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State Of Organics Recycling In The United States

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**U.S. Environmental Protection Agency
Resource Conservation Challenge
Web Academy
October 18, 2007**











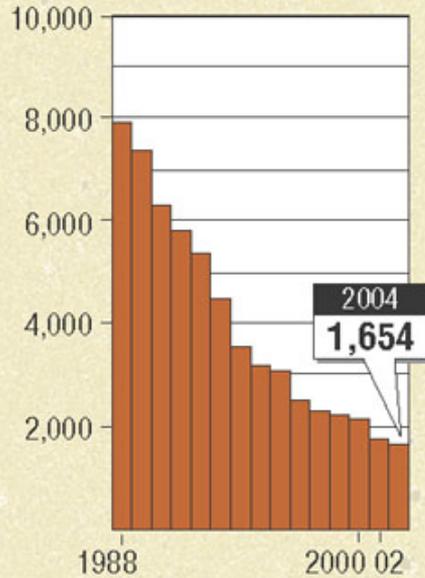
Key Messages

- **Paying To Throw Away Resources — Broken Paradigm**
- **Landfilling has created “Single Bullet” Reality of Waste Disposal — Strategies to mimic that success**
- **Cheap and easy still trumps resource recovery**
- **In organics recovery, end product demand is factor**

Key Messages

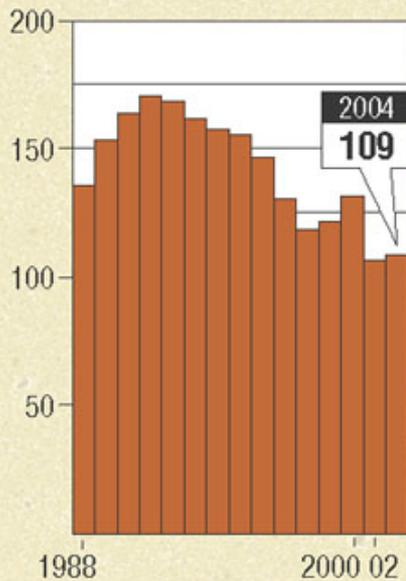
- **Renewable resource management — composting, compost use have key roles**
- **Energy Independence — Organics diversion is a major player**
- **Bottom Line: “Winners” measured on cost-benefit basis relative to:**
 - **Energy and biofuels production**
 - **Climate change**
 - **Eventually water and soil resources**

