

# CODE OF PRACTICE FOR COMPOST FACILITIES

## ALBERTA ENVIRONMENTAL PROTECTION

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# CODE OF PRACTICE FOR COMPOST FACILITIES

## ALBERTA ENVIRONMENTAL PROTECTION

### PREFACE

**1(1)** The Code of Practice for Compost Facilities is incorporated by the *Waste Control Regulation* (A.R. 192/96), under the authority of section 36 of the *Environmental Protection and Enhancement Act*. Persons responsible for Class I compost facilities accepting 20,000 tonnes or less of waste per year must meet all its requirements to ensure that their activities are in compliance with Alberta's environmental laws. In addition to the requirements of this Code of Practice, these persons responsible must comply with all requirements of the *Environmental Protection and Enhancement Act*, its associated regulations, the *Subdivision and Development Regulation* (A.R. 212/95), and all other applicable laws.

**(2)** Persons responsible for compost facilities affected by this Code must register with Alberta Environmental Protection prior to commencing the construction and operation of a compost facility. Section 4 of this Code deals with registration in greater detail.

### INTRODUCTION

**2(1)** This Code of Practice outlines minimum requirements for the design, construction, operation, and reclamation of Class I compost facilities that accept 20,000 tonnes or less per year of waste, and promotes environmentally sound management practices at those facilities. The *Guidelines for Compost Quality* published by the Canadian Council of Ministers of the Environment provide the compost quality objectives required by this Code.

**(2)** Compost facilities that accept more than 20,000 tonnes of waste require an approval under the *Environmental Protection and Enhancement Act*. Persons responsible for these facilities should consult the *Activities Designation Regulation* (A.R. 211/96) to determine whether their activities will require an approval.

**(3)** Questions or concerns regarding the application or contents of this Code of Practice can be made to:

Alberta Environmental Protection  
Northeast Boreal & Parkland Regions  
Regional Director  
5th Floor, 9820 - 106 Street  
Edmonton, AB T5K 2J6  
Phone: (403) 427-9562  
Fax: (403) 422-5120

or:

Alberta Environmental Protection  
Northwest Boreal & Northern East Slopes Regions  
Regional Director  
Provincial Building  
203, 111 - 54 Street

Edson, AB T7E 1T2  
Phone: (403) 723-8395  
Fax: (403) 723-8542

or:

Alberta Environmental Protection  
Southern East Slopes & Prairie Regions  
Regional Director  
201 Deerfoot Square  
2938 - 11 Street N.E.  
Calgary, AB T2E 7L7  
Phone: (403) 297-7605  
Fax: (403) 297-5944

## **DEFINITIONS**

**3(1)** In this Code of Practice,

- (a) "active life" means the period of operation of a compost facility beginning with the initial receipt of waste and ending at completion of reclamation activities;
- (b) "aerated static pile system" means a composting system in which a heap of feedstock is formed and subjected to forced or passive aeration to provide the aerobic biological decomposition of the organic matter;
- (c) "compost" means the stable humus-like material that
  - (i) results from the biological decomposition and stabilization of organic materials under aerobic and thermophilic conditions,
  - (ii) is potentially beneficial to plant growth, and
  - (iii) is sanitized to a degree that protects human health;
- (d) "compost facility" means a Class I compost facility that accepts 20,000 tonnes or less of waste per year;
- (e) "disease vectors" means animals capable of transmitting disease to humans;
- (f) "feedstock" means waste that contains organic materials which decompose biologically;
- (g) "in-vessel system" means any compost system in which feedstock is contained in a vessel or reactor;
- (h) "leachate" means liquid that has percolated through and drained from feedstock or compost and has extracted dissolved or suspended materials;
- (i) "MPN" means most probable number;

- (j) "operation procedures" means the activity of processing and producing compost, and may include blending of materials, agitation and mixing of materials, addition of moisture, stabilization of compost and storage of product;
- (k) "points of compliance" means the location or locations where measurements of groundwater quality are taken to assess the performance of the compost facility;
- (l) "run-off" means any rainwater or meltwater that drains as surface flow from the processing, curing and associated storage areas of a compost facility;
- (m) "run-on" means any rainwater or meltwater that drains as surface flow onto the processing, curing and associated areas of a compost facility;
- (n) "uppermost formation" means a continuous water-saturated geological stratum or strata, including but not limited to sand lenses and aquifers, that is projected to be the most probable pathway or pathways for lateral transport of leachate;
- (o) "windrow system" means a compost system in which feedstock is placed in elongated piles of triangular or trapezoidal cross-section that are turned in order to enhance convective airflow, to control temperatures and to blend the feedstock.

