Composting on Campus: Trends, Innovations & Best Management Practices

October 17, 2013

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Your Hosts!

Missy Beckwith

Molly Shane

Arwen Buchholz

Joe Rasmussen

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Agenda

Welcome & Introduction

Composting on Campus: Trends, Innovations & Best Management Practices

Speakers:

- Missy Beckwith, Assistant Director for Support Services, Middlebury College
- Molly Shane, "Weigh the Waste" Campaign Manager, Middlebury College
- Arwen Buchholz, Recycling and Waste Reduction Coordinator, Duke University
- Joe Rasmussen, Ed.D., LEED AP BD+C, Integrated Waste Management Specialist, CalRecycle

Q& A (after the presentation)

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Composting at Middlebury

20 years, and

6,000 tons of food waste later…

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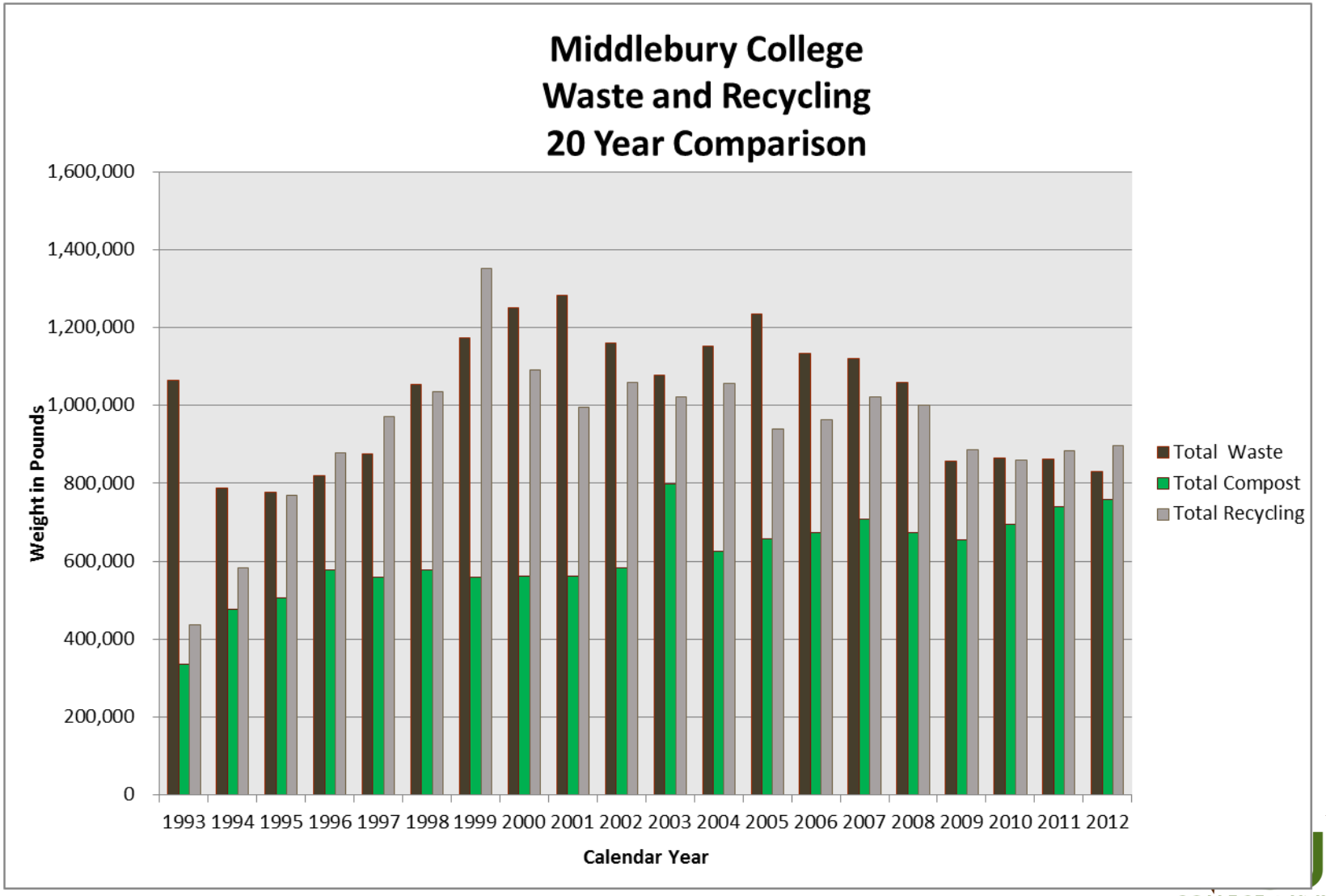
Compost – 30% of Midd's waste



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Composting at Middlebury

Staff separate pre- and post-consumer food waste in the dining halls.

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Composting at Middlebury

A specially-designed truck empties toters and brings food waste to a storage container at the composting site.

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Composting at Middlebury

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Composting at Middlebury

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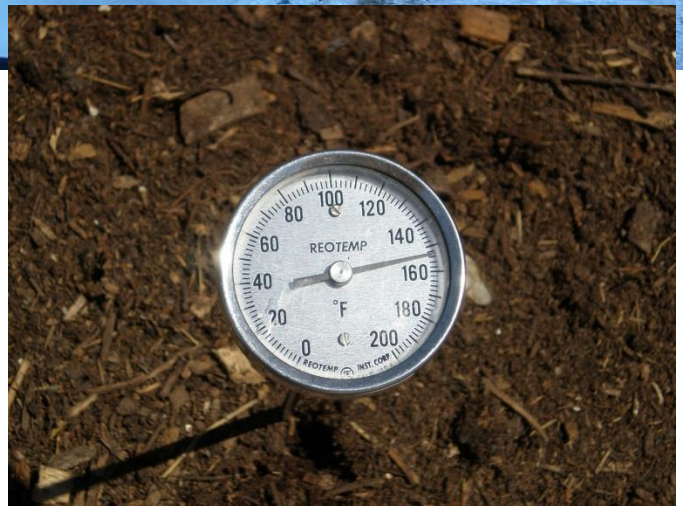
Composting at Middlebury



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Composting at Middlebury

Finished compost is used as soil amendment on campus grounds and at the Organic garden.

