Composting as a Materials Management Strategy

North Texas Renewable Energy Group
January 12, 2019 | Composting Forum
Importance of Organic Recycling

- **Key Driver:** Diversion and beneficial reuse of green material (among other organic materials) is becoming an increasing priority for a host of economic and environmental reasons including reduced disposal costs, landfill conservation, air quality, soil enhancement and erosion control. Since 2000, the tons of green material processed has steadily increased, while its % of total MSW generated has held constant.

- **Climate Change Concerns:** recycling green material produces significantly less methane gas through its aerobic digestion process as opposed to disposing of it in landfills (anaerobic digestion). Methane gas has a Global Warming Potential which is 21x greater than CO2. *(Source: Intergovernmental Panel on Climate Change)*

- **Government actions/Landfill Conservation:** Local municipalities have been enacting regulation pushing for green materials to be recycled rather than disposed of into landfills in order to increase the life of landfills and promote a focus on “sustainability” / sends the “Green” message.
Environmental Impact

Landfill Reduction:
Living Earth processed 750,000 tons of organic material, primarily brush and yard trimmings, for beneficial use as compost, mulch and soil products in 2018.

In 2017, the Company’s recycling and composting operations prevented more than 400K metric tons of CO₂ emission through our landfill diversion programs, the equivalent of taking 85,000 cars off the road for one year.
Living Earth Metrics – Feed Stocks

Living Earth operates a network of facilities that are able to accept, manage, and process source separated organic discards such as stable bedding, leaves, grass clippings, pre-consumer vegetative foods (compost feedstock), residential yard trimmings, brush, tree chips (mulch feedstock).
Living Earth Metrics – Production Process

**Mulch**
- **Organic Material Intake**: Raw materials sourced from generators who deliver high-quality consistent feedstock. Material is evaluated to ensure it is free of contaminants.
- **Separation/Grinding**: Brush/tree trimmings are separated into feedstock types. Brush is processed to the size and texture that is appealing to ultimate end-users and matches end-use applications.
- **Screening**: Material can be screened to remove fines and achieve a lighter more appealing mulch product.
- **Coloring**: A large amount of material is colored to arrive at popular black, brown, or red end-product.
- **Product for Sale/Delivery**: Mainly sold in bulk, either picked-up or delivered. Also bagged for sale to nurseries, retailers, and big box stores. Bags are also sold directly at our own locations.

**Compost**
- **Organic Material Intake**: Raw material is sourced from generators who deliver high-quality consistent feedstock. Material is evaluated to ensure there is free of contaminants.
- **Separation/Grinding**: Pre-consumer food waste is combined with stable bedding, grass and leaves, then aged, ground and screened to prepare various types of compost, a process that takes roughly four months. Grass & Leaves are processed to size necessary to facilitate aerobic processing.
- **Water and Turning**: Moisture content and aeration are key to both active breakdown phase and cure phase. Water and mechanical agitation applied to maintain ideal conditions.
- **Screening**: Material can be screened to achieve a high-quality consistency for certain applications.
- **Product for Sale/Delivery**: Compost is also a key component material for various Rose, Azalea, Bedding and Landscape mix products. Compost is bagged for sale to nurseries, retailers, and big box stores. Bags are also sold directly at our own locations.

**Soil**
- **Purchased Raw Material**: Purchased materials are mixed with compost in varying amounts to produce desired end-products for various applications.

**Input for Soil Products**: Purchased materials are mixed with compost in varying amounts to produce desired end-products for various applications.
What’s Going on in Texas

Most Landscape Companies are utilizing mulch and composting facilities vs. landfill to dispose of green waste. Numerous Commercial Generators of vegetative residuals and clean wood scraps, and Municipalities that offer curbside brush and yard trimmings collection divert organic materials to compost/mulch facilities vs. landfill.

Compost Facilities vs. Landfills
- Convenient, accessible locations
- Lower Tipping Fees
- Materials managed for beneficial uses
- Increased Recycling Rates for Customer
What’s Going on in Texas

- Low landfill tipping fees result in a very small amount of post-consumer food waste currently being recycled.
- Post-consumer food waste is often contaminated, resulting in higher processing costs.
- Food waste produces very little product to sell.
What’s Going on in Texas

Per TCEQ there are 106 Authorized Facilities in Texas

- 0 Exempt Facilities
- 87 Notification
- 8 Permitted
- 11 Registered

48 Texas Compost Facilities participate in the USCC Seal of Testing Assurance Program (STA)

Data as of 11.01.2018
Commercial Composting in Texas: Policies, Procedures

Where the Rules Begin: Title 30, Texas Administrative Code – Chapter 330 → 332

Legitimate Texas Recycling and Composting Facilities:

- Accept only source-separated recyclable materials, and comply with composting requirements set forth by the State (30 TAC 332)
- Pay for the materials they receive, accept them at no charge, or charge tipping fees to accept them;
- Add value to the materials they receive by sorting and/or processing them to meet specifications of a buyer or market;
- Sell the materials or put them to beneficial use after processing

TCEQ Authorization Types for Compost Facilities

- Exempt
- Notified
- Registered
- Permitted
## Exempt Authorization

### Notice of Intent to Operate a Recycling Facility

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<tbody>
<tr>
<td>source separated;</td>
<td>To TCEQ’s MSW Permits Section</td>
<td>None</td>
<td>Yes: General Requirements (Section 332.4); Air Quality Requirements [(Section 332.8(b)]; Storage Limitations (Section 328.4); Reporting and Recordkeeping (Section 328.5)</td>
<td>None</td>
<td>60-90 days</td>
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<td>yard trimmings;</td>
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<td>clean wood material;</td>
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<td>vegetative material;</td>
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<td>Paper; and Manure</td>
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## Compost Notification
**Notice of Intent to Operate a Compost Facility**

