



Composting Materials and Preparation

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Vision Recycling

- Bay Area Mulch Supplier
- And Compost Producer
- 7 facilities currently
- With Long Term Contracts
 - County of Santa Cruz Public Works
 - Salinas Valley Solid Waste Authority
- Own facilities in Newark, Livermore & Benicia
- Local Model
- Prefers Niche Market size capacity

Vision History

- Started by a landscaper
- Need for Organics processing on landscape division of the business
- Bought a tub grinder
- Awarded the SC Contract in '95
- Bio Mass
- Markets Shifted
- Landscape & Gardening material began

Role in the company:

- Drive Sales & move finished product away from sites
- Marketing & Branding
- Website, multi media & promo
- Tradeshows, workshops, Earth Day & outreach
- Advertising
- Safety Training for staff
- Product Development
- Food Waste Program (Back End Mgmt: testing, create markets, input monitoring at generators)
- Legislation & Advocacy
- Expansion seeking new ventures



Organics Source Separation

Pile #'s at facility

- Curbside green bin – Compost
- Self-haul brush & trimmings –C&G
- Pallets & lumber – C&G
- Redwood only – C&G
- Food Waste – Compost
- Manure – Compost

Buena Vista, Watsonville



Industry Products

- Green Waste Mulch
- Fines Soil Amendment
- Recycled Lumber
- Dyed Mulch & Painted Wood Chip
- Redwood
- Compost



California Organics

- Locally (MC, Green Bin, composting, events)
- State (AB939, AB 341, AB32, AB1826, AB1594)
- Nationally (USCC, Bio Cycle, NY, PA, CO, TX)
- Fortunate to be in the Bay area
- Recycling is available, commercial composting
- Communities
- Backyard composting





Bay Area Commercial Composting

San Francisco-GW/FW

San Jose-GW/FW

Santa Cruz-GW/FW

Others: San Diego-GW/FW

Maryland –GW/FW

Pennsylvania-GW/Manure

Technology

- Open Windrow
- ASP (Aerated Static Pile positive or negative)
 - Covered with tarp or bio filter
- Anerobic Digestion (enclosed system)
Without the use of Oxygen
- Bunkers or In-Vessel
- Progressive ASP

Open Windrow



Turners



Inputs In The Compost Process

- Food Waste (Pre and Post Consumer)
 - The next frontier
- Yard Trimmings/Green Waste
- Compostables (silverware, plates, cups)
- Water
- Air
- Manure
- Compost
- Bio Solids

Recipe Mixture

- Ingredients
- Compost Chef
- Right %
- Correct turning
- Temp's
- Gotta get it right

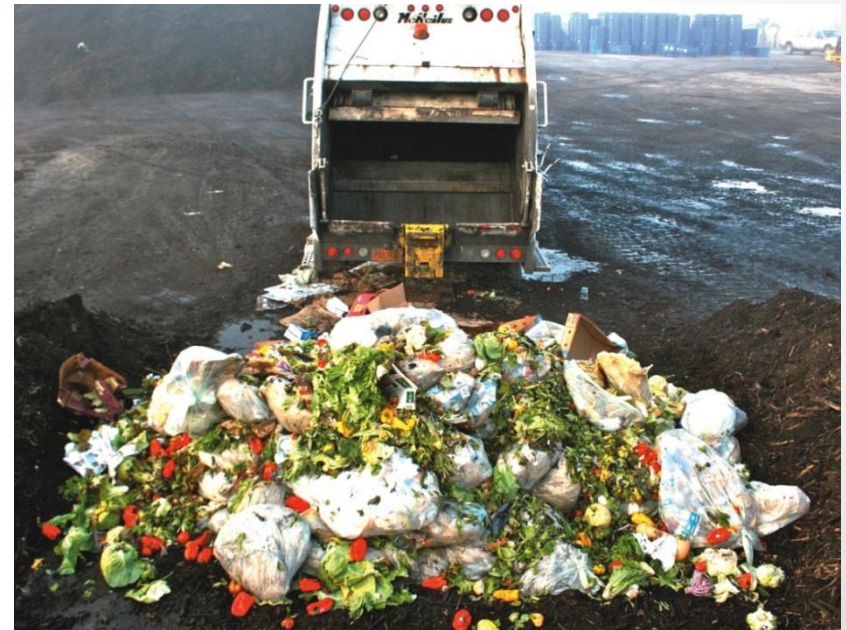


Food Waste

- Fruit, vegetables, meat, dairy, fish & shells
- Hauler/generators
- Great Nitrogen source
- Moist/Adds water
- Bulking/add GW

Concerns:

- Collection on the pad
- Contamination (spoons)
- Compostables
- High Salt Sodium
- Leachate
- Pond



Screening



Santa Cruz Food Waste Pilot Program

- Mixed with Green Waste
- Covered Static Pile
- Positive air
- Windrow 90' feet long
- Agg Bag system-dinosaur
- 2K tons annually food waste plus bulking agent









Yard Trimmings

- Small Brush (leaves, grass) curbside
- Great Carbon source
- Self Haul Drop Off
- Compost alone or as a Bulking Agent with FW
- Absorbs water & leachate
- Provide organic matter
- 3/8" vs 2" minus

Concerns:

- Inventory and Storage juggling act and science
- Contamination
- Finished product quality



Screening



Yard Trimmings & Woody Material Handling

- State reg's
- Fire lanes
- Active drop off area
- Temperatures
- Time limit to move material off site



Compostables



Standards for What is Compostable?