Landfills



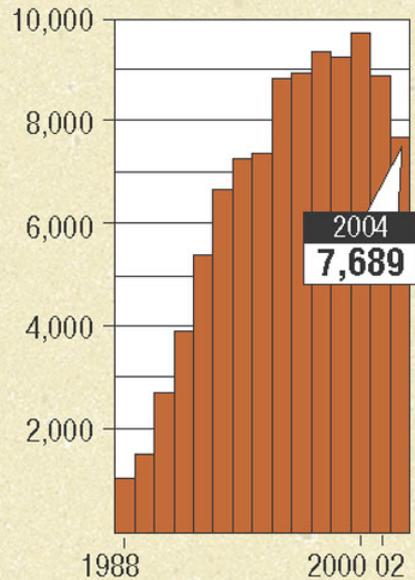
Landfills:
1988: 8,000
2004: 1,654

Waste-To-Energy

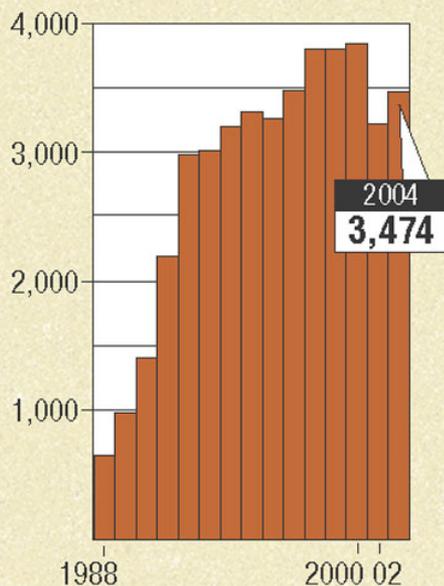


BioCycle, 2006, The State of Garbage In America

Curbside Programs



Yard Trimmings Facilities



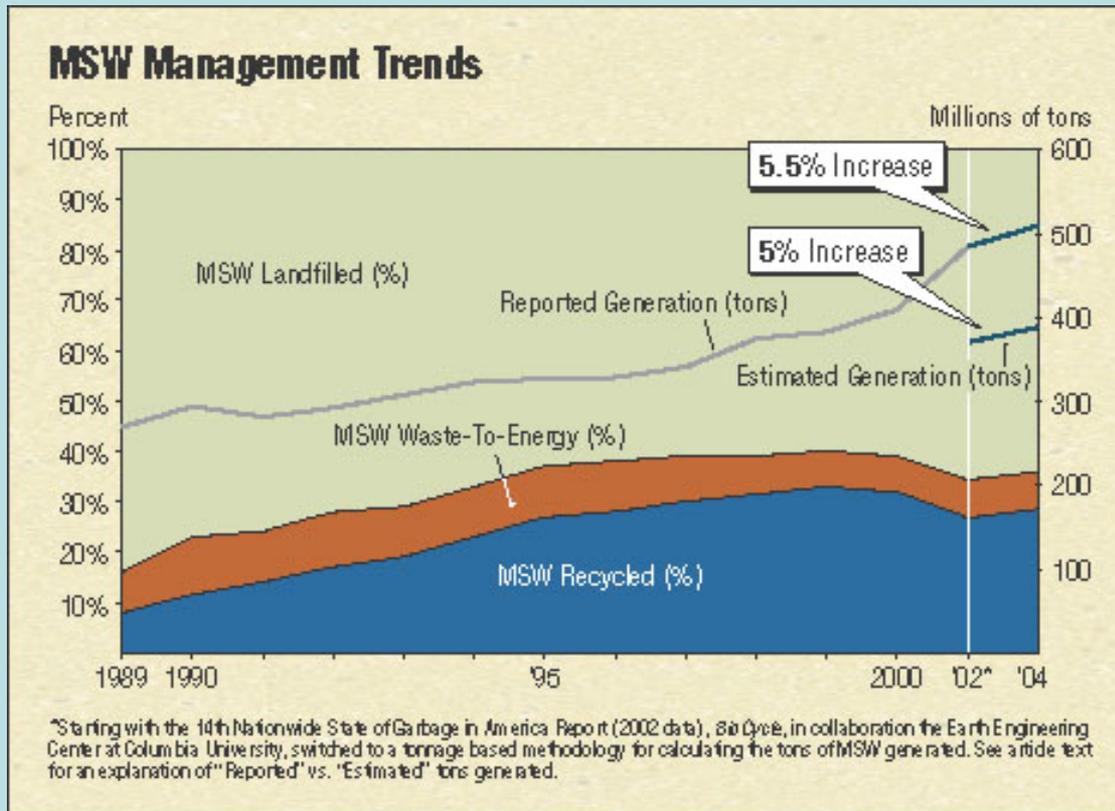
**Yard Trimmings Composting Sites:
3,474 in U.S. (2004)**

