FACT 1 SHEET

Easy Backyard Composting

Source: New York State Department of Environmental Conservation
Division of Solid & Hazardous Materials
Bureau of Waste Reduction & Recycling
e-mail: dshmwrr@gw.dec.state.ny.us

What is compost?

Compost is a dark, crumbly, earthy-smelling mixture that consists mostly of decayed organic matter. Composting is a simple, natural process, Nature's way of recycling nutrients and returning them to the soil so that they can be used again. Compost is used for fertilizing and conditioning soil. It can be made from materials that most households throw out.

What can I compost?

- Yard wastes, such as fallen leaves, grass clippings, weeds and the remains of garden plants.
- Kitchen scraps EXCEPT FOR meat, fish, bones and fatty foods (such as cheese, salad dressing and leftover cooking oil).
- Woody yard wastes, chipped or shredded, can be used as a mulch or for paths where they will eventually decompose and become compost.

By taking advantage of the natural composting process, you can help lighten the load of waste that would otherwise go to a landfill.

How do I make a compost pile?

It's easy! Follow these simple steps and in just a few hours, you'll be in business. To build a simple compost bin, you'll need:

- Small mesh wire fencing or snow fencing.
- Seven or more rough boards or stakes, depending on the shape of bin you choose. Build a square, rectangular or circular structure-your choice. For a typical home garden, a bin 3-to-4 feet in height and 5-to-8 feet square will do. Locate it away from buildings and combustible materials.

To start your compost pile:

1. Spread a layer of plant wastes 6-to-8 inches deep in the bottom of your bin. Moisten the layer thoroughly.
2. Make a second layer of high nitrogen fertilizer, such as 10-10-10. This will be a very thin layer-use ONLY about 1/2 pound or 1 cup to each 30-to-35 square feet. Moisten thoroughly.
3. Make a third layer with a few shovelsful of garden soil, about 1 to 2 inches deep. This will ensure that plenty of decay organisms are present in your compost pile. Again, moisten thoroughly.

That's all there is to it!

- Repeat steps 1, 2 and 3 until you have used up your waste material. To start, your pile should have at least four or five layers of waste.
- Kitchen scraps (minus meat, fish, bones and fatty foods) should be added to the center of the waste layers where heat will be the greatest.
- Pile waste material loosely in the bin. Too much compaction inhibits the flow of air through the pile.
- It helps to make the top layer slant toward the center where it will catch rainfall. Water is the key to successful composting. A compost pile should be kept damp, but not soggy, especially during dry spells.
- Be patient! it will take six months to a year before the compost is ready for use.

Composting Do's and Don'ts

- **Do** add lime, small amounts of wood ashes or crushed eggshells to the compost pile to neutralize acids which may form and cause an odor problem.
- **Do** mix grass clippings with other wastes to loosen them up. They have a tendency to compact.
- **Do** keep compost pile damp, especially during dry spells.
- **Don't** use unfinished compost. It will rob your plants of nitrogen instead of acting as a fertilizer.
- **Don't** compost weeds that are heavily laden with seeds. Some seeds will not be killed during the heating process.
- **Don't** add meat, fish, bones or fatty food scraps to the compost mixture. They will attract animals (dogs, cats, rats, etc.) and they do not decompose readily.
- **Don't** add diseased vegetable plants to the pile if the compost will be used on a vegetable garden. The disease organisms may reappear the following year.

Community Composting

Community composting is beneficial because:

- Leaves take up too much space in landfills-many communities now ban leaves from landfills.
- Many householders do not have the time or space to compost large quantities of organic waste, such as fallen leaves.
- Composting is environmentally safer -- leaves in landfills generate dangerous gases; burning leaves creates smoke pollution and is unlawful in many communities.
- Some communities will accept leaves and other yard wastes for community compost heaps. Finished compost is usually available free to residents. Find out what's happening in your area. If no program exists, urge your community leaders to put one in place.

Why Should I Make Compost?

Composting benefits you and your community.

For you . . .

- Composting is an easy, practical way to recycle your organic yard and kitchen wastes.
- Compost is an excellent soil conditioner for even the smallest yard and garden--it's safe to use and it costs practically nothing to make.
- Compost grows healthy plants and healthy plants improve the air by removing carbon dioxide and making fresh oxygen.
- For serious gardeners, compost is an inexpensive alternative to peat and other soil improvers.

For your community . . .

- Composting could remove more than 15 percent from the solid waste stream, if everyone participated.
- Many communities now ban leaves from landfills forcing residents to find other alternatives. Some communities have started composting programs.
- Composting eliminates air pollution caused by burning leaves and other yard wastes.
- Composting recycles nutrients by returning them to the soil.