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The Evolution of Composting at Midd

- Compacting roll-offs to far away places
  - Bad smells and vermin
  - Unsightly
  - Just to far
  - Hefty hauling fees
- But
  - Confirmed volume
  - Confirmed ability to divert through kitchen staff
  - Confirmed savings over landfill fee

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The Evolution of Composting at Middlebury

- PAWS (Passively Aerated Windrow System), specially designed hook-lift truck, and plenty of black gold
  - Resolved vermin and smell issues by removing food waste daily from Dining Halls.
  - Installed compost coolers.
  - Reduced hauling fees by purchasing our own hook-lift truck and designing a box.

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The Evolution of Composting at Middlebury

- The Switch - Turned windrow system
  - No weed seed.
  - Improved process time.
  - Reduced labor.
- Other improvements over the years -
  - Modifications to the truck – more user friendly.
  - Cement pad at the Facility

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Other composting initiatives…

Waste Stations at All-Campus Events

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Other composting initiatives…

Residential and Office Building Collections

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A great system, but….

- It’s Invisible
- Minimal student involvement
- Does not resolve the waste generation issue.

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What's next….

Great student's like Molly get involved!

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a student-led initiative to address food waste on the Middlebury campus

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Our Beginnings

- Share the Surplus
  - Learning about food recovery

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Middlebury's Food Waste

- What We Knew:
  - 300 tons of food waste per year
- What We Didn't Know:
  - Sources of waste?
  - Types of waste?
  - Solutions to waste?

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The Challenges of Waste

- Waste is…
  - Invisible
  - Variable
  - Hard to make sense of

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Weigh the Waste: What We Do

- The Problem
  - Unnecessary food waste
- The Solution
  - Make waste visible
- The Process
  - Scrap plates; separate and weigh waste; display waste; track waste

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The Problem:
Unnecessary Food Waste

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The Solution: Make It Visible

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The Solution: Make It Visible

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The Process: Scrap plates

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The Process: Separate and Weigh

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Results

- We've collected 5 times in 2 dining halls

- Here's what we've found:
  - Avg. total waste = 174.5 lbs
  - On avg. edible waste is 79.5% of total
  - On avg. inedible waste is 12.7% of total

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Moving Forward

- Opportunities for Collaboration
  - Local sourcing
- Beyond the Dining Hall
  - Where else does waste exist?
  - How else could we take ownership of our waste?

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The Ripple Effect

- Students lack ownership over the processes of production, consumption, and disposal
- Waste is invisible and so are the people that handle our waste
- Community Benefits
  - Challenging disrespect, entitlement, exclusive definitions of community,

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Questions

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Composting at Duke University

Introducing Post-Consumer Compost Collection

10/17/13

Duke University Sanitation and Recycling Services

- Duke FMD Sanitation and Recycling Services (DSRS)
  - "Traditional" recycling collection
    - Glass, Plastic, Aluminum, Steel/Tin
    - Office Paper
    - Newspaper & Magazines
    - Cardboard
    - Collects and removes recyclable material from interior and exterior locations within the University and parts of School of Medicine
  - Recycling Outreach and Education Campaigns
    - Special programs (Ex . Recycle for the Children, Free Store, RecycleMania, Move Out for Charity)
    - Training sessions
  - Waste collection
    - Removes Non-Hazardous waste from outside University, School of Medicine, and Health System buildings
  - Recycling and diversion rate reporting
  - Waste Reduction
    - Special events and Athletics
    - Non-traditional materials
    - Information resource for Duke Community

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Established Dinning Composting

	Totals (lbs)
East*	355,770
West*	260,040
Devil's Den	10,200
Freeman Center	5,600
The Refectory*	13,060
Devil's Bistro	5,070
Sanford Deli	2,350
Law*	21,210
McDonalds	18,375
Pitchfork Provisions	37,710
Grace's	12,264
Quenchers	24,830
Twinnies	6,910
Blue Express	8,730
Nasher Café	9,430
Greenhouse	20,730
Fuqua Business	29,050

Grand Total (lbs)	841,329
Grand Total (tons)	420.66

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Campus Sustainability Committee and DSRS Goals

- **Finalize and consolidate reporting**
  - Develop a centralized system for reporting all recycling and diversion efforts

- **Finalize reporting methods, boundaries and targets**
  - Determine methodology for reporting
  - Determine inclusion areas
  - Conduct waste audits
  - Develop targets for Duke's overall recycling and waste reduction efforts

- **Develop recycling standards for Duke**
  - Accepted materials and method for collection (single stream vs. dual-stream and post-consumer compost)
  - Bin standards
  - Ensure outside contractors follow same standards

- **Outdoor and Athletic Waste Management**
  - Identify the key barriers and address best policy for moving forward.