**(2)** Terms defined in section 1 of the *Environmental Protection and Enhancement Act* and in the *Waste Control Regulation* (A.R. 192/96) are incorporated into and become part of this Code of Practice, unless otherwise defined or modified within this Code of Practice.

## **REGISTRATION**

**4** In addition to any information required by the Director under the *Approvals and Registration Procedure Regulation* (A.R. 113/93), the person responsible shall complete the registration form attached to this Code of Practice and submit the completed form to the Director, prior to commencing construction of a compost facility.

## **PERSON RESPONSIBLE'S DUTY**

**5** The person responsible for a compost facility shall comply with all requirements of this Code of Practice.

## **DESIGN AND CONSTRUCTION**

**6(1)** The person responsible shall construct a compost facility that is designed in accordance with the following requirements:

there shall be a design plan which defines and describes

the operating capacity of the compost facility to receive feedstock, and to produce and store the compost and non-compostable materials,

the structures and equipment required for the operation of the compost facility, and

the structures, facilities and equipment for control of emissions of offensive odours and contaminated liquids;

there shall be a composting pad

constructed of at least 0.5 metres of clayey material having a permeability less than  $5 \times 10^{-8}$  metres per second, or an alternative material that provides equivalent protection, and

constructed with a minimum slope of 2 percent in order that the pad does not collect water or leachate;

there shall be a run-on control system that prevents the flow of surface water onto the storage, processing and curing areas; and

there shall be a run-off control and management system that provides protection of surface water quality in accordance with section 7(4).

**(2)** In addition to the requirements set out in section 6(1), a compost facility that is enclosed within a structure or vessels shall include an air pollution control system to control emissions of

- (a) offensive odours,
- (b) airborne microbials, and
- (c) airborne particulates so that the opacity from all air emission sources does not exceed an opacity of 40 percent over a period of 6 consecutive minutes per hour.

**(3)** The Director may, by notice in writing, require the person responsible to construct and maintain a groundwater monitoring system where

- (a) the compost facility is not enclosed within a structure or vessel;
- (b) the volume of feedstock exceeds 5,000 tonnes per year;
- (c) the compost facility is located on a natural geological material with a hydraulic conductivity that is greater than  $5 \times 10^{-7}$  metres per second and within 5 metres vertically of an unconfined aquifer; or
- (d) the base of the composting pad is less than 1 metre above the seasonally high water table.

**(4)** The person responsible shall comply with any notice given under section 6(3) in accordance with its terms.

## **OPERATING REQUIREMENTS**

**7(1)** The person responsible shall develop, maintain and implement an operations plan that is consistent with the compost facility design and includes as a minimum:

- (a) a description of the source and types of feedstock to be composted;
- (b) operation procedures for feedstock preparation, aeration, moisture control, and

temperature control;

- (c) feedstock acceptance procedures and policies;
- (d) an emergency response plan to deal with fires, releases, or medical emergencies;
- (e) a plan for the management, detection and mitigation of offensive odours; and
- (f) a plan for minimizing dust.

(2) The compost shall meet the following requirements:

- (a) fecal coliforms shall be less than 1000 MPN per gram of total solids calculated on a dry weight basis; and
- (b) salmonella sp. shall be less than 3 MPN per 4 grams of total solids calculated on a dry weight basis, where the Most Probable Number method of analysis is used, or otherwise non-detectable by other generally accepted methods of analysis.