For More Information…

If you want to know more about composting and about other, more elaborate, ways to make good compost, consult books or gardening magazines at your local library-or call your county Cooperative Extension office, listed in the telephone directory.

OTHER USEFUL LAWN INFORMATION

- Watering your lawn is best done in the early morning. An inch of water per week is sufficient for good root growth.

- Fertilizing varies with soil types and growing conditions. The rule of thumb is 2 to 4 pounds of nitrogen per 1,000 square feet of lawn per year.

Test the soil to determine your fertilizer need and remember to adjust the pH of the soil to between 6.5 and 7.2. This will improve the efficiency of the nutrients.

Studies have shown that grass recycling reduces the need for fertilizer by 25%.

FOR YOUR INFORMATION

- 1/4 acre of lawn produces more than 1½ tons of clippings during the growing season!

- The overall time spent on lawn care decreases with the elimination of bagging, even when mowing increases to once every four to seven days!

DO YOU COMPOST YARD DEBRIS?

If you don't want to leave grass clippings on your lawn, try backyard composting.

Composting your organic wastes in the backyard is simple and beneficial.

There are many methods to backyard composting ranging from a simple pile to a purchased composting bin.

For more information on "Leave It On The Lawn" or backyard composting call:

The Composting Hotline at
(518) 457-8704
or write to:

Bureau of Waste Reduction & Recycling
Division of Solid & Hazardous Materials
NYSDEC
625 Broadway
Albany, NY 12233-7253

Or contact your local Cornell Cooperative Extension Office.

printed on recycled paper

New York State
Department of Environmental Conservation

LEAVE IT ON THE LAWN

(Grass Recycling)

George E. Pataki, *Governor*
Erin M. Crotty, *Commissioner*

FACT 2 SHEET

Leave it on the Lawn (Grass Recycling)

Source: NYSDEC

LAWN CARE WASTE REDUCTION TIPS

How do you dispose of grass clippings after mowing the lawn?

- Put them in the garbage?
- Put them on the curb for collection?
- Compost them?

Why not try to "LEAVE IT ON THE LAWN!" It will:

- Benefit the environment.
- Improve your lawn.
- Save time.
- Save landfill space.

WHY YOU SHOULD "LEAVE IT ON THE LAWN"

- **Benefits the environment by reducing the amount and frequency of fertilizer application.** Grass clippings are 80% water and contain 2- 4% nitrogen, phosphorus, potassium and other nutrients. This is also good for you (lower fertilizer costs).
- **Improves your lawn.** Leaving grass clippings on the lawn returns nutrients to the soil resulting in healthier turf.
- **Saves time.** Since the grass is no longer bagged, fewer stops are required.

- **Reduces the amount of garbage you throw out.** Grass clippings can account for as much as 10% of the garbage we produce.

HOW TO "LEAVE IT ON THE LAWN"

Allow your grass to grow to three inches and then cut no more than one inch off the top. This is the "one-third" rule. This helps develop a deeper root system which is a natural defense against weeds, disease and drought.

During fast growing periods you may have to cut the grass every four to seven days.

COMMON QUESTIONS

1. Do grass clippings cause thatch?
No. Thatch is an accumulation of the "woody" parts of the grass plant: stems, roots and stolons, not the clippings. Thatch is most often caused by over watering and over fertilizing.

2. Isn't it more work to mow the lawn often enough to keep the clippings short?

No. Cutting grass before it is overgrown is easier and faster. Eliminating the time and effort it takes to bag clippings further shortens the mowing time.

3. What if my lawn grows too high between mowings to leave the clippings?
You have several options. You may mow over the clippings to further shred and scatter them. You may raise the mower height so only the top third of the grass blade is removed and then gradually lower the mower height over the span of several mowings.

4. Do I need a mulching mower?
No. Mulching blades and adaptor kits are available for many types of lawn mowers. When it is time to replace your mower, consider purchasing an electric mulching mower.

FACT 3 SHEET

Practical Source Reduction Tips

Source: NYSDEC Bureau of Waste Reduction and Recycling
625 Broadway
Albany, NY 12233-7253
(518) 402-8704

For Businesses

Preventing wastes, maximizing resources and increasing efficiency can give your company a competitive edge. You can take positive action now by implementing source reduction.

- Source reduction is any activity that prevents the creation of solid waste at the point of generation.
- Source reduction happens at the earliest possible stages of production, manufacturing and packaging processes.
- Source reduction activities should be integrated with reuse and recycling programs.