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Waste Audits

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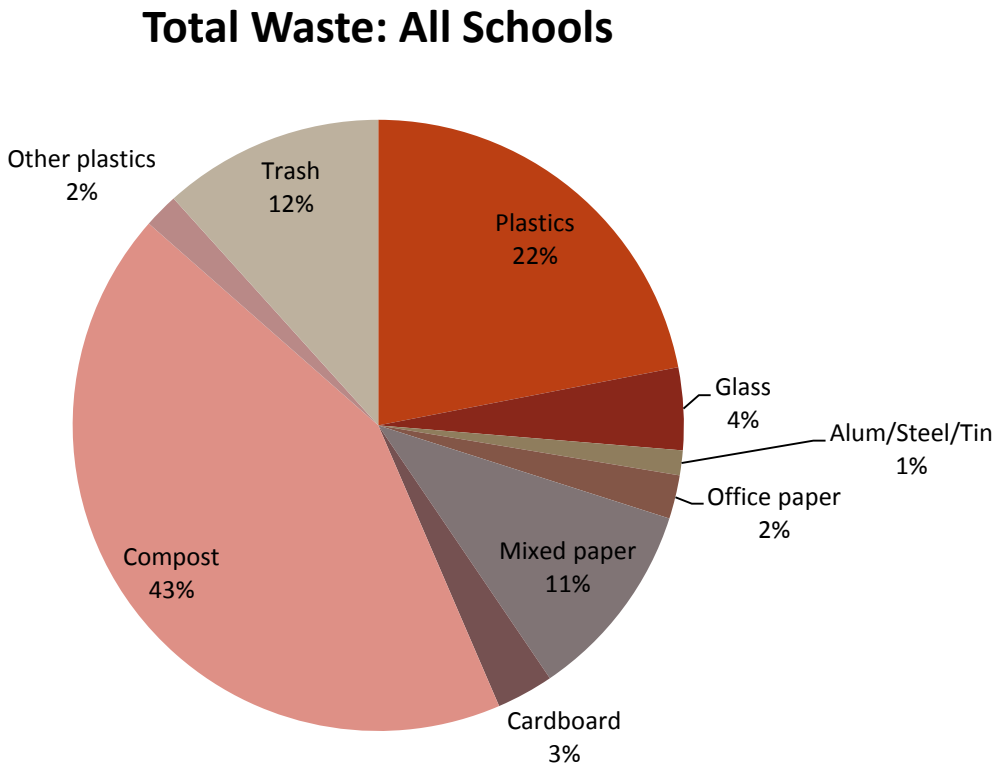
Waste Audits: All Participants



- **Mostly compostables and plastics**
- **Trash** - Granola bar wrappers, candy wrappers, snack wrappers (e.g. fruit snacks), styrofoam, wrap-plastics, chip bags, condiment packets (e.g. ketchup/mustard squeeze packs), non-paper tea packets, plastic gloves, padded manila envelopes, plastic shopping bags.

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Pilot Projects Launched 2013

- Post-Consumer Composting
  - Facilities Management, Sanford, Wilson and Brodie Gyms
- Mixed Recycling
  - Facilities Management, Sanford, Wilson and Brodie Gyms
- Custom DSRS Bins
  - Facilities Management, Sanford, Wilson and Brodie Gyms
- Office Waste Reduction Program
  - Facilities Management and Sanford
- Lab Plastics Recycling
  - French Science and Biology
- Film Plastics Recycling
  French Science and Biology

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Composting and Mixed Recycling Bin

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Mini-Bin Program

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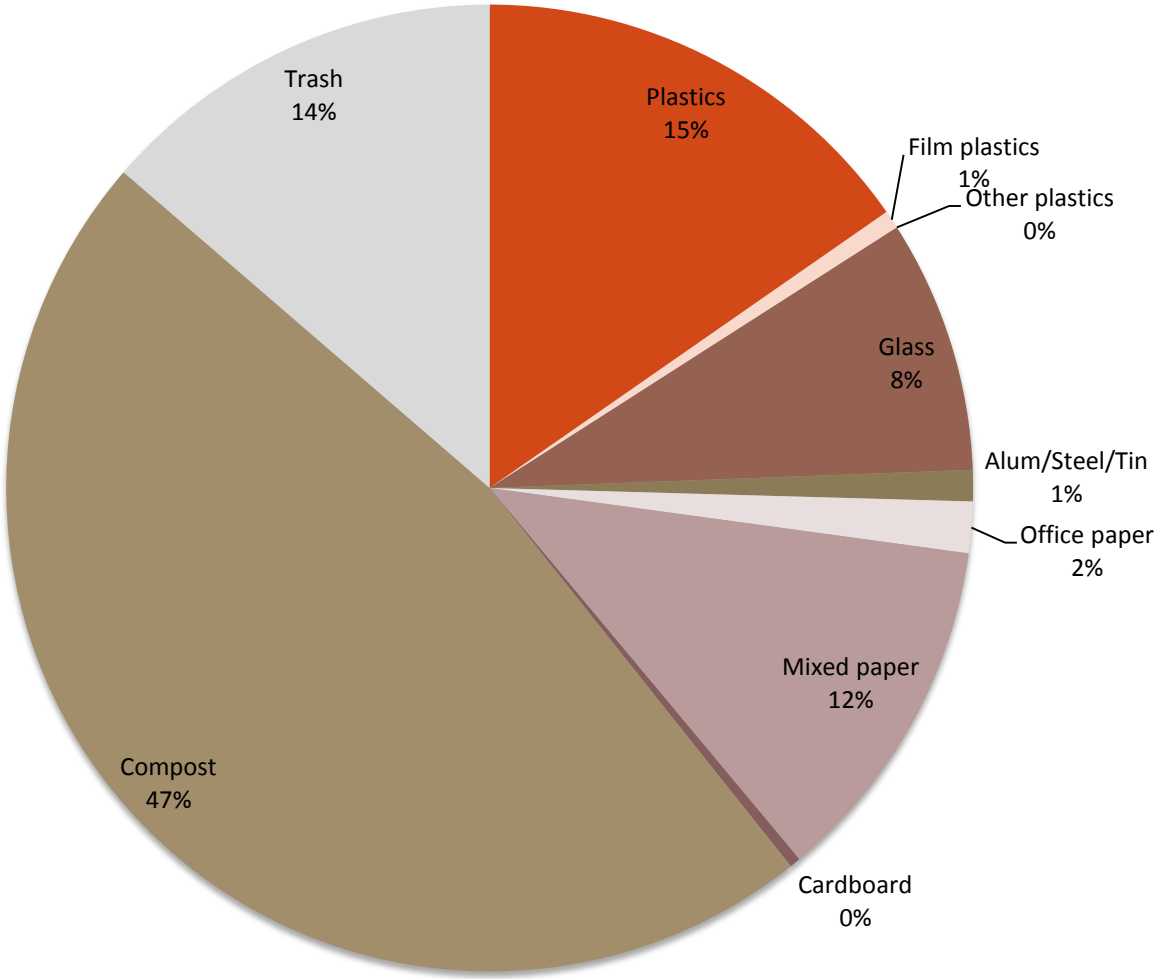
Pre-Transition Waste Audits from Pilot Bldgs