BioCycle, 2006, The State of Garbage In America

Landfilled: 64.1%

Recycled: 28.5%

Combusted: 7.4%



**388 million tons
MSW generated**

BioCycle, 2006, The State of Garbage In America

Figure 4-1 Georgia Statewide Aggregate Disposed MSW Composition

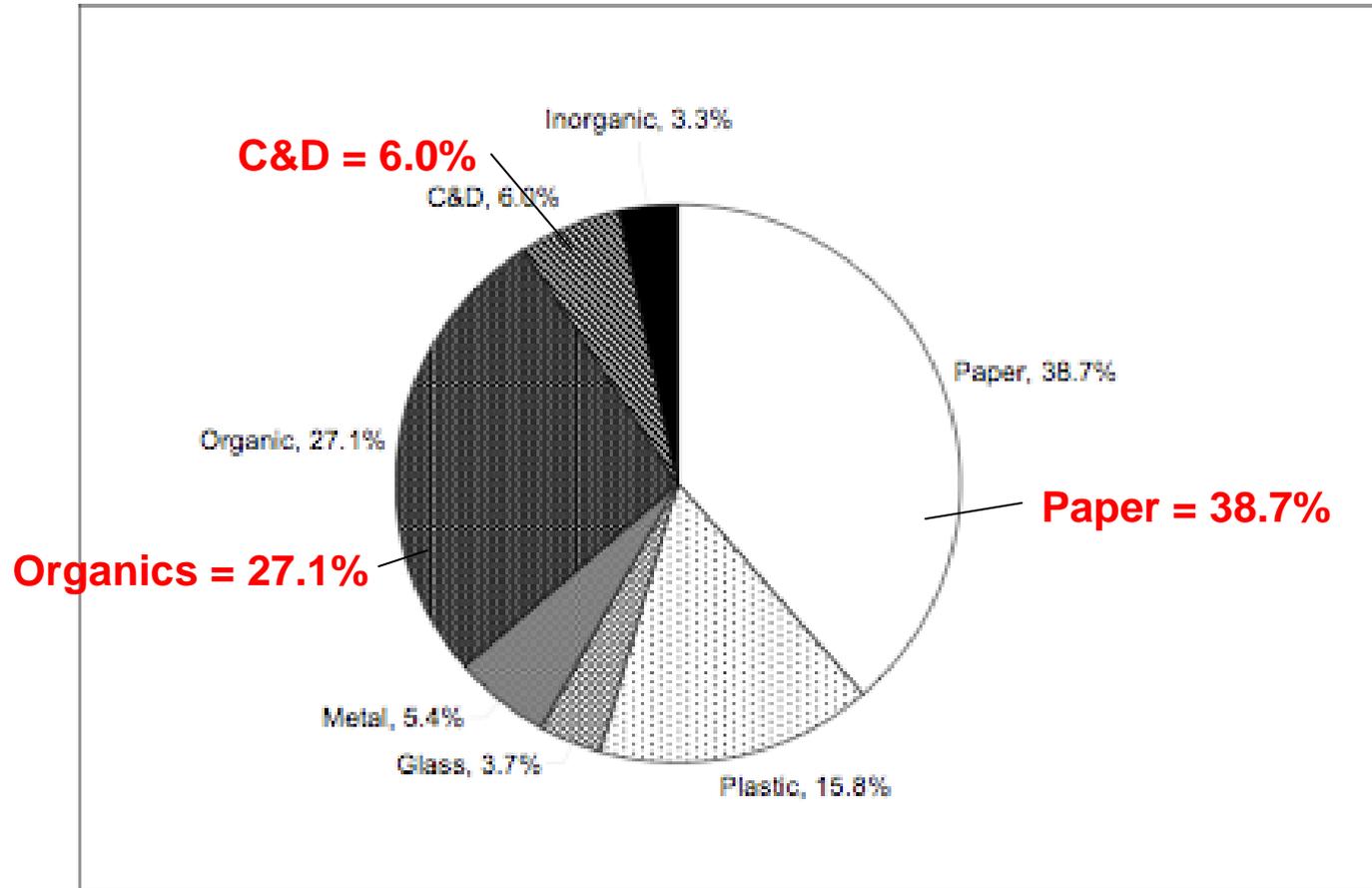
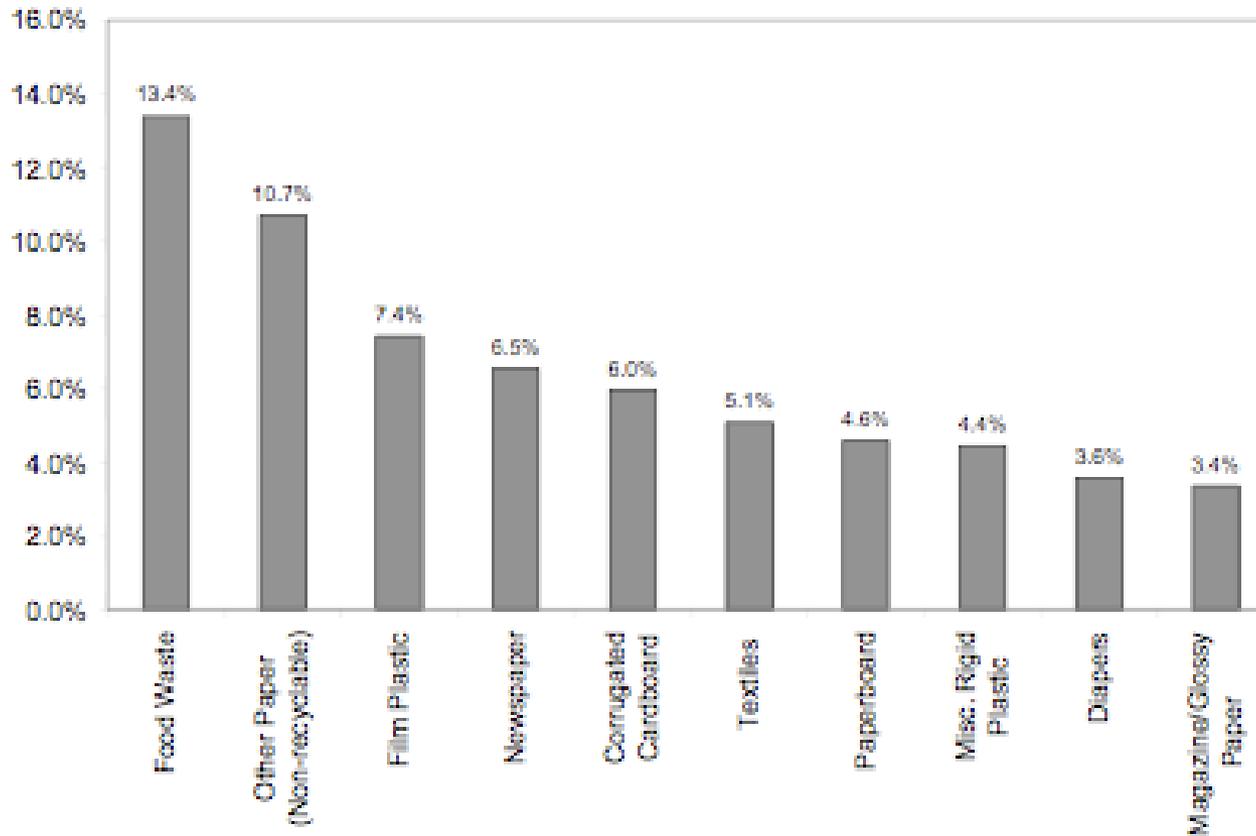