(3) Notwithstanding subsection (2), where the feedstock does not include materials that may include high levels of human pathogens, including but not limited to food scraps and fecal matter, the processing shall meet the following requirements:

- (a) in an in-vessel or aerated static pile system, the compost shall be maintained at operating conditions of 55°C or greater for 3 days;
- (b) in a windrow system, the compost shall attain an internal temperature of 55°C or greater for at least 15 days, and during this stage, the windrow shall be turned at least 5 times.

(4) The person responsible shall prevent the release of leachate or run-off from the composting pad to the surrounding watershed unless the leachate or run-off meets the least stringent of the following parameters:

- (a) surface water background quality,
- (b) the most recent edition of *Alberta Ambient Water Quality Interim Guidelines*, published by Alberta Environmental Protection, or
- (c) the most recent edition of *Canadian Water Quality Guidelines*, published by the Canadian Council of Ministers of the Environment.

(5) The person responsible shall establish and maintain litter controls to minimize the escape of wastes from the compost facility, and shall retrieve waste that is washed or blown onto adjacent properties or accumulates on the compost facility and shall properly dispose of such waste.

(6) Non-compostable materials that result from preparation of the feedstock or from the screening of compost shall be removed from the compost facility and properly disposed of when the amount of non-compostable materials exceeds the storage capacity specified in the design plan required in section 6(1).

(7) The person responsible shall establish controls to prevent the propagation, harbourage or

attraction of disease vectors and noxious weeds at the compost facility.

**(8)** The person responsible shall post signs at the compost facility entrance providing the following information:

the name of the person responsible for the compost facility,

any waste restrictions, and

telephone numbers for

the person responsible,

the local fire department,

Alberta Environmental Protection, Pollution Emergency Response Team (1-800-222-6514), and

the local police department.

**(9)** The person responsible shall provide artificial or natural barriers at the compost facility to control public access and prevent unauthorized vehicular traffic and illegal dumping of wastes.

## **MONITORING**

**8(1)** The person responsible shall establish a program to monitor and record the temperature of the composting process.

**(2)** Where a groundwater monitoring system is required by the Director under section 6(3), the person responsible shall

obtain and analyze representative samples from the groundwater monitoring system on an annual basis, or at a frequency approved in writing by the Director, and

analyze such samples for the parameters set out in section 8(3).

**(3)** Throughout the active life of a compost facility, the groundwater quality shall meet the performance standards listed in Table 1 in the uppermost formation or formations at the points of compliance. The person responsible may apply in writing to the Director where the person responsible seeks to use alternate performance standards, providing justification for the use of the proposed alternate performance standards.

**Table 1 - Performance Standards for Compost Facilities**

<b>CHEMICAL</b>	<b>CONCENTRATION (mg/L)</b>
Chloride (Cl)	250
Nitrate - nitrogen	10
pH	6.5 to 8.5 units

**(4)** The Director may, by notice in writing to the person responsible,

require that groundwater samples be analyzed for parameters other than those set out in section 8(3),

change the frequency of groundwater monitoring and analysis required under section 8(2), or

require the person responsible to install additional groundwater monitoring wells,

where the Director is of the opinion that it is necessary due to

the character of feedstock received at the compost facility,

changes in groundwater quality at the compost facility, or

other evidence that suggests an impact on groundwater quality.

(5) The person responsible shall comply with any notice given under section 8(4) in accordance with its terms.

(6) Where groundwater at the compost facility fails to meet the performance standards set out in section 8(3), the person responsible shall notify the Director and shall implement a groundwater remediation plan.

(7) Where groundwater monitoring is require the person responsible shall

protect all groundwater monitoring wells from damage,

keep all groundwater monitoring wells locked, except when being sampled, and

clean, repair or replace groundwater monitoring wells which have been damaged or are no longer able to produce representative groundwater samples prior to the next scheduled sampling date.

(8) The person responsible shall conduct analyses of samples collected in the following manner:

for water and leachate samples, in accordance with

the most recent edition of *Standard Methods for the Examination of Water and Wastewater*, published by the American Public Health Association, American Water Works Association and the Water Environment Federation,

the *Methods Manual for Chemical Analysis of Water and Wastes* (1987), published by Alberta Environmental Protection, as amended from time to time, or

any other equivalent method accepted by the Director in writing;

for feedstock and compost samples, in accordance with

the most recent edition of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, published by the United States Environmental Protection Agency,

the most recent edition of *Manual on Soil Sampling and Methods of Analyses*, published by the Canadian Society of Soil Science, or

any other equivalent method accepted by the Director in writing.