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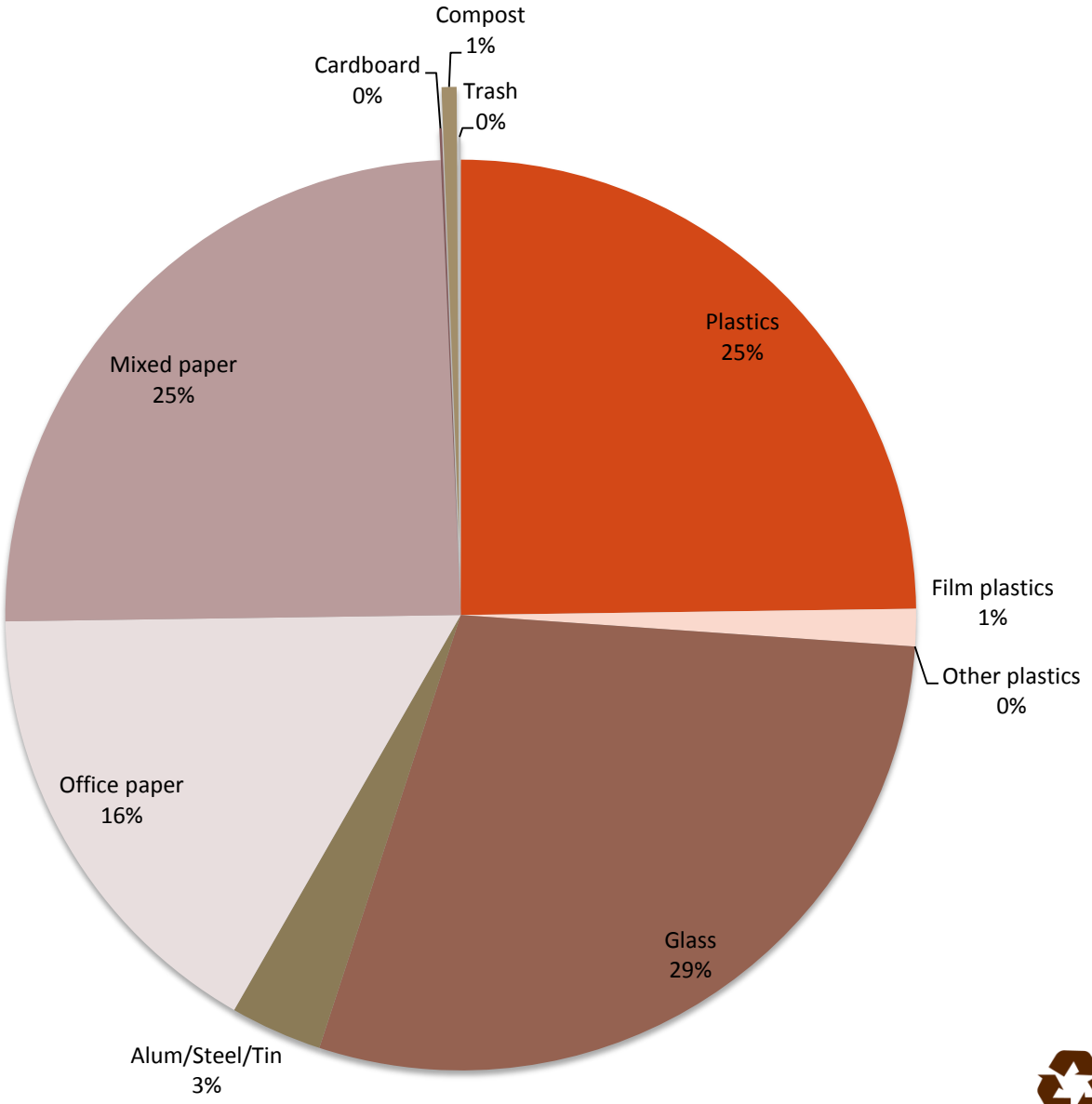
Pre-Transition Recycling Audits from Pilot Bldgs



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Contamination Rates During Summer Evaluation

	Contamination in Recycling Bins	Contamination in Compost Bins	Contamination in Trash Bins
Pre-Transition	0.6%	N/A	86.3%
2 Weeks After Transition	3.7%	20.0%	72.1%
4 Weeks After Transition**	15.3%	8.9%	85.0%
7 Weeks After Transition**	11.4%	17.3%	61.0%
9 Weeks After Transition	3.4%	5.8%	75.1%

**Organic contamination in Sanford's recycling elevated because of seminars in the conference room, adjacent to new double recycling bin, compost bin on the other side of the floor. A new compost bin was ordered for this location