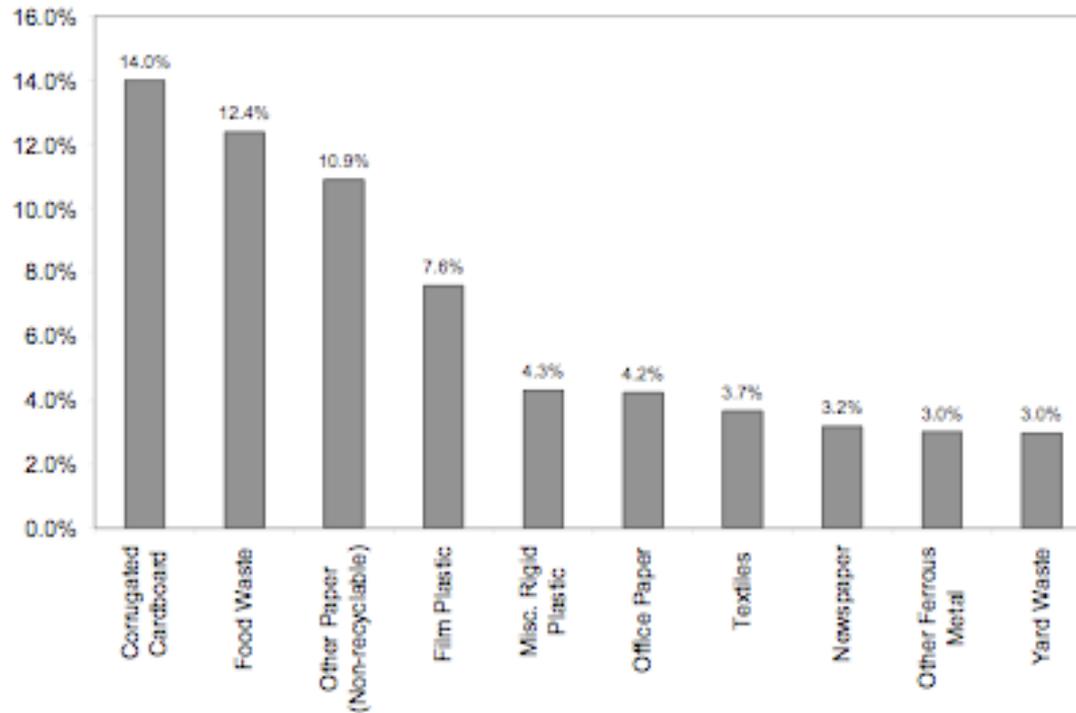
Figure 4-6 Top 10 Most Prevalent Materials in Georgia Residential Waste



Food Waste = 13.4%

Other Paper = 10.7%

Figure 4-7 Top 10 Most Prevalent Materials in Georgia Commercial Waste



Corrugated = 14%

Food waste = 12.4%

Yard waste = 3.0%

Table ES-4
GENERATION AND RECOVERY OF MATERIALS IN MSW, 2005
(in millions of tons and percent of generation of each material)

