Composting
FACTSHEET

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REGULATIONS AFFECTING COMPOSTING

AGRICULTURAL COMPOSTING, REGULATIONS

The ultimate goals of composting are to produce a good growing medium for plants and a stabilized source of nutrients in an organic form. Within British Columbia, composting and, to a lesser extent compost quality are regulated primarily by two acts. The *Waste Management Act* and the *Agricultural Land Commission Act*. Composting of other wastes, such as municipal solid waste, yard waste and biosolids or the co-composting of agricultural waste with other wastes is not considered to be agricultural composting and could be subject to regulation by several other Acts.

Waste Management Act

In British Columbia there are three kinds of composting which may occur on a farm that are considered agricultural composting as defined by the *Code of Agricultural Practice for Waste Management*, part of the *Agricultural Waste Control Regulation*, under the *Waste Management Act:*

1. Agricultural wastes produced on a farm that are composted and used on the same farm for various agricultural and horticultural purposes.
2. Agricultural wastes both produced and composted on a farm and sold off or distributed off the farm.
3. Agricultural wastes produced off the farm but brought to a farm and composted. The resulting compost must be used on the farm.

Composting operations which do not fall within the preceding three categories are not considered agricultural operations, and are subject to regulation under the *Waste Management Act* or the *Production and Use of Compost Regulation.*

Agricultural Waste is defined under the *Agricultural Waste Control Regulation* and includes manure, used mushroom media and agricultural vegetation waste. Woodwaste is the only non-agricultural waste that can be co-composted with agricultural waste, and the resulting compost may used on the farm or be sold off the farm. However, the woodwaste must have been previously used on the farm for one of the allowed uses described in the *Code of Agricultural Practice for Waste Management*. Note: Although the Code does not allow the direct use of woodwaste in composting, it is implied that this would be an allowed use.

Materials used to make compost include, but are not limited to, manure, straw, vegetative waste, wood waste, other sources of carbon and nitrogen, and bulking agents.

In some instances it may be necessary to add materials or wastes not produced on the farm to produce good quality, useful compost. For example, fish waste may be used to balance the carbon: nitrogen ratio of woody wastes from nurseries. Similarly, straw, woodwaste or ground paper may be blended with manure high in nitrogen and moisture. Non-agricultural wastes brought onto a farm for composting purposes requires a permit or approval from Ministry of Environment, Lands and Parks.

Farm practices must not cause pollution. If a farm operation does not comply with the Code, it may need to be operated under a waste management permit. The B.C. Ministry of Environment, Lands and Parks is authorized to take legal action anytime under the Waste Management Act should pollution occur.

Agricultural Land Commission Act

In addition to regulations under the Waste Management Act which govern composting, there are provisions under the *Agricultural Land Commission Act* and the *Soil Conservation Act* which allow the Agricultural Land Commission to set policies which control composting activities on lands within the Agricultural Land Reserve (ALR). Policy 014/86 deals with composting and divides such activities into three categories:

Category 1: General Commercial Composting. This includes general composting, including municipal solid waste, that may be part of a municipal or regional waste disposal program. A variety of materials may be composted from different sources and may or may not use agricultural waste as part of the process.

Category 2: Agriculture Commercial Composting. This includes facilities that have a strong agricultural orientation due to one or several forms of locally generated animal waste being a prime input into the operation.

Category 3: Farm Composting. This includes the composting of wastes originating on and off the farm for the purposes of the farm operation. Waste may be brought onto the property if the composting operation is for growing medium or a product to be used exclusively for the farm operation upon which the composting activity is taking place. Examples include mushroom farms, nurseries and greenhouses.

The third category above deals with the types of composting activities which are allowed for under the *Agricultural Waste Control Regulation*. The second category deals with composting operations which are not considered to be agricultural composting operations although they may be carried out on agricultural land with permission. The first category describes operations which would likely require exclusion of the land from the ALR.

Farm Practices Protection (Right to Farm) Act

This Act provides farmers with the fundamental right to farm in B.C.'s important agricultural areas, particularly in the Agricultural Land Reserve, provided "normal farm practices" are followed and other legislation is abided by, specifically the Waste Management Act, Pesticide Control Act and the Health Act. The Farm Practices Protection Act protects farmers from undue nuisance complaints regarding odour, dust and noise and provides a complaint resolution process.

COMPOST QUALITY

Although agricultural composting is not regulated by compost quality criteria, compost products, leaving a farm will enter a market where many products are governed by such criteria. The following discussion pertains to compost quality criteria and the parameters which are usually measured. See Managing Agricultural Composting Systems, Factsheet No. 382.500-7, for an example of compost quality criteria.

As previously mentioned, the goals of composting are to produce a good growing medium for plants or a stabilized source of nutrients in an organic form. Parameters such as moisture content, maturity, total organic matter content, porosity, water retention, particle size, pH, nutrient content and specific conductance (soluble salts) are factors which may be used to evaluate compost quality. Also of importance are the presence of unwanted items such as soluble salts, stones, glass, metal, plastic, pathogenic bacteria, viable weed seeds, pesticide residues and heavy metals. In general, compost containing these contaminants is not acceptable for any agricultural use.