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<tr>
<td>Exempt material plus: source separated; Meat Fish Dead Animals Dairy Material Meat/Vegetable Oils and Greases <strong>NOT FOG from Grease trap / interceptors</strong></td>
<td>Mailed Notice to Adjacent Land Owners via TCEQ’s MSW Permit Section and OCC</td>
<td>Limited to Adjacent Land Owners via letter correspondence: No Motion to Overturn; No Public Meetings; No Public Hearing available</td>
<td>Yes: General Requirements (Section 332.4); Air Quality Requirements [(Section 332.8(c)]; Storage Limitations (Section 328.4); Reporting and Recordkeeping (Section 328.5) Plus some operational requirements (Section 332.23)</td>
<td>No</td>
<td>60-120 days</td>
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### Compost Registration

#### Section 332.32(b), Chapter 332, Subchapter C & Sub G

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<tr>
<td>Exempt material plus:</td>
<td>Mailed Notice to Adjacent Land Owners via TCEQ’s MSW Permit Section and OCC</td>
<td>Opportunity for Public Meetings (Published and Mailed)</td>
<td>No to Recycling</td>
<td>Yes</td>
<td>Yes to Compost: Sludge = Chapter 312 and 332.72(d)(2)(A) and (D)</td>
</tr>
<tr>
<td>Compost Notification Material</td>
<td>Published Notice</td>
<td>Opportunity for Motion to Overturn ED Decision (mailed)</td>
<td>Yes to Compost: General Requirements (Section 332.4); Air Quality Requirements [(Section 332.8(c)]; plus</td>
<td>Yes</td>
<td>6-12 months</td>
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<tr>
<td>Plus:</td>
<td></td>
<td></td>
<td>Operational requirements (Section 332.27); plus</td>
<td></td>
<td>Admin and Tech</td>
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<tr>
<td>Municipal Sewage Sludge</td>
<td></td>
<td></td>
<td>Soil Liner Required</td>
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<td>Disposable diapers</td>
<td></td>
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<td>Paper Sludges</td>
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# Compost Permit

## Chapter 330: Section 330.1(d)

Chapter 332, Subchapter D, E, F and G; Section 332.3(a)

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<td>Exempt material</td>
<td>Mailed Notice to</td>
<td>Opportunity for</td>
<td>No to Recycling</td>
<td>Yes</td>
<td>9-18 months</td>
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<tr>
<td>Plus:</td>
<td>Adjacent Land</td>
<td>Public Meetings</td>
<td>Yes to Compost:</td>
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<tr>
<td>Compost</td>
<td>Owners via TCEQ’s</td>
<td>(Published and</td>
<td>General Requirements (Section 332.4);</td>
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<tr>
<td>Material Plus:</td>
<td>MSW Permit Section</td>
<td>Mailed)</td>
<td>Air Quality Requirements [(Section 332.8(e)];</td>
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<td></td>
<td>and OCC</td>
<td>Opportunity for</td>
<td>Operational requirements  (Section</td>
<td></td>
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<tr>
<td>Plus:</td>
<td>Published Notice</td>
<td>Motion to Overturn ED</td>
<td>332.45); plus</td>
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<tr>
<td>Mixed MSW Waste</td>
<td></td>
<td>Decision (mailed)</td>
<td>Soil Liner Required</td>
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<tr>
<td>Grease Trap Waste</td>
<td></td>
<td>Opportunity for</td>
<td>Groundwater Monitoring Required</td>
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- **Sludge =** Chapter 312 and 332.72(d)(2) (A) and (D)
- **No Sludge =** 332.71 and 332.72
How the Commercial Composting Industry Continues to Develop

Growth in Municipal Green Waste Diversion
Ban of Organics in Landfills

States that Ban Organics or Mandate Organics Recycling - October, 2014

- Ban/mandate some yard debris: Arkansas*, Delaware, Florida*, Georgia*, Illinois, Indiana, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska*, New Hampshire, New Jersey, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, South Dakota, Vermont, West Virginia, Wisconsin
  - *Allow yard debris disposal in landfills that generate energy

- Ban/mandate food scraps: California, Connecticut, Massachusetts, Rhode Island, Vermont.
  - Also of note: New York City, Seattle

Evolution of Composting as a Materials Management Strategy

Compostable ‘Plastics’ & Other Products

Check with Compost facility for Acceptance

Food Discards
Composting Industry Challenge – Closing Infrastructure Gaps

Challenges
• Premium Cost for Service
• Route Density Challenges
• Proximity to Processors

Solution
Data Base & GIS Mapping to Connect Generators, Haulers, Processors

*Source: Houston-Galveston Area Council
Living Earth’s Take:
New Entrepreneur Opportunities and Areas of Future Focus

Farm Dirt Houston
Cowboy Compost Fort Worth
Turn Compost Dallas
Compost Peddlers Austin
Additional Resources:

Composting Topics | Living Earth® YouTube:

✓ http://www.tceq.texas.gov/p2/nav/composting.html
✓ https://www.youtube.com/watch?v=kH18ssKMcaQ
✓ https://www.youtube.com/watch?v=9iof4-6HGlC

Contact info:
Lora Hinchcliff, S.C.
Living Earth®
(972) 506-8575
lhinchcliff@letcogroup.com

www.LivingEarth.net

SWANA Certified Manager of Composting Programs