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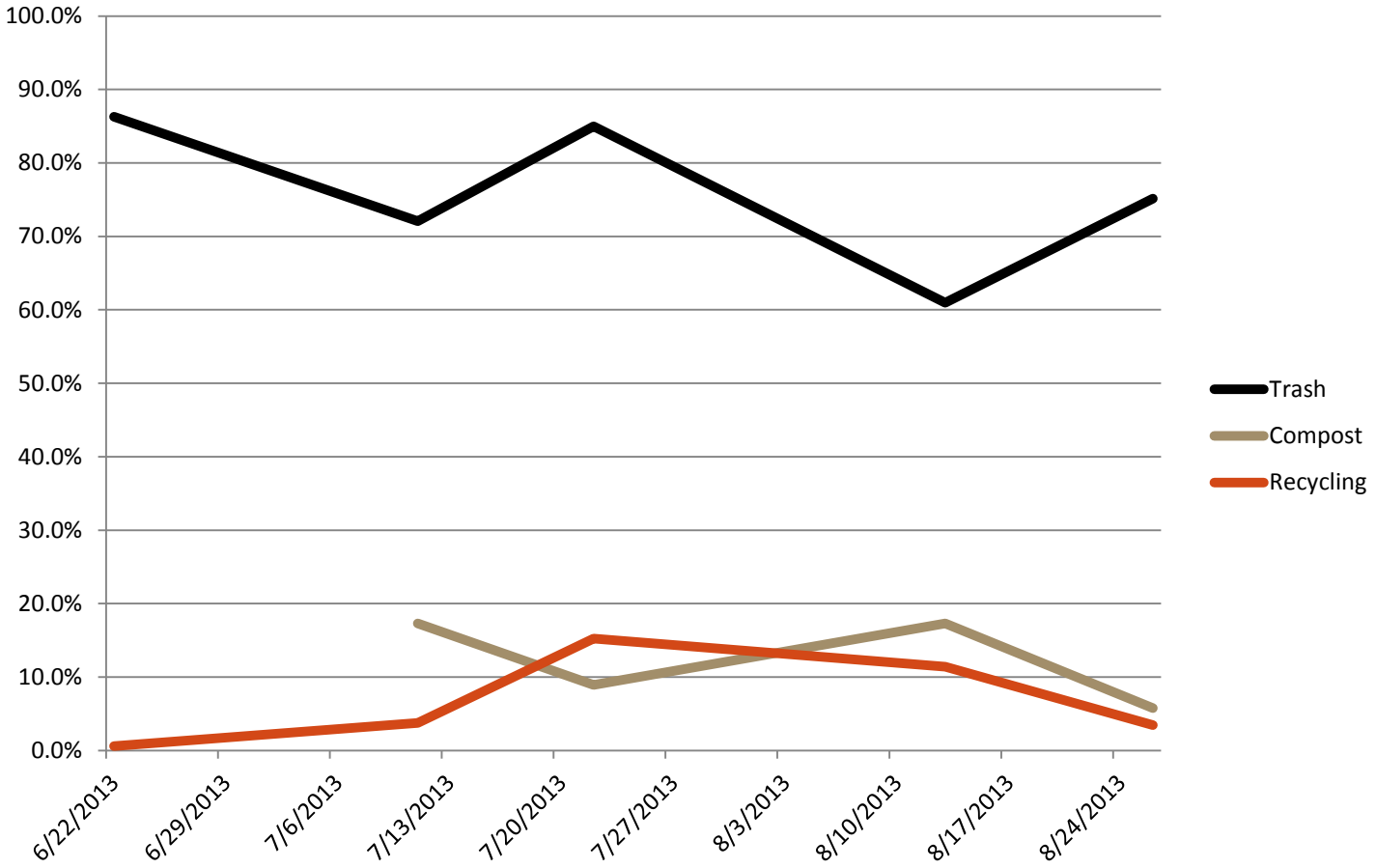
Aggregate Contamination



Participant Feedback

- Mini-bin doesn't fit opening
- Want a mini-bin for compost
- Trash opening too small
- Don't like touching trash
- Pizza Boxes
- Mostly participants like the program but want it to be more convenient
- Recycling volume increase requiring 2xweek collection

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Next Steps

- Education
  - Working with Students for Sustainable Living to ramp up education in academic building
  - Will use this plan to help develop more robust campaigns in other buildings
  - Working with Env. 245 class to develop education campaign for residence halls
- Survey
  - Pilot participants
- Bins
  - Update design
- Analyze Recycling Service/Recycling Standards
  - Develop growth plan based on pilot results
  - Finalize Outdoor recycling plan
- Reporting
  - Continue waste audits
  - Develop waste reduction targets

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Questions

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Exploring On-site Food Waste Reduction: Dehydrators and Liquefiers

Presenter: Joe Rasmussen, Ed.D.

Integrated Waste Management Specialist

CalRecycle

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Presentation Overview

- Food Waste Dehydrators and Liquefiers
  - What are they, and how do they work?
  - Claims made by vendors
  - What does the research tell us?
  - Pros and Cons
  - Are they green?
- How do these technologies fit into EPAs Food Recovery Hierarchy?
- Implications

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Food Waste Dehydrators

…What are they, and how do they work?

- On-site food waste “reducer” (not a composter)
- Use heat and turning to dehydrate food waste
- Volume & mass reduced 70 - 90% (batch system)
- Can be coupled with pulping and/or dewatering
- Residual Materials = Dehydrated Food Waste and Condensate Water

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Food Waste Dehydrators

Claims made by vendors:

- *"The end product is a material ideal for use as soil amendment."*
- *"Decomposes compostable waste without using microorganisms, enzymes or additives."*
- Condensate water is *"sterile water for landscaping or other recoverable use."*
- *"Reduces carbon footprint."*
- *"Zero environmental impact."*

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Food Waste Dehydrators

…what does the research tell us?