Foreign material, in a compost product is defined as the presence of organic or inorganic material that is not readily decomposed, such as glass, metal, plastic, leather and bones, but does not include sand, grit or small stones. Some of these materials may not be a concern for certain agricultural applications or for a low grade use such as landfill cover, but if present in noticeable quantities, can make compost unacceptable for use in horticulture production, and landscape gardening. Compost is classified in the *Production and Use of Compost Regulation (Schedule 2 part 2(a)* by the proportion of foreign matter present as follows:

Class 1: ≤ 1%,
Class 2: > 1% but ≤ 2%
Class 3: > 2% but ≤ 10%

Pathogens

The current standard in Canada (CAN/BNQ 413-200) for pathogens in compost is that faecal coliforms concentration must be less than 1,000 MPM/g (oven dried mass) and that no salmonella are to be present. The factors that bring about the destruction of organisms pathogenic to humans, animals and plants in the compost process are mainly a function of heat, time and competition from other microorganisms.

Heat: Temperatures should be at sufficiently high levels for a period of time long enough to destroy all pathogenic organisms. For example, salmonella typhosa does not growth beyond 46ºC (115ºF), and dies within 30 minutes at 55º to 60ºC (130º to 140ºF) and within 20 minutes at 60ºC (140ºF). Some plant pathogens or fungii may require temperatures of 50ºC (122ºF) for up to 14 days for complete control. Most organisms are destroyed within a short time in the active phase of a well functioning compost.

Time: Pathogens do not die instantaneously; some time is usually required. Section 9(1)h of the *Production and Use of Compost Regulation*, (BC Reg 334/93), published by the B.C. Ministry of Environment, Lands and Parks describes specific time and temperature requirements. Generally, if all organic waste has been exposed to 55ºC for 3 or more consecutive days, pathogens will be significantly reduced.

Weeds, Animal Health Products and Pesticides

As is the case for pathogen extermination, destruction of weed seeds generally occurs if the entire composting mass achieves a temperature of 55ºC (130ºF) or more for three consecutive days. Apart from this, note that under the *Weed Control Act*, it is illegal to sell noxious weed seeds, such as Canada Thistle at all.

Animal health products such as drugs and hormones are reported to be destroyed if the composting process remains thermophilic for a minimum of three days.

TABLE 1
ALLOWABLE METALS CONCENTRATIONS FOR COMPOST [a]

Metal	Concentration [b] (mg/kg dry wt)
Arsenic	≤ 13
Cadmium	≤ 2.6
Chromium	≤ 210
Cobalt	≤ 26
Copper	≤ 100
Lead	≤ 150
Mercury	≤ 0.8
Molybdenum	≤ 5
Nickel	≤ 50
Selenium	≤ 2
Zinc	≤ 315

[a] From: Production and Use of Compost Regulations BC Reg 334/93.

[b] Metal concentrations (Code 1) refer to compost classed as Types Y and A, i.e. compost which has unrestricted distribution.

The possible presence of harmful pesticide and herbicide residues are of concern when making compost. Some pesticides have been reported to be destroyed by the composting process. Care should be taken when choosing compost materials suspected of containing pesticides.

Metals

Metals will not normally be of concern if you use clean agricultural feedstocks. Feedstocks are described in Co-composting with Off-Farm Wastes, Factsheet No. 382.500-13. For these materials, guidelines for metal concentrations exist. High concentrations of heavy metals in soils can affect the health of humans and animals eating crops grown on these soils. Once applied, most metals remain in the crop rooting zone for many years. The Production and *Use of Compost Regulations* published by BCMELP details the allowable trace metal content of municipal solid waste compost, including those available "on an unrestricted basis". Some example of allowable limits are listed in Table 1.

NON-AGRICULTURAL COMPOSTING, ANCILLARY REGULATIONS

A number of regulations relative to compost production relate to potential health hazards, while others are primarily concerned with the commercial production and sale of compost. There are three levels of government that establish legislative requirements for composting operations: local, provincial and federal. Each of these has jurisdiction over producers in aspects that legislate the prevention of pollution or nuisance. Compliance with one agency does not necessarily mean that requirements are satisfied for all agencies. Non-compliance with the legislation or regulation of any agency may result in fines, jail terms or regulated compliance, for example the requirement to operate under a permit.

Local Government

Local governments have the authority to enact and enforce a variety of land use plans and zoning bylaws that affect agricultural operations. Zoning bylaws delineate specific areas for agriculture within local government regions or districts, as well as establish specific setbacks for the siting of farm buildings. Specific setback distances from lot lines and watercourses are to help reduce conflicts with neighbours and to minimize pollution risk.

Local government authority to establish legislation affecting agriculture is given under the Municipal Act; however, all municipal planning and legislation within the Agricultural Land Reserve is subject to the *Agricultural Land Commission Act*, and the *Farm Practices Protection (Right to Farm) Act*.

When changes are made to a zoning bylaw, existing operations not in compliance with the new bylaw will be protected under the non-conforming section of the Municipal Act. This means that the operation would be considered "legally non-conforming" and could operate as previously, but would be limited to its present size. Expansion of a farm operation would require total conformance to any new bylaw.