Material	Weight Generated	Weight Recovered	Recovery As a Percent of Generation
Paper and paperboard	84.0	42.0	50.0%
Glass	12.8	2.76	21.6%
Metals			
Steel	13.8	4.93	35.8%
Aluminum	3.21	0.69	21.5%
Other nonferrous metals*	1.74	1.26	72.4%
<i>Total metals</i>	18.7	6.88	36.8%
Plastics	28.9	1.65	5.7%
Rubber and leather	6.70	0.96	14.3%
Textiles	11.1	1.70	15.3%
Wood	13.9	1.31	9.4%
Other materials	4.57	1.17	25.6%
<i>Total Materials in Products</i>	180.7	58.4	32.3%
Other wastes			
Food, other**	29.2	0.69	2.4%
Yard trimmings	32.1	19.9	61.9%
Miscellaneous inorganic wastes	3.69	Neg.	Neg.
<i>Total Other Wastes</i>	65.0	20.6	31.6%
<i>TOTAL MUNICIPAL SOLID WASTE</i>	245.7	79.0	32.1%

50% recovery

9.4% recovery

2.4% recovery

62% recovery

USEPA Resource Conservation Challenge

- 35 percent national recycling rate by 2008
- In municipal solid waste, is targeting organics, paper, packaging & containers
- ORGANICS
 - Yard Waste: 60% recovery by 2008 — 16.8 million tons
 - Food Waste: 5% recovery by 2008 — 1.28 million tons
- Current Organics Recovery (2005 EPA data)
 - Yard Waste: 62% recovery — 20 million tons
 - Food Waste: 2.4% recovery — 690,000 tons

Food Waste Generators (by percent, after recycling)

- **Full Service**
 - 66% are food scraps
 - 5% “compostable paper”
- **Fast Food**
 - 52% food scraps
 - 12% “compostable paper”
- **Grocery Stores**
 - 65% food scraps
 - 6% “compostable paper”
- **Large Hotels**
 - 44% food scraps
 - 7% “compostable paper”



Solid Waste Realities

Landfill Capacity Remaining In the Northeast States (Total Tons) Adding Capacity?

- **Connecticut — 150,000 cubic yards; No (65% WTE)**
- **Delaware — 60 million; Yes**
- **Maine — 5.5 million cubic yards; Yes**
- **Massachusetts — 2.4 million tons; No**
- **New Hampshire — n/a; No**
- **New Jersey — 38 million; No**
- **Pennsylvania — 279 million; No**
- **Rhode Island — 6.3 million tons; n/a**
- **Vermont — 850,000 cubic yards; Yes**

BioCycle, 2006, The State of Garbage In America

2006 BioCycle MSW Composting Data: Mixed MSW

- **Mixed waste composting: 13 plants operating**
 - All municipally owned; 3 are privately operated
 - 9 use rotary drum digesters upfront
 - 3 use aerated container technologies
 - 7 co-compost with biosolids
- **Tons/day processed:**
 - 4 under 50 tpd
 - 4 between 50-100 tpd
 - 3 between 100-200 tpd
 - 2 > 200 tons/day



West Yellowstone, MT
-2,000 cubic yards/year
-50 tpd design



Engineered Compost Systems in-vessel technology



Delaware County, NY
-120 tons/day (35,000 tpy)
-6,700 tons/year of biosolids
-Conporec/S&W Services





IPS/Siemens composting bays

**WeCare Environmental
Marlborough, MA**

**Two Bedminster rotary digesters
Aerated Windrows
100 tpd MSW; 50 tpd biosolids**



2006 BioCycle MSW Composting Data: Source Separated MSW

- **Source separated organics that include household organics beyond yard trimmings**
- **30-plus municipalities with SSO programs**
 - 15 in California
 - 10 in King County, including Seattle
 - 4 in Minnesota
 - 1 in Michigan
- **11 composting facilities servicing these programs**
 - 3 municipally owned
 - 2 (municipal) process only source separated MSW (5 tpd)
 - Rest are yard trimmings composting sites receiving SSO

City and County of San Francisco, California

Three-Stream Source Separation

- Residential, commercial and institutional organics diversion
- 150,000 households
- 300-plus tons/day of source separated organics



