



Eco-Efficiency Centre

Committed to Excellence and Efficiency

Fact Sheet: Eco-Efficiency and Composting

Introduction

Since November 30, 1998, a ban of all organic materials (such as, food scraps, yard waste, boxboard, soiled and non-recyclable paper) entering Nova Scotia landfills has been in place. The HRM has begun to enforce this legislation within the business community. To avoid contravening this legislation, businesses have to identify methods of dealing with organic waste, and implement them.

What is Composting?

Composting is the process by which organic materials are broken down aerobically (in the presence of oxygen) or anaerobically (without oxygen) by the actions of microorganisms. The product of this process is rich humus which can be used to greatly improve the texture and fertility of soil, making it a valuable product for agricultural uses and gardening. For business, composting can be done either off-site or on-site. For off-site composting, a waste hauler is hired to pick up organic material from the business and deliver it to a larger facility. On-site composting is the method of treating organic material near the source, that is, setting up a composting system on the property of the business. While most large companies choose to contract with a hauler, some business are finding on-site composting is an attractive, less expensive alternative.

This fact sheet was prepared by the *Eco-Efficiency Centre* - a non-profit, non-government educational and environmental management support centre for small and medium-sized enterprises in Nova Scotia. The Eco-Efficiency Centre was established in 1998 as a partnership between Dalhousie University and Nova Scotia Power Inc., and is supported by private corporations, governments and foundations. The Centre assists companies to achieve better environmental and economic performance through resource conservation, pollution prevention, recycling, reuse, and general good environmental practices.

Eco-Efficiency

What is Eco-Efficiency?

Eco-efficiency is a practical and systematic approach that businesses can adopt in setting and achieving environmental and business performance objectives. It is very closely associated with and complementary to other concepts such as Occupational, Health and Safety (OHS), Total Quality Management (TQM), and Pollution

Prevention (also known as source reduction). It involves changing processes, finding alternatives, and reducing or eliminating the generation of toxic wastes instead of dealing with problems of cleanup or disposal after the fact. It also includes extending product liability, enhancing material recyclability and maximizing the use of renewable resources. Eco-efficiency means doing more with less, creating and providing quality products and services while reducing resource use, waste and pollution along the entire value chain. It is not only about managing waste after it is created, but strives towards preventing and minimizing waste in the first place.

Choosing the Right Way to Compost On-Site

When deciding upon a method of composting for your business, there are many variables to consider so that the right method is chosen.

- Cost of bins and equipment.
- Geographic location.
- Climate.
- Source and amount of organic material to be composted.
- Staffing/size of business.
- Animal nuisance such as raccoons.
- Surrounding land use.



Methods for Composting

Once the decision to use on-site composting at your business has been made, there are four popular methods available to choose from. These methods include backyard composting, aerated static piles, in-vessel composting and vermiculture.

Backyard Composting

To simplify it, this method is basically a vessel or bin you place in the backyard of your business which holds food waste and yard scraps to reduce them to compost. This option requires an appreciable amount of work for maintenance. Material must be turned over on a regular basis to keep the process advancing at a steady pace. Backyard composters also need a fairly strict mix of yard waste, food waste, moisture and exposure to air to run without problems such as odour. As well, the flow of meats/dairy products to the backyard composter should be monitored very carefully. Such products slow down the composting process, and can cause odours and attract animals (although there are some commercial 'digesters' designed for these products). The backyard composter has a low start-up cost and is ideal for business with a large outdoor space and employees willing to provide the needed maintenance. The end product of composting is ideal for landscaping around the business or giving to employees/customers.

Key Notes: Very low start up cost, though outdoor space is required, as is a good deal of maintenance.

Most Applicable: Small/Medium sized businesses whom have adequate space outdoors, as well as an employee willing to help maintain the composter.

Aerated Static Pile

A more advanced version of the backyard composter is called the Aerated Static Pile. This system is very similar to the basic backyard composter in set up; however, this unit has a blower fan and an air distribution system down the center of each pile to force air in. These "add-ons" eliminate the need for an individual to physically turn the compost. This system is intended for coarse materials. Material that is too moist or too finely broken up does not compost well as it prevents proper circulation of air. To promote a uniform rate of composting, compostable waste should be mixed with a bit of bulk material (such as sawdust, mature compost, peat moss or leaves). Even though there is no maintenance needed with regards to turning compost over, the moisture content and the temperature must be monitored. The composting area should be enclosed or covered to provide better control of moisture and temperature.

The installation of an aerated static pile costs more than the backyard composter, however, less maintenance time is needed to tend to the unit.

Key Notes: Higher start up cost, outdoor space required, less maintenance required because of aeration system.

Most Applicable: Small/Medium size businesses with outdoor space, who wish to minimize the need for regular maintenance.