## COMPOST QUALITY

**9** The person responsible shall produce a compost that meets the standards established in the most recent edition of *Guidelines for Compost Quality*, published by the Canadian Council of Ministers of the Environment.

## RECLAMATION

**10** Before reclaiming the compost facility, the person responsible shall notify the Director in writing of the intent to close the compost facility.

## RECORD KEEPING

**11(1)** The person responsible shall establish and maintain an operating record for the compost facility, and shall provide the operating record and its contents to Alberta Environmental Protection upon request.

**(2)** The operating record shall include the following information:

- (a) a copy of the registration for the compost facility,
- (b) the current versions of the design and operations plans for the compost facility, and
- (c) annual reports as required by section 11(3).

**(3)** Throughout the active life of the compost facility, the person responsible shall prepare an annual report for the compost facility for the calendar year from January 1 to December 31, and shall place the report in the operating record by March 31 of the following year. The annual report shall contain the following information:

- (a) the type and volume of feedstock received and processed in the calendar year;
- (b) the amount of compost produced, stored, and shipped from the compost facility in the calendar year;
- (c) the operating temperatures recorded in accordance with section 8(1);
- (d) the surface water monitoring data;

the groundwater monitoring data, where groundwater monitoring is required in writing by the Director under section 6(3);

an analysis of the compost where it is intended for an unrestricted use as defined in the most recent edition of *Guidelines for Compost Quality*, published by the Canadian Council of Ministers of the Environment;

any remedial action taken in relation to clauses (c), (d) and (e).

## REPORTING

**12** The person responsible shall immediately report any contraventions of this Code of Practice

by telephone to the Director of Pollution Control Division at (403) 422-4505. The Director of Pollution Control Division may require the person responsible to provide a further written report of any contravention.

## **CODE AMENDMENT**

**13** This Code of Practice will be reviewed every 5 years beginning in 2001. Alberta Environmental Protection will accept and compile written comments on the contents of this Code at any time, and will review all comments received at the next review. The Director may institute a review and amendment of this Code of Practice at any time. All proposed amendments to this Code of Practice will be reviewed by government, industry, and the interested public. The Director shall have the final decision on amendments made to this Code of Practice. Amendments to this Code of Practice shall become effective when published by Alberta Environmental Protection.

**CODE OF PRACTICE FOR COMPOST FACILITIES REGISTRATION FORM**  
**SMALL COMPOST FACILITIES**  
**(<20,000 tonnes/year of feedstock)**

**1. GENERAL INFORMATION:**

Applicant Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Legal Land Description  
for Compost Facility: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

**2. TECHNICAL INFORMATION:**

(a) Please provide the following information as specified in the Code of Practice for Compost Facilities ("the Code"):

- (i) copies of the site investigation, compost facility design and groundwater monitoring system as specified in sections 6(1) to 6(3) inclusive of the Code where applicable; and
- (ii) a copy of the operations plan as specified in Section 7 of the Code.

(b) If applying for alternate groundwater quality performance standards, as specified in Section 8(3) of the Code, please provide documentation supporting the request for alternate performance standards.

**3. OTHER INFORMATION**

Please provide:

- (a) a copy of the development approval issued by the local municipal authority;
- (b) an overview of the public's involvement in the siting and planning of the compost facility.
- (c) where appropriate, a copy of the field approval issued under section 19(1)(c) of the Public Lands Act; and
- (d) the rationale for the compost facility, in writing.

I acknowledge that I have reviewed a copy of the Code of Practice for Compost Facilities, and that I am bound by the provisions of the Code and any subsequent amendments to it.

\_\_\_\_\_  
Applicant Signature

\_\_\_\_\_  
Date

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For Office use only:

Date Received: \_\_\_\_\_

Registered by: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Director's Signature

\_\_\_\_\_  
Date