Norcal Waste Systems' Jepsen Prairie Organics Composting Facility

Composting System

- Pre-grinding
- Initial composting in Ag-Bag pods
- Windrows





King County, Washington



**Cedar Grove Composting
Seattle, WA region
Gore Cover systems
Aerated static piles**



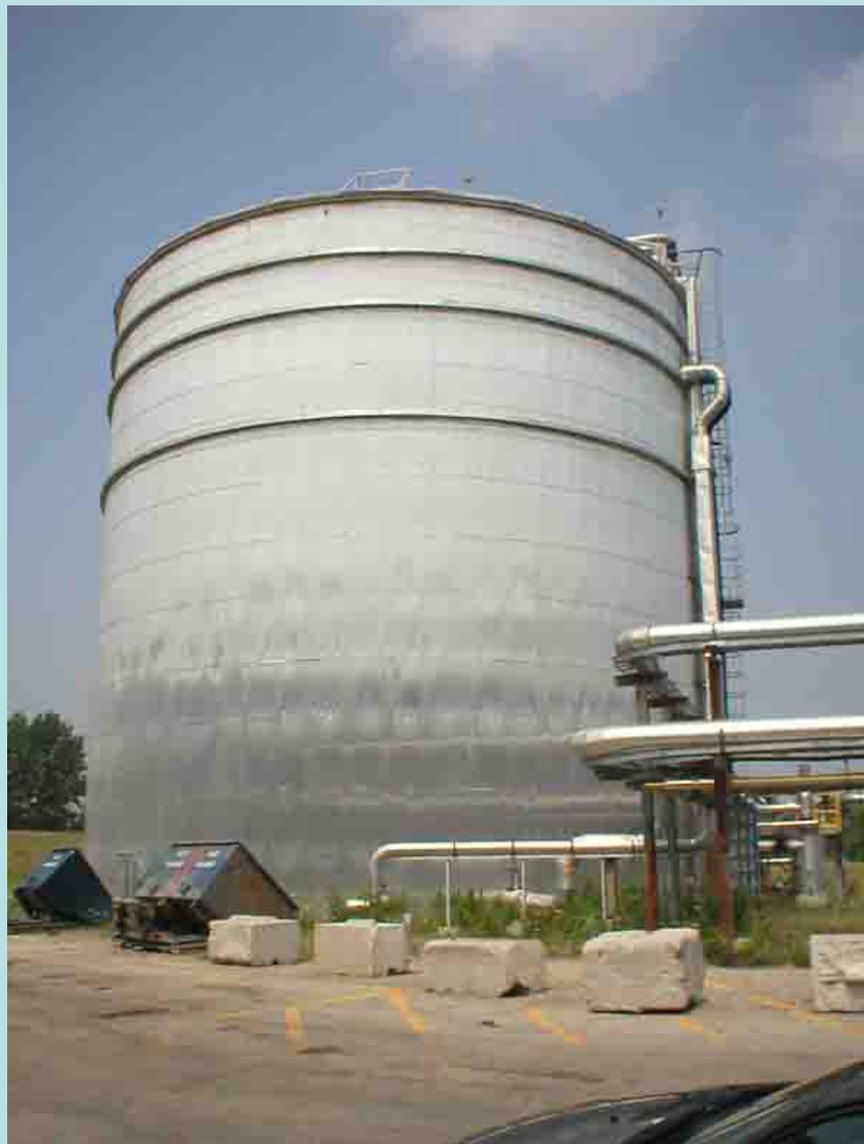
Western Lakes Superior Sanitary District, Minnesota



One Million-Plus Households Serviced



**Dufferin Transfer Station
Toronto, Ontario**



Why Residential SSO On West Coast, In Canada?

- **West Coast: Year-round green waste generation**
- **Canada: 13-gallon carts**
- **Use of 64- or 90-gallon carts**
- **Commingled recyclables**
- **Enables co-collection**
- **Reduce frequency of trash collection**

Food Waste: What Are We Dealing With?

- **Food waste, by weight, is one of biggest categories in waste composition studies**
- **Food waste is highly putrescible, i.e., it DOES NOT degrade gracefully**
- **Food waste in landfill is greenhouse gas contributor**
- **Separation, materials handling, collection methods are key to successful diversion**
- **These feedstocks have high energy value**
- **Compost has high soil & water value**
- **Need to design for diversion**