For Management…

- Develop a written source reduction policy and adopt a corporate ethic that encourages source reduction and other environmental practices.
- Take a look at how your business produces waste each day and identify the types and amounts of waste produced.
- Have brainstorming sessions to generate ideas on how to prevent waste. Reward good suggestions.

For Packaging…

- Avoid overpackaging.
- Ship your products on returnable or reusable pallets and containers.
- Minimize packaging waste as much as possible.

Purchasing Practices...

- Examine your production and purchasing procedures to see where wastes can be prevented.
- Adopt procurement polices that promote source reduction.
- Revise procurement specifications for supplies and materials to ensure that the products bought are produced and packaged with source reduction in mind.
- Consider cooperative purchases with other businesses to reduce price and packaging wastes.
- Buy supplies in bulk, larger sizes or in concentrated form.

In Your Office…

- Institute double-sided (duplex) copying to reduce paper use and mailing costs.
- Use alternatives to paper communication, such as voice mail and e-mail.
- Use routing slips to circulate memos, documents, periodicals and reports.
- Post nonurgent communications for general distribution on bulletin boards.

- Cull mailing lists to remove uninterested recipients and eliminate unwanted mail by notifying the sender.
- Proofread documents on the computer screen before printing.
- Eliminate unnecessary forms, reports and publications.

In the Snack Rooms and Cafeterias…

- Encourage employees to use china or reusable plates, cutlery, glasses and coffee mugs.
- Install cloth towel rolls or air dries in restrooms.

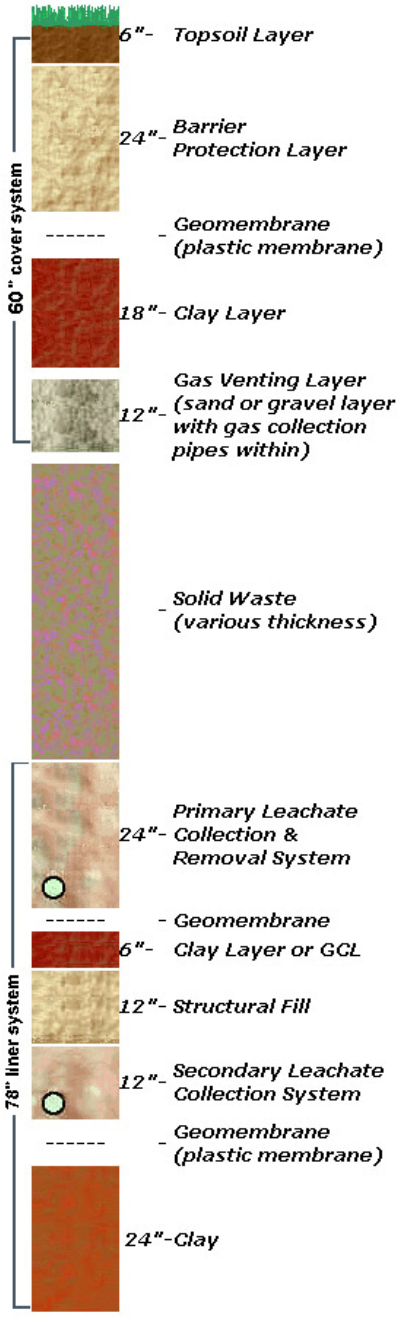
For Customers…

- Let people know about your source reduction programs.

FACT 4 SHEET

Landfill Environmental Containment System Components

Source: NYSDEC



Components of a Modern Municipal Solid Waste Landfill's Environmental Containment System

Component Functions:

The 24-inch thick barrier protection layer composed of soil and the overlying six inches of vegetated topsoil serve to protect the underlying geomembrane and promote rainwater run-off away from the landfill.

A 60 mil (0.06 in) thick (or 40 mil (0.04 in) thick, depending on the type of material used) geomembrane, along with the underlying low permeability clay layer, form a composite barrier cover system which prevents infiltrating rainwater from reaching the solid waste buried in the landfill and generating additional leachate.

The gas venting layer collects and controls landfill gases generated by the decomposing waste mass.

The waste mass may be greater than one-hundred and fifty feet thick.

The primary leachate collection and removal system consists of a series of drains and pipes within a layer of sand or gravel designed to collect all of the liquid leachate which has drained through the waste mass. A 60 mil thick geomembrane underlies the leachate collection system. On the bottom of the landfill, the 60 mil geomembrane is underlain by a clay layer or GCL (a thin manufactured layer of very strong textiles and extremely low permeability clay) component to make a composite liner. The collected leachate is sent to a wastewater treatment plant.