- Lack of research available
- BioCycle article based on study at Loyola Marymount University
- Studied biodegradation of dehydrated food waste (DFW)
- Results: When re-hydrated, DFW grew fungus rapidly; not suitable as a soil amendment.

TESTING DEHYDRATION

FOOD WASTE DIVERSION AT URBAN UNIVERSITY

With space constraints for on-site composting, research study evaluates a food dehydration machine, and the potential to use the output as a soil amendment on campus.

Joe Rasmussen and Briana Bergstrom

As an urban university without the space needed to easily have a traditional on-site composting operation, Loyola Marymount University (LMU) in West Los Angeles, California is challenged to find other ways to handle its food waste in an environmentally, socially and economically sound manner. The university also was interested in reducing the amount of water used on campus and being able to generate more of its own fertilizers and soil amendments.

LMU's preconsumer food waste was being hauled to a landfill. A team, consisting of faculty and students, Facilities Management, Dining Services and Campus Sustainability representatives, decided to conduct research and implement programs that most appropriately recycle campus food waste streams. One option evaluated was volume reduction via dehydrating food waste.

One of the first steps in the research process was to quantify the amount of food waste generated. The LMU Dining Services staff conducted a two-week audit in the main dining hall. Preconsumer food waste generated by the kitchen was weighed on a large digital scale and measurements were recorded in a log. The data showed that the kitchen generated just over 1,000 lbs/week of food waste which was put into a trash compactor located on the kitchen's dock.

In June 2010, LMU purchased a food dehydration machine. The unit, the Somat eCorect, uses a combination of turbines and 200°F heat to physically break down the scraps coming out of the kitchen, drain them of their water, and reduce the volume by 80 to 90 percent. Feedstocks such as pineapple tops, banana peels and browning lettuce are loaded in the top of the system. The final product is ejected after an 18-hour cycle, consisting of a dark, dry, mulch-like material.

Loyola Marymount University purchased a Somat eCorect dehydrator to reduce the volume of food waste generated in its main dining hall.

LMU immediately saw a savings in hauling costs and a reduction in what is landfilled by using the eCorect. But due to its interest in producing a soil amendment for landscaping on campus, LMU decided to evaluate the suitability of dehydrated food waste (DFW). A review of the literature found very little information on this topic, including its physical and chemical properties. Companies marketing the units claim that the material can be used as a soil amendment. Others suggest mixing the DFW with landscaping mulch and using it in commercial and home garden applications. Questions such as whether DFW needs to undergo further processing such as composting, and if so, for how long and under what conditions, led LMU to initiate a research project. Moreover, if the material cannot be used on LMU's grounds, then further research needs to be done

http://www.biocycle.net/2011/12/19/food-waste-diversion-at-urban-university/

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Food Waste Dehydrators …Pros and Cons

Pros

- Reduces food waste sent to landfills
- No water input needed
- Relatively small equipment footprint
- May reduce odors/vectors
- May reduce labor needs
- May reduce some transportation impacts
- May reduce expenses

Cons

- Residual material needs further processing for beneficial reuse
- Condensate water not beneficially used
- Uses electricity (energy use varies by model)
- Staff education needed
- May be expensive over the long-term

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Food Waste Dehydrators

…are they green?

- Difficult to answer
- Analysis must be site-specific
- Use a significant amount of electricity
- Condensate water goes to sewer
- Residual is *not* compost (then what is it?)
- Material characterization study would be helpful
- A detailed Life Cycle Analysis (LCA) would be useful to better understand Pros and Cons

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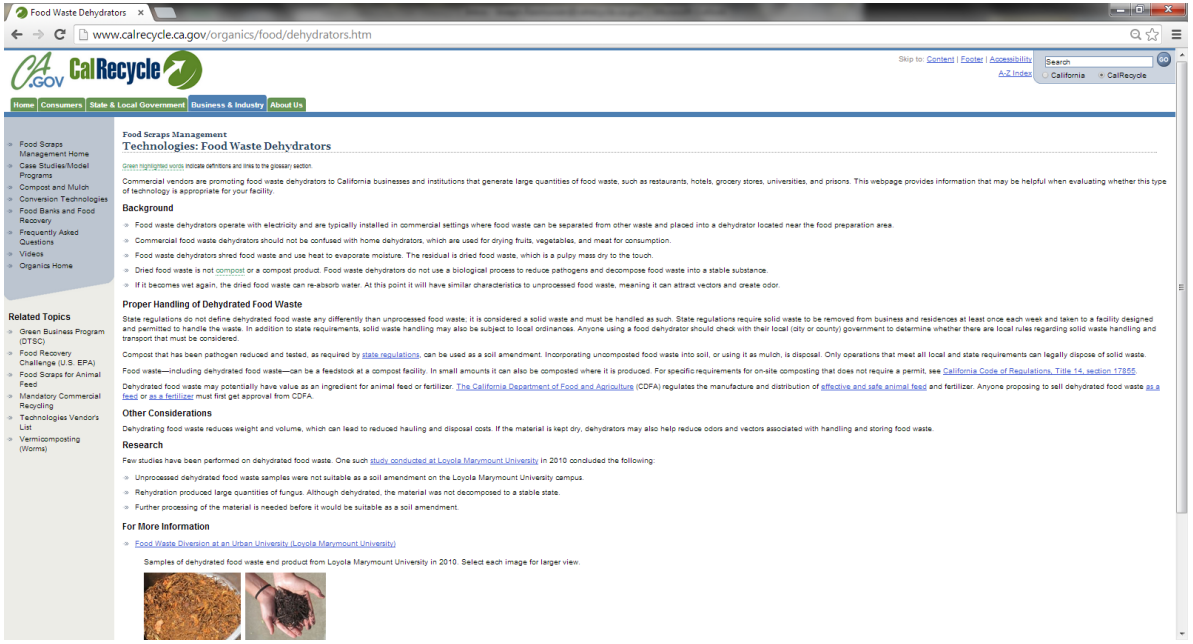
Food Waste Dehydrator Webpage



http://www.calrecycle.ca.gov/organics/food/dehydrators.htm

- **Dehydrated food waste is still food waste.**
- **CA Regulations = Land application of food waste or mixed solid waste is considered disposal.**