Separation And Collection

Commercial, Institutional, Residential







Grocery Store Installation – Direct To Compactors



Capturing Food Residuals At Portland (OR)
Airport Coffee Shop



Designing For Diversion



Compostable Products





BioCYCLE
ADVANCING COMPOSTING, ORGANICS
RECYCLING AND RENEWABLE ENERGY



BioCycle
ADVANCING COMPOSTING, ORGANICS
RECYCLING AND RENEWABLE ENERGY

McEnroe Farms Millerton, NY



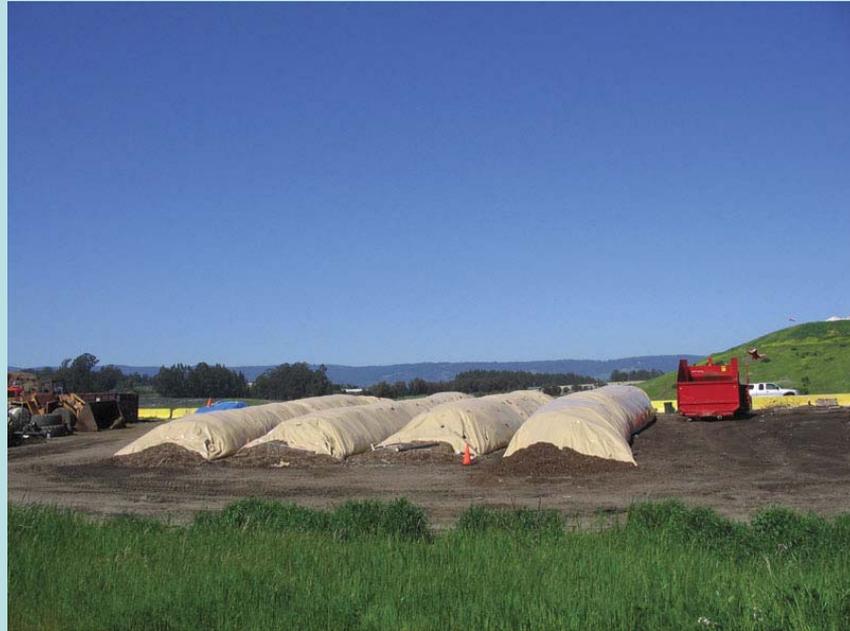
Ag Choice, Andover, NJ



Rocky Hill Farms Saugus, MA



Santa Cruz County, CA



Olympia, WA



Slurry To Anaerobic Digestion



Photo courtesy of EBMUD

Scenic View Dairy Fennville, MI





**Fepro Farms
Cobden, Ontario**



Special Event Diversion





Markets For Recycled Organics



Positive Public Policies

Food Scrap Management

http://www.epa.state.oh.us/ocapp/food_scrap/index.html

AASHE: Asso...r Education Apple .Mac Amazon eBay Yahoo! News (916) findacomposter Apple (87)

OhioEPA Office of Compliance Assistance & Pollution Prevention
50 West Town Street, Suite 700 Columbus, OH 43215 (614) 644-3469

Chris Korleski, Director

Air Land Water Pollution Prevention Public Information

Food Scrap Management

Did you know that each American throws away an average of 1.3 pounds of food scraps every day? Each year, residents in Ohio generate enough food scraps to pile on a football field over a half mile high! Food scrap waste generated by all households in the United States could be piled on a football field more than 15 miles high.

The top two portions of the U.S. waste stream (paper and yard waste) have been successfully diverted from landfills through recycling and composting efforts, with recovery rates of 50 percent and 62 percent, respectively. Piling in comparison, the food scrap recovery rate is less than three percent.

Across the nation states are exploring ways to reduce pollution and encourage alternative methods of waste management such as recycling. Although some food scrap management programs are being implemented at the local level (universities, business locations, etc.), more can be done to help reduce the need for food scrap disposal.

Ohio EPA has developed this Web site and **accompanying brochure** to identify resources that you might find helpful when deciding whether to implement programs to address food scraps. There are several options to help address food scraps, including:

- Preventing the generation of food scraps.
- Converting food scraps to animal feed.

U.S. Waste Generation by Category

Category	Percentage
Paper	35.2%
Yard trimmings	12.1%
Food scraps	11.7%
Plastics	11.3%
Metals	8.0%
Rubber, leather and textiles	7.4%
Wood	5.8%
Glass	5.3%
Other	3.4%

Source: U.S. EPA

Answer Place
Have questions?
Need help?
Click here to visit the Answer Place.