The landfill's secondary leachate collection and removal system is a backup series of drains and pipes within a layer of sand or gravel designed to collect any leachate which was not contained by the primary liner system. A 60 mil (0.06 in) thick geomembrane underlain by a 24 inch thick clay layer or GCL comprises the secondary composite liner system which acts as secondary containment for leachate.

This design serves to protect the environment from contaminants which may be present in the municipal solid waste. The landfill siting plan, which prevents the siting of landfills in environmentally sensitive areas, as well as on-site environmental monitoring systems, which monitor for any sign of groundwater contamination and for landfill gas, provide additional safeguards.

4 Landfill Environmental Containment System Components

FACT 5 SHEET

Liquid Waste Management Plan

Source: Public Safety and Prevention Initiatives
Ministry of Environment
Government of British Columbia

Sample Outline of a Liquid Waste Management Plan

A Liquid Waste Management Plan (Stages 1, 2 and 3) is a written record of a community's decisions and plans for the management of liquid wastes. The final document with attendant drawings should include but not necessarily be limited to the following.

Introduction

a) geographical outline of the area covered by the plan
b) existing environmental, social and economic conditions
c) existing official plan and proposed land use (land-use bylaws and zoning)

Projected population and industrial growth — sewered and unsewered

a) residential population
b) industrial (type)
c) commercial

Source control and waste volume reduction

a) options for source control and reduction of sewage and industrial waste volumes and toxicity
b) infiltration control options are to be considered to reduce the hydraulic load on treatment facilities

For a secondary treatment process to operate correctly, a good source control program is essential. Infiltration and inflows must be controlled. Failure to do so will result in process upsets, toxic effluent and contaminated sludges.

Waste recycling and utilization

a) options for recycling and using sewage effluent
b) industrial and commercial waste
c) beneficial reuse of sewage sludge and septic tank pumpage

Secondary treated effluent can be economically reused or recycled as irrigation water, industrial process or cooling water, and to develop wetlands, ponds, etc. Sewage sludge recovers nutrients and organics which can be used as fertilizer and organic soil conditioner, and to produce top soil for disturbed lands.

Estimated waste quantities as per growth projections

a) residential sewage
b) residential septic tank pumpage
c) industrial and commercial waste discharged to sewer
d) commercial sewage and septic tank pumpage
e) sewage treatment plant sludge
f) urban storm water runoff
g) combined sewer overflows (CSO)
h) pump station overflows

Capacity of water bodies and land to accept waste

a) water bodies
- availability
- capacity to accept waste
- limitations regarding health, fisheries and limnological aspects (separate studies may be required)
- possible hazards to the environment and other users

b) land
- availability
- capacity to accept or reuse waste
- limitations and soil types for various uses (e.g. agricultural and infiltration capabilities)
- failure contingencies
- other hazards

c) groundwater
- capacity to accept waste
- limitations
- failure contingencies
- other hazards

Options for treatment and disposal of waste

a) treatment technology options for effluent disposal or reuse
b) source control treatment options
c) elimination and/or treatment of combined sewer overflows (CSO)
d) urban storm water runoff management options, including source control and treatment
e) treatment technology for sludge and septic tank pumpage facilities
f) pump station overflow control
g) proposed effluent quality
h) final effluent disposal or reuse methods
i) individual on-site sewage disposal; factors to be considered include:
- overall environmental impact assessment of subdivisions on groundwater or surface water,
- soil and terrain suitability studies,
- lot size and development density.

Site location options

a) sewage treatment plants and sewage effluent outfalls
b) land treatment and reuse/disposal sites
c) septic tank pumpage and sewage sludge
d) effects on land use, zoning and growth patterns
e) official plan statement for the site
f) effect on Agricultural Land Reserve
g) pump stations
h) urban storm water runoff treatment facilities and/or discharges

Financial aspects

a) capital and operating cost estimates for
- waste collection alternatives including trunk sewers and force mains
- treatment alternatives
- treatment site options
- sludge and septic tank pumpage facilities
- final effluent disposal or reuse options

b) present worth analysis of alternatives
c) markets for recovered materials
d) benefits derived from reused or recovered materials
e) cost to the province and municipality considering applicable grants and other external sources of funding
f) cost to local taxpayer
g) stages of construction
h) a fiscal implementation plan with alternate funding strategies

Other relevant aspects

a) unique problems
b) public preferences
c) political considerations
d) other

Recommended course of action — reduction, collection, treatment, reuse, disposal, site locations, financing, public preferences

a) outline the reasons for choosing the selected methods of treatment and reuse or disposal and present an implementation schedule of the proposed works
b) outline the anticipated impact on the environment of chosen course of action
c) outline the benefits in terms of reducing toxicity and recycling, reusing or recovering materials and re sources

FACT 6 SHEET

About Waste to Energy

Source: Integrated Waste Services Association (IWSA)

Americans generate more than 225 million tons of trash annually. About one-third of that is recycled or composted, leaving 150 million tons of trash to be managed. This remaining trash will be handled using other elements of EPA's integrated waste management approach, primarily landfilling and waste-to-energy.