  *** See Title 14, Section 17852 (a)(15)(C)**

http://www.calrecycle.ca.gov/Laws/Regulations/Title14/ch31.htm

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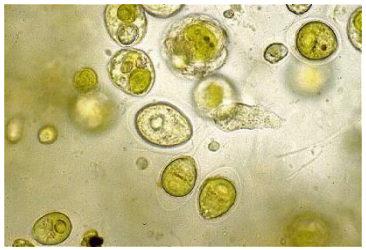
Food Waste Liquefiers

…what are they and how do they work?

- Convert food waste into liquid effluent (continuous feed system)
- Aerobic digestion via microbes
- Mechanical turning of materials
- Particles break down and are sent to the sewer system as wastewater effluent
- Water is continually added to keep system clean and replenish water lost through discharging to sewer



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Food Waste Liquefiers

Claims made by vendors:

- *"Effluent can be re-used for irrigation and agricultural applications."*
- *"There are no by-products, this water can go down the drain or gets recycled for gardening."*
- *"The liquid compost is channeled through the sewer system or can be returned to the soil as nourishment."*

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Food Waste Liquefiers

…what does the research tell us?

- Very little research available
- BioCycle article based on effluent study at Loyola Marymount University
- Results: Effluent tested was "stronger" than raw sewage, and pathogen indicators were found; should not be used for landscape irrigation.

Food Waste Management

SHRUBS OR SEWER?

EVALUATING FOOD DIGESTION EFFLUENT FOR LANDSCAPE USE

Effluent from an on-site liquifier that processes cafeteria food waste was tested for suitability as irrigation water.

John H. Dorsey and Joe Rasmussen

Raw food waste is loaded into the machine; large aluminum paddles (below) spin continuously, breaking up food waste particles. A mixture of microorganism and enzymes is added weekly; small plastic chips (shown at left) act as bulking agent.

The small food waste particles are flushed through the system, ultimately exiting as a liquid by-product.

OVER the last year, Loyola Marymount University (LMU) has installed and studied a food waste diversion technology that converts raw food waste into a liquid effluent that is disposed through the sewer system. As an urban university located in West Los Angeles, California, LMU faces two major barriers with respect to composting food waste: on-campus space constraints and long distances to off-site composting facilities. There are neither ideal spaces for on-site composting, nor composting facilities permitted for food waste in close proximity to the campus. Faced with few options for food waste diversion in the university's dining facilities, LMU's dining services provider, Sodexo, purchased and installed a technology called the ORCA Green™ Machine (ORCA).

The ORCA system is a food digester, also described as a food liquifier, which converts raw food waste into a liquid effluent through microbiological activity. This system consists of a heavy-duty stainless steel rectangular box with a rotating drum inside. Kitchen staff open the top hatch and dump raw food waste, including vegetables and meat scraps (with the exception of bones), into the machine. The ORCA runs 24-hours/day and can be fed continuously as long as space is available in the machine. Large aluminum paddles attached to a stainless steel

Table 1. Results of water quality testing on ORCA effluent from February through April 2012.

Constituent	Method	n	Mean	Standard Deviation	Range	Raw Sewage*
BOD (mg/L)	Hach Method 8043	4	5291.0	2221.2	3156-9030	350
Fats, Oil & Grease (FOG) (mg/L)	EPA 1664A	1	211.7	–	–	100
Total solids (g/L)	Standard Methods	21	9.0	7.0	1.5-29.5	1.2
Nitrate (mg/L)	Hach Method 8192	27	13.2	10.2	1.0-35.0	0
Orthophosphate (mg/L)	Hach Method 8048	15	17.5	11.6	2.3-38.1	10

*Values from Metcalf & Eddy (2003, Table 3-15) for high strength domestic wastewater.

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http://www.biocycle.net/2012/09/18/evaluating-food-digestion-effluent-for-landscape-use/

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Food Waste Liquefiers …Pros and Cons

Pros

- Reduces food waste sent to landfills
- No solid waste byproduct after processing
- Small equipment footprint
- May reduce odors/vectors
- May reduce labor needs
- May reduce some transportation impacts
- May reduce expenses

Cons

- Hundreds of gallons of potable H_2O used daily
- Uses electricity 24/7
- On-going expenses
- Waste water effluent not beneficially used
- May be issue for waste water treatment plants
- May be corrosive to plumbing

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Food Waste Liquefiers

…are they "green"?

