻ , CN ⁻ , NO ₃ ⁻ , NO ₂ ⁻ , PO ₄ ³⁻) | 7 |
| Nitrogen (total Kjeldahl, NH ₃ /NH ₄ ⁺) | 7 |
| Phosphorus (all forms) | 7 |
| Organics | |
| Hydrocarbons (including total petroleum hydrocarbons, PAHs) | 7 |
| Pesticides, organochlorine (OCs) | 28 |
| Pesticides, other | 7 |
| Phenolics | 7 |
| Polychlorinated biphenyls (PCBs) | 28 |
| Other | 14 |

4.1.4 Interpretation of results

Once the laboratory results are obtained they need to be entered into the table in Section 6 for bulk waste or the table in Section 7 for packaged waste. If the average result plus the standard deviation of the total concentration exceeds the contaminant threshold given in the table, a leaching procedure (ASLP) will need to be carried out on the sample. These results are then compared to the Leachable concentration values given in Tables 6 and 7 of the application. If the values are less than the thresholds your waste may be accepted providing that all other criteria are met. There is the option of either recording the analytical results in Sections 6 & 7 of the application form or alternatively, or requesting an electronic copy of these tables, in which you can enter your results and the calculations are automatically updated.

5 Exceptions to the Landfill Criteria

There are two occasions when waste meets the criteria for disposal in Class III landfill but cannot be accepted as Class III due to occupational health reasons. Under these circumstances waste may be disposed in the Class IV landfill and charged at the corresponding rate. These circumstances are detailed below:

5.1 The PPE Requirements of Class III

The Class III landfill is a highly active cell and the tip face is accessed not only by Red Hill operating staff but also by external contractors on a daily basis. To minimize potential health risks to Red Hill staff and other contractors, Class III contaminated waste that requires PPE beyond the standard Class III PPE will only be approved for Class IV disposal and associated charges will apply. Standard Class III PPE at Red Hill is steel capped boots, high visibility vest, long sleeved shirt and long trousers. Nitrile gloves and safety/sunglasses are also used in Class III when required.

5.2 Asbestos Contaminated Soil

Asbestos contaminated soil can only be accepted in bulk without containment if the quantity of asbestos fibres have been quantified by a NATA certified laboratory as being less than 0.001 % (w/w).

All asbestos soil with greater than 0.001% or more asbestos fibres:

- Must be separated from other material for disposal where reasonably practicable.
- Be contained in a manner that prevents asbestos fibres escaping to the atmosphere during transport and disposal. This involves containing the material in sealed drums, bulka bags or an EMRC approved container.
- The container must be labelled as "Caution Asbestos" with writing no less than 50mm high.
- All containers must be transported on pallets for easy unloading of the material into the landfill cell.

5.3 Asbestos Products

To ensure the correct disposal of all other asbestos products (e.g. sheets, pipes, lagging etc.) at Red Hill, customers are to be aware of the following conditions:

- Asbestos products must be separated from other material.
- Asbestos products are to be wrapped in bundles no higher than 1m or 3 sheets, such that the bundles can be manually handled into the Asbestos Bin at the Transfer Station.
- A forklift is available for unloading larger bundles, but they must be transported on pallets or wooden cleats.
- Each bundle is to be wrapped in heavy-duty black plastic and sealed with adhesive tape to prevent asbestos fibres entering the atmosphere during transport and disposal.
- Bundles are to be labelled with the words "CAUTION ASBESTOS" in letters not less than 50mm high.

6 Consequences for the incorrect classification of waste

All waste that is accepted at Redhill Waste Management Facility will be sampled and tested by the EMRC to verify the class of the waste being accepted. Any waste that is found to be of a higher class than that indicated on the application form will be reported to the Department for the Environment. The EMRC will also meet with the applicant to determine the reason for the non-conformance and may take other action as appropriate.

Regular reclassification of waste from a single customer may lead to the EMRC banning waste from that customer. *For these reasons, the EMRC strongly encourages customers to ensure that the waste sampling methods and laboratory analysis adequately represent the waste, and that the application form depicts the true nature and origin of the waste*