Agency Links

- Public Participation
- Offices & Programs
- Small Business Assistance

Office Links

- Forms & Publications
- Rules & Laws
- Food Scrap P2
- Food Donations
- Technology and Success Stories
- Regulations for Food Scrap Composting
- Composting at Home
- Funding
- Other Helpful Links
- Food Scrap Home Page

Permit Wizard

OHIO EPA Rules and Laws

http://www.epa.state.oh.us/rules.html

Ohio EPA Food Scraps Init

AASHE: Asso...r Education Apple .Mac Amazon eBay Yahoo! News (916) findacomposter Apple (87)

OhioEPA Ohio Environmental Protection Agency
 50 West Town Street, Suite 700 Columbus, OH 43215 (614) 644-3020

Chris Korleski, Director

Air Land Water Pollution Prevention Public Information

Answer Place
 Have questions?
 Need help?
 Click here to visit
 the Answer Place.

Agency Links

- Public Participation
- Offices & Programs
- Small Business Assistance
- Forms & Publications
- Rules & Laws
- Employment Opportunities
- News & Events
- Partnerships
- About Ohio EPA
- Clean Ohio Fund
- E-Check

Permit Wizard

Ohio EPA Rules Index

This site is designed to allow you to access current and pending rules within our program divisions. It will also give access to rule packages which are cross program in nature such as the PTI/P.E. Signature rules, which affect a number of divisions. In addition to links to the individual Ohio EPA programs, the site also has links to outside sites which may be of use to individuals interested in rules or the **rule-making process**. These sites include the Register of Ohio, which contains all state agency rule proposal packages and the Joint Committee on Agency Rule Review, which is the legislative committee responsible for the review and processing of all state agency rules.

If you would like a hard copy of any of Ohio EPA's rules and regulations, please see the Small Business Assistance Office's "**Getting Copies of Ohio EPA's Regulations.**" All State of Ohio rules and regulations are available **online through LAWriter**. Because the online documents may not be updated as soon as changes are made, we recommend that you follow the links below to see specific rules and regulations by division to ensure that you are referencing the most current version.

If you have any questions regarding the Ohio EPA rule-making process, please feel free to contact **Edward Kitchen**, Ohio EPA Rules Coordinator, at (614) 644-2782. To receive notification of rule changes, please complete the form below.

Agency-Wide Rule Issues

- Industrial Waste Development and Beneficial Use Rule Development
- Diesel School Bus Retrofit Grant Rules
 - Rule References
 - General Program Information

PTI/P.E. Signature Rules

These rules can be found in the applicable program area's rules and laws pages. Please click on the appropriate link below for specific rule references.

Division of Surface Water



CENTRAL VERMONT SOLID WASTE MANAGEMENT DISTRICT

802-229-9383 or 800-730-9475
Fax: 802-229-1318
137 Barre Street, Montpelier, Vermont 05602

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MEMBER TOWN SERVICES

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Zero Waste

- [Zero Waste for Residents](#)
- [Zero Waste for Businesses](#)
- [Zero Waste for Municipalities/Schools](#)
- [Zero Waste Fact Sheet](#)
- [CVSWMD Zero Waste Plan](#)
- [ZW Communities, Organizations and Businesses](#)

We're Working Toward Zero Waste!

The Central Vermont Solid Waste Management District has committed to helping its 22 member communities to work toward Zero Waste.

Zero Waste won't eliminate discards. Rather, working toward Zero Waste means that we will strive to capture all of the resources in such products so they can be reused and recycled in this region, instead of wasted by burying them in a landfill or burning them in an incinerator. Reducing waste up front through good product choices is also a critical component of a Zero Waste effort.

Click on the other tabs at the top of the page for the programs and services the District provides to help residents, businesses and member municipalities take steps toward this goal.

See the Zero Waste sections for more information about our efforts and this growing international movement.



Public Policy Predictions

- Landfill closures due to Subtitle D would create local infrastructure for recycling, composting
- State landfill bans on green waste disposal create composting infrastructure
- Landfill diversion, recycling goals and mandate (California) – create policy incentives
- Permitting for clean SSO streams less onerous than mixed waste

Public Policy Realities

- **No capacity shortage in U.S. because of willingness to long-haul to “mega-landfills”**
- **California only state with teeth in its diversion goal**
- **City and county visions of sustainability drive some programs**
- **Higher disposal costs in some regions make increased organics diversion economically feasible**
- **Permitting can be an obstacle**

Role of Organics In Meeting 35% National Goal

- **Needs kick start with public policy-based incentives**
- **High up on the learning curve in terms of program initiation and management**
- **Facility economics continue to be challenge**
- **Recognizing organics as environmental problem solvers, natural resource “creators and preservers”**
- **End uses can help drive need for organics diversion infrastructure**

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for a composter?**

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buy compost?**

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