Each local government varies in the number of bylaws affecting agriculture. Local government legislation can regulate such things as:

- specific setback distances from lot lines for buildings;
- building requirements in flood plains;
- nuisances, for example, excessive noise from machinery; and
- setback distances for facilities from watercourses.

With the enactment of the *Farm Practices Protection Act*, farm bylaws have been introduced into the *Municipal Act* that give local governments more flexibility in regulating the conduct of farm operations. Farm bylaws have to be approved by the Minister of Agriculture, Fisheries and Food.

Provincial Government

There are four provincial government ministries in British Columbia that administer Acts affecting farm practices on B.C. farming operations. When provincial and federal acts or regulations change, producers must meet such changes, since there is no "non-conforming status" as in local government legislation.

1. Ministry of Municipal Affairs, Recreation and Culture

Municipal Act. This Act gives local governments the authority to write bylaws that control the use and development of land, including the regulation of farming operations. Control of land is achieved through community plans, land use bylaws and development permits. The Municipal Act also gives local government the authority to make bylaws that control nuisance. Any of these regulations could effectively control the method of composting, or in more extreme cases, prevent the existence of operations at all.

2. Ministry of Health

Health Act. This Act regulates farm practices that could constitute a health hazard. A health hazard may occur, for example, if manure or other wastes are discharged to land, water or air to such an extent that nutrients or pathogens cause a health problem to the general public. Sanitary regulations for example, specifically address dead animal disposal. These regulations could affect the use of mortalities or off-farm wastes in composting operations.

3. Ministry of Environment, Lands and Parks

Waste Management Act. This Act is the primary provincial legislation responsible for controlling waste within the agricultural industry.
Pollution is defined under the Waste Management Act as "the presence in the environment of

substances or contaminants that substantially alter or impair the usefulness of the environment".

The *Agricultural Waste Control Regulation*, part of the *Waste Management Act*, is supplemented by a set of farm practice standards called the *Code of Agricultural Practice for Waste Management* (Code). This Code deals with the application and composting of agricultural wastes, and does not address non-agricultural waste composting.

Farms that compost off-farm yard waste with livestock manures and produce less than 20,000 m^3 of finished compost per annum must comply with Section 3 of the *Production and Use of Compost*

Regulations part of the *Waste Management Act*, as will as the Code. However, operations that mix other off-farm feedstocks will likely need to comply with Section 15, Request For Individual Exemption.

The purpose of the *Production and Use of Compost Regulation* is to facilitate recycling and resource recovery, and to protect the Province's land and water resources by regulating the production and use of compost made from municipal solid waste. This regulation does not cover the composting of on-farm wastes. This regulation does cover the composting of any municipal solid waste (MSW), and yard waste if the annual finished compost volume is greater than 20,000 m^3. The regulation sets strict limits on the size and location of a site as well as on the composting processes to be followed. Operations that compost sewage sludge (biosolids) are dealt with separately under other regulations. The compost operations which have an annual production of less than 60 cubic meters.

4. Ministry of Agriculture, Fisheries and Food

Agricultural Land Commission Act. This Act establishes the Agricultural Land Reserve (ALR), a provincial land use authority which designates the primary use of lands within its boundaries. The Agricultural Land Commission, through the Act, can specify allowed uses such as composting operations.

The *Soil Conservation Act* deals strictly with the removal and placement of fill on a property within the ALR. This Act can pertain to the development of composting facilities.

Federal Government

Fisheries Act. At the present time, the Fisheries Act is the primary federal legislation that addresses pollution from farms. This Act prohibits any unauthorized deposit of a deleterious substance into water frequented by fish or into water that may eventually enter water frequented by fish. Environment Canada, in cooperation with Fisheries and Oceans Canada, has the lead role in the administration of pollution control provisions for the Fisheries Act. The Canadian Shellfish Sanitation Program monitors shellfish water quality, and is included in the Fisheries Act. Examples of deleterious substances are manure, compost, runoff from compost production areas, and woodwaste leachate. The Fisheries Act is considered to be the strongest legislation for pollution control in British Columbia.

Fertilizer Act. Since compost may be used as an organic fertilant, the Fertilizer Act must be abided by. Applicable sections in the Act are titled: Exemptions from Registration, Registration, Standards, Regulations, Guaranteed Analysis and Labelling. Depending on the operation, a permit may or may not be required. The Fertilizer Act also provides details on nutrient content criteria.

Canadian Environmental Protection Act. Section 8(1)(b) of this Act presents guidelines on compost labelling under the auspices of the Environmental Choice Program. Manufacturers or importers of compost wanting to identify their product with The Environmental Choice EcoLogo must conform to this guideline.

Organic Soil Conditioners - Compost National Standard Of Canada (CAN/BNQ 413-200). This national standard for compost quality was prepared by Le Bureau de normalisation du Québec and is a voluntary standard for the industry.

This is one of a series of Factsheets on Composting. A list of references used in producing this series is included in the Composting Factsheet "Suggested Reading and References."

COMPOSTING FACTSHEET SERIES PREPARED BY:
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