Waste-to-energy is an effective method of trash management and volume reduction with the added benefit of generating clean energy. Waste-to-energy technology has proven to be safe, environmentally friendly and economical. Burning trash effectively destroys waste stream bacteria, pathogens and other harmful elements. The waste-to-energy process also reduces the incoming volume by *about 90%.* The remaining ash is either used as a road bed material or similar product or landfilled.

The Future of America's Trash Disposal Dilemma - Answered by Proven Waste-to-Energy Products

- There are 102 waste-to-energy plants operating in 31 states throughout the U.S.
  - these plants burn about 14% of the trash generated nationwide or about 97,000 tons each day;
  - they generate more than 2,800 megawatts of electricity to meet the power needs of nearly 2.5 million homes;
  - they serve the disposal needs of more than 37 million people.

- Waste-to-energy plants represent a national capital investment of more than $10 billion.

- A recent survey conducted in 70 cities nationwide and published in *Solid Waste and Power Industry Sourcebook* indicates that almost three-quarters of the Americans polled believe waste-to-energy plants are vital components for the nation's environmental and economic future. Respondents also believe that waste-to-energy programs mean cleaner disposal of trash, less need for landfill space and cost-effective, safe power generation.

The Environment and the Economy are Incentives to Use Waste-to-Energy Technology

- Waste-to-Energy plant employees receive total annual wages in excess of $150 million. This translates into local economic benefits of more than $300 million. The waste-to-energy industry provides more than 6,000 jobs for American workers.

- The value of energy produced annually at waste-to-energy plants in this country exceeds $850 million. Waste-to-energy provides a reliable form of power because even after source reduction and recycling, the supply of fuel (trash) is dependable.

Waste-to-Energy Plants - Responsive to the Environment

- New Clean Air Act rules for municipal waste combustors ensure that waste-to-energy is one of the cleanest sources of power in the world. Energy is produced from trash as cleanly as it is produced from natural gas, reports a recent booklet jointly released by the U.S. Conference of Mayors, the American Society of Mechanical Engineers and others. Since the power from modern waste-to-energy plants usually replaces

older oil- or coal-burning technologies, the plants can actually *improve* the air quality in the communities where they operate.

- How clean are modern waste-to-energy facilities? Consider that in 1993, John Eppich and Don Avilla of the Los Angeles District Sanitation Department, and Joe Smisko, plant manager of the Commerce, California waste-to-energy plant, concluded that their local facility created less pollution than the trucks used to haul trash to a nearby landfill.

- The U.S. Department of Energy has labeled waste-to-energy technology as a major part of a plan to reduce carbon dioxide emissions in the United States. By replacing fossil fuels, waste-to-energy reduces the buildup of carbon dioxide in the air. Combusting biomass - materials such as paper, wood and food waste - *does not* add to the buildup of greenhouse gases.

- A recent air emissions sampling at a waste-to-energy facility in Indianapolis showed that sulfur dioxide emissions were reduced by 52% over the levels produced by an old coal power generating plant.

Waste-to-Energy Supports Recycling

- Communities with waste-to-energy plants recycle an average of *33% of their trash*.

- Waste-to-energy enables the recovery of materials that would not otherwise be recycled. Ferrous metals remaining in the ash are extracted by powerful magnets and sent to recycling centers. Since these metals are often combined with non-recyclable materials during manufacture, extraction of the metals would not be feasible without combustion. Nearly 788,000 tons of steel are recovered for recycling each year at waste-to-energy plants.

- Each year, an additional 939,000 tons of glass, plastics, white goods, batteries, paper, cardboard, metals, yard waste and ash are recycled on-site at waste-to-energy plants.

Safe Ash Management and Reuse

- Ash landfill studies conducted over the past decade show that leachate is like salty water with a metals content at about the same level as the standards set for drinking water.

- More than 300,000 tons of ash are used annually as daily and final cover in place of soil in landfills and in roadbed construction. Ash is used as a substitute for aggregate in road base materials, building construction and artificial offshore reefs.

- Waste-to-energy residue ash is safe for landfilling. The ash exhibits concrete-like properties causing it to harden once it is placed and compacted in a landfill. This reduces the potential for rainwater to leach contaminants in landfills into the ground.