- Difficult to answer
- Potable water is a precious resource
- Electricity is continually used (typically 24/7)
- Most liquefiers require proprietary enzymes and/or microbes to be added periodically
- Effluent quality varies based on inputs; more independent effluent testing would be useful
- A detailed Life Cycle Analysis (LCA) would be helpful to better understand Pros and Cons

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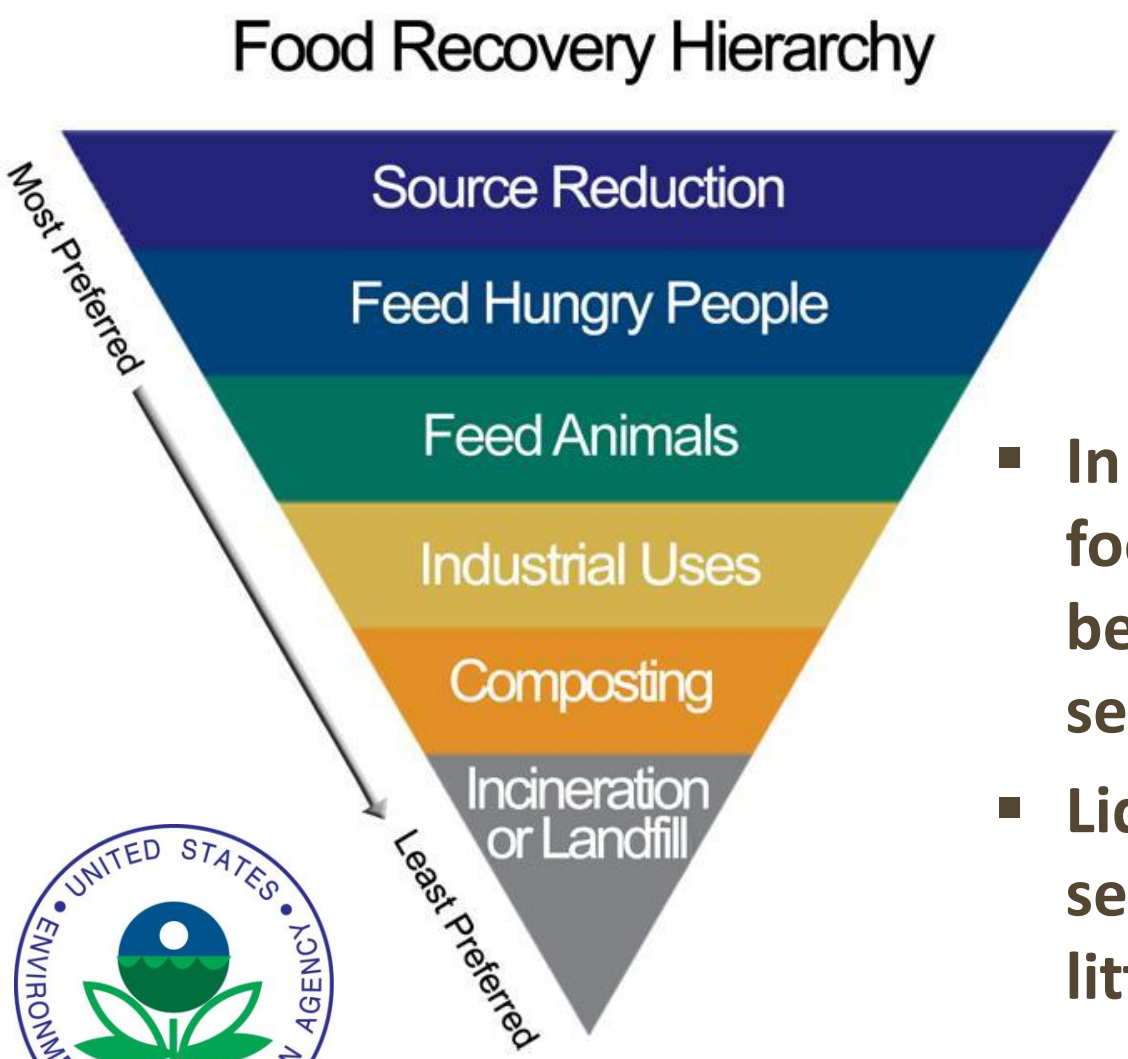
Where do these technologies fit…



…into EPAs Food Recovery Hierarchy?

- In California, dehydrated food waste cannot legally be land applied; it must be sent to a disposal site.
- Liquefied food waste is sent to the sewer with little to no beneficial use.

http://www.epa.gov/smm/foodrecovery/

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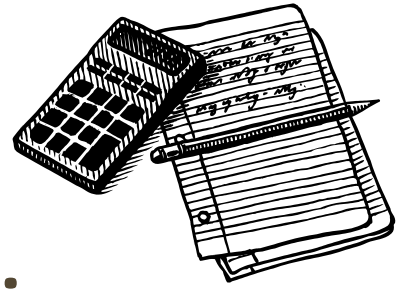
Implications

- Need much more research to build a robust knowledge base of these technologies
- Life Cycle Analyses (LCAs) would be particularly helpful studies



- Appropriateness of these technologies is dependent on context, and is site-specific
- These technologies are relatively new and emerging, so there is some inherent risk
- <u>Advice:</u> Do your homework! Ask vendors for references and contact them to learn more.

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References:

- Bergstrom and Rasmussen (2011) *Food Waste Diversion at Urban University*. BioCycle. Emmaus, PA. Vol. 52, No. 12, p. 34.
- DeSombre, Et. Al. (2013) *Food is Not Trash: Redefining Wellesley's Waste Culture by Composting*. Environmental Studies Program, Wellesley College. Wellesley, MA.
- Dorsey and Rasmussen (2012) *Evaluating Food Digestion Effluent For Landscape Use*. BioCycle. Emmaus, PA. Vol. 53, No. 9, p. 26.
- Griffith-Onnen, Patten & Wong (2013) On-Site Systems for Processing Food Waste: A Report to the Massachusetts Department of Environmental Protection. Northeastern University, Boston, MA.
- Neale (2013) *Analysis of Biodigesters and Dehydrators to Manage Organics On-site*. BioCycle. Vol. 54, No. 10, p. 20.
- Spencer (2008) *A New Generation Of Commercial Disposers*. BioCycle, Vol. 49, No. 7, p. 27

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