- B.P.I. *Bio-degradable Products Institute*
- ASTM 6400 and ASTM 6868
- Look for the logo



- Compostable in the landfill
- Challenge in the compost pile
- Certifying Organic material
- Retail level

Water

- Moisture is essential
- Microbial activity
- Not too much!
- Not too little
- Incorporate into pile



Air

- Crucial for monitoring Temp's
- Positive or Negative ASP



Manure

- Chicken/Horse/Cow
- Great source of Nitrogen
- Also hay & other Brown
- Concerns:
- Proper PFRP
- Organic certification
- Antibiotics



Compost As An Input Tea



Bio Solids

Composting of Human Waste
the movie “The Martian” Matt Damon

- land reclamation
- mine reclamation
- agricultural land fertilization
- forest fertilization
- erosion control
- horticulture
- slope stabilization
- roadside aesthetic improvements

Inputs that cause a Challenge

- Palm



- Large Woody Material



- Stumps
>5'x5'



Inputs that cause a challenge con't

- Animal feces
- Small plastic bags
- Grass Sod



Questions Re: Inputs

Measurements for Success

- Lab Report
- Squeeze Test
- Odor (Smell)
- Color
- Bulk Density
- Certification
- Output

Lab Report

- PFRP
- Pathogens
- C/N
- pH
- Organic Content
- Sodium
- Ash

ANALYTICAL CHEMISTS
AND
BACTERIOLOGISTS
Approved By State of California

SOIL CONTROL LAB

15000 BROADVIEW
WHITTIER, CA 90604
TEL: 310-337-2222

Account #: 512839 / 22-494 /
Group: Dec: 15 / 316
Reporting Date: January 6, 2016

Vislon Recycling
41900 Boswell Road
Fremont, CA 94538
Attn: Kevin Tuttle

Date Received: 16 Dec 15
Sample Identification: Vislon Comp
Sample ID #: 512839 / 222

Nutrients	Dry wt.	As Recd.	units	Stability Indicator:	Biologically Available C:
Total Nitrogen	0.95	0.51	%	CO2 Evolution	mg CO2 / g dry OM/day
Ammonia (NH4-N)	11	5.9	mg/kg	Stability Reading	very stable
Nitrate (NO3-N)	< 1.1	< 0.5	mg/kg		very stable
Org. Nitrogen (Org-N)	0.95	0.51	%		
Phosphorus (as P2O5)	0.52	0.17	%		
Phosphorus (P)	1400	730	mg/kg		
Potassium (as K2O)	0.66	0.35	%		
Potassium (K)	5300	2900	mg/kg		
Calcium (Ca)	1.5	0.81	%		
Magnesium (Mg)	0.40	0.21	%		
Sulfate (SO4-S)	129	37	mg/kg		
Boron (Total B)	16	8.4	mg/kg		
Molibdenum	0	40.5	%		
Sodium (Na)	0.090	0.048	%		
Chloride (Cl)	0.16	0.087	%		
pH Value	NA	7.38	unit		
Bulk Density	22	40	lb/cu ft		
Carbonates (CaCO3)	41.1	41.1	lb/cu ft		
Conductivity (EC)	2.2	NA	mmhos/cm		
Organic Matter	49.4	25.4	%		
Organic Carbon	21.0	11.0	%		
Ash	50.6	27.1	%		
C/N Ratio	22	22	ratio		
Ashiness	8	8	ratio		

Pathogens <th>Isolate <th>Units <th>Reading</th> </th></th>	Isolate <th>Units <th>Reading</th> </th>	Units <th>Reading</th>	Reading
Escherichia coli	< 7.5	MPN/g	pass
Salmonella	< 3	MPN/g	pass

Date Tested: 16 Dec 15

Trace Elements	% by weight
Aluminum (Al)	< 0.5
Antimony (Sb)	< 0.5
Barium (Ba)	< 0.5
Bismuth (Bi)	< 0.5
Boron (B)	< 0.5
Bromine (Br)	< 0.5
Cadmium (Cd)	< 0.5
Chromium (Cr)	< 0.5
Cobalt (Co)	< 0.5
Copper (Cu)	< 0.5
Iron (Fe)	< 0.5
Lead (Pb)	< 0.5
Manganese (Mn)	< 0.5
Mercury (Hg)	< 0.5
Molybdenum (Mo)	< 0.5
Nickel (Ni)	< 0.5
Selenium (Se)	< 0.5
Zinc (Zn)	< 0.5

Sample was received and handled in accordance with TML 302 procedures.

Analyst: Asad Sadeh

Measurements

- Squeeze
(Moisture)



- Odor

- Color



- Bulk Density
(Compaction)



Certifications



Government Trade Association Commercial
Entity

Output

- How does the product perform?
- Success stories
- Photos
- \$ saved
- Water reduction

Finished Material (Where does it go)

- Landscapers
- Home Gardeners
- Municipalities
- State Cal Trans
- Agriculture
- Vineyards
- Cannabis growers
- Bio Mass Plants
- Bio Treatment L.I.D.



Bio Treatment Soil Blend



- Low Impact Development product
- Filtering Storm Water
- Coarse sand to percolate water
- Compost attract contaminants
- Promoting vegetation within the bio swale

Stanford Campus Installation



Bio Mass Crisis

- One other outlet for Organics as a substitute for Coal to create energy
- Central California Power Plants have closed
- Lower cost alternatives to energy
- California has said keep Organics out Landfills
- But, material is going back in the landfill





Conclusion

- Feedstock Management
- So Important for achieving finished product
- *What Goes In Dictates What Comes Out*
- Cannot make Gold out of Lead
- Compost is Natural Steroids for Soil
- Organics is the next frontier
- For Municipalities it is crucial for long term life of the landfill

Helpful Links

- USCC
 - Compost Operator Training Class
- Bio Cycle Magazine
- Association of Compost Producers
- B.P.I. World (website for compostables)
 - ASTM