In-Vessel Composting

In-Vessel composting systems are a step up from the aerated static piles. They attempt to create conditions within the compost mass that are optimum for composting activity. Basically, there are two versions, batch and continuous flow. In-vessel systems are able to balance the optimum carbon, nitrogen, oxygen, water and temperature levels. Through technological innovations, in-

vessel systems have become highly automated systems that shred, mix, aerate, water and unload automatically. This set up makes in-vessel composting suitable for urban areas with land restrictions and concerns over odour, animal attraction and maintenance. In-vessels can handle any kind of food waste, including meat and dairy products.

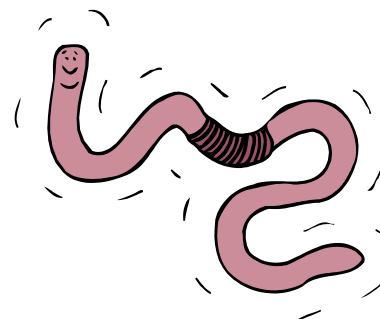
The main advantage of the in-vessel systems relate to the speed of the composting process and the control maintained over key composting variables (i.e. moisture). The principal disadvantage of this unit is the high initial cost of the technology.

Key Notes: High start up cost, high operating costs, and outdoor space must be available.

Most Applicable: Large/Medium sized businesses willing to pay for a unit which requires little maintenance.

Vermi-Composting

Vermi-Composting, or vermiculture, is the addition of worms to the composting process to help speed up the process and make it suitable for indoors.



Vermiculture uses a specific kind of earthworm, the red wiggler, because of its ability to survive and adapt to sudden changes to its surroundings. For the climate in Nova Scotia, it is best to place the bin indoors in the winter, cooler seasons. For a small office, vermiculture requires a bin about the size of a normal blue box. Once a bin is obtained, the bin should be filled about six or eight inches high in bedding material such as peat moss, leaves, and saw dust. For this size bin, about half a pound of worms are added to settle in this material and organic waste can be added by burying it into the soil. Also, meat and dairy products should not be added to the vermi-composting unit.

Vermiculture does require a small amount of maintenance because food scraps must be buried under the soil, as well, the bedding must be changed every four months and the compost extracted at that time.

Key Notes: Very low start-up costs, regular maintenance required, should be kept indoors.

Most Applicable: Small/Medium sized businesses with no outdoor space. Also ideal for offices of 2-8 people.

Composting Tips

Once you've selected the most applicable on-site composting method, there are some general tips for proper operation which apply to all forms of on-site composting including:

- Proper segregation of materials. Train employees in the source separation of food waste in the kitchen/lunch room and the compost operations.

- Food waste fed to a composting unit must be free of contaminants like heavy metals and non-compostable materials.
- Breaking up organic material helps it to compost at a faster rate. To speed up the composting process add organic material in small pieces.
- Make sure the circulation of air is not a problem in your composter. If it is a problem the composting unit will give off odours.
- For every amount of food waste, add a small portion of 'brown waste'. Brown waste is comprised of such materials as leaves, straw, hay, woody material, paper, egg cartons, toilet paper rolls, cereal boxes, boxboard, etc.
- Use positive results to promote the image of your business.

For more information, contact:

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References and Resources

Information for this fact sheet was collected through several publications, fact sheets and websites from a number of sources. We would like to acknowledge these organizations, and agencies, or their information.

- **Clean Nova Scotia** - "How to Start a Composting Program in your Business" <http://www.clean.ns.ca/>
- **Environmental Information Exchange** – Additional information on four composting methods - <http://www.brookes.ac.uk/eie/compost.htm>
- **Resource Recovery Fund Board** [phone: 1-800-665-LESS] <http://www.rafb.com/>
- **The Worm Firm**, Atlantic Canada's Vermi-Composting Specialists - <http://www.wormfirm.ns.ca/index.html>
- **HRM Solid Waste Division** [phone: 490-5960] <http://www.gov.ns.ca/enla/waste/about/>
- **University of Georgia Compost Research** - <http://pubs.caes.uga.edu/caespubs/pubcd/B1189.htm>

Telephone and Website Guide

Eco-Efficiency Centre

Tel - 902-461-6704

Website - www.dal.ca/eco-burnside

Atlantic Canada Opportunities Agency (ACOA)

Tel - 902-426-6743

Website - www.acoa-apeca.gc.ca/e/index.shtml

Atlantic Region, Environment Canada, P2

Tel - 902-426-7231

Website - www.atl.ec.gc.ca/epb/pollprev/

NS Dept of Environment and Labour

Tel - 902-424-5300

Website - www.gov.ns.ca/enla

NS Materials Exchange

Website - www.nsmaterials.com

RRFB Nova Scotia

Tel - 1-877-313-7732 (toll-free)

Website - www.rafb.com

Directory of Solid Waste, Reuse, Recycling and Composting

Contacts in Nova Scotia

<http://www.gov.ns.ca/enla/emc/wasteman/contents.htm>