

# MANAGING CONTAMINATION OF ORGANIC WASTE

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Embracing Zero Waste—Adding Organics Diversion in the ICI Sector

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## KEY CHALLENGES

- Lack of adequate storage capacity
  - Day-to-day routines
  - Collection infrastructure
  - Existing waste contracts
- Staffing issues resulting in poor participation and contamination of SSO stream
  - Odour
  - Insects and rodents
    - Program costs
    - Compost quality



## IDENTIFY SOLUTIONS

- Technologies
- Infrastructure
  - Scheduling
- Management
  - Training
  - Monitoring
- Regulations
- Contracts
- Compost Uses

## CORNELL UNIVERSITY REJECTS COMPOST DUE TO CONTAMINATION

A large amount of compostable waste is generated at Cornell each year. However, approximately 50 percent of material coming from retail dining locations and waste from major events is rejected due to a high concentration of inorganic contamination.

## INORGANIC CONTAMINATION



## CONTROL OF CONTAMINANTS

- Education
- Training
- Signage
- Control access to dumpsters
- Surcharges for contaminated loads
- Feedback to generators
- Hand sorting
- Mechanical screens
- Variations in compost quality

## MANUAL REMOVAL OF CONTAMINANTS



## INORGANIC CONTAMINANTS



**PROBLEMS:** Contamination, usually film plastics and bags collecting on teeth in tub grinder.



## WEST YELLOWSTONE SSO COMPOSTING FACILITY





## NOT ALL PLASTIC, GLASS, AND METAL SCREENED OUT



## THE ROLE OF MANAGEMENT

- 100% variation in organics diverted in same size supermarkets based on store manager
  - Track diversion rates
- Conduct monthly comparisons of quantities diverted
  - Determine reasons for variability
  - Recommend program changes
  - Meet with employees monthly
  - Recognize and promote success
    - Consider competition

## EVALUATING CONTAMINATION AT POINT OF GENERATION

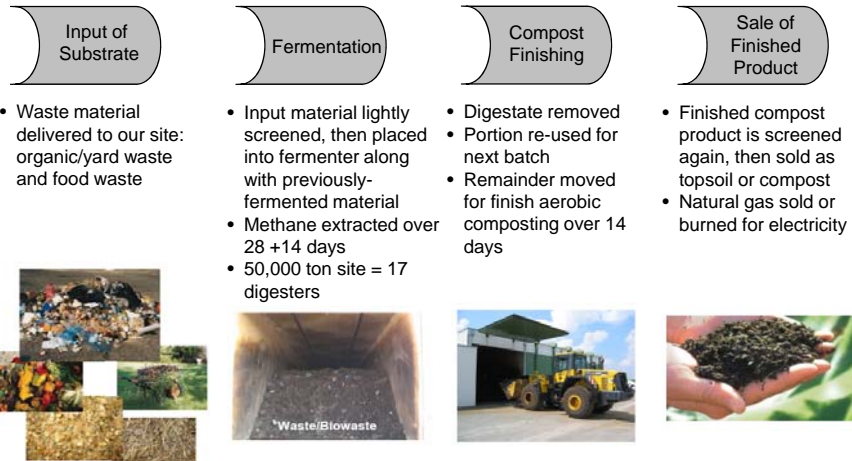
- Inspect containers frequently
- Hand sort or use grab tool to pull out contaminants
  - Provide and use disposable latex gloves
  - Dispose of gloves in trash bin
  - Locate trash bin close to organics bin
- If it requires too much time to remove a wrapper discard into trash
- Important to not interfere with job performance

## EVALUATING CONTAMINATION AT PROCESSING FACILITY

- Organics facility operators may provide feedback on contamination
  - Facility operators conduct visual inspections
- E-mail digital photos to manager – may know source
  - Different types of “finger prints” from floral, deli, bakery
- Easier to identify contamination source from one compactor vs. multiple sources in load
  - Send photo to all generators in that load
  - Sur-charge for contamination

## HIGH SOLIDS ANAEROBIC DIGESTION

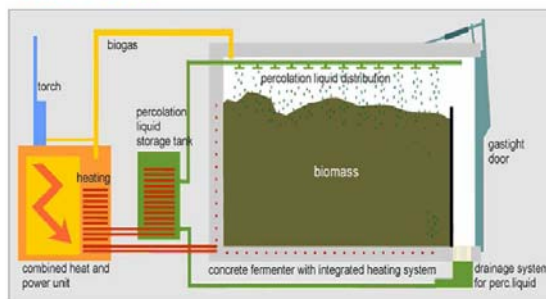
*Four steps to extract energy and generate high-quality compost*



## HSAD TECHNOLOGY

*Anaerobically (without oxygen) digests waste material to produce methane over a 28-day period.*

### The Process



- 1) Waste material placed in an air-tight, garage-like building for 28 days (typically 50/50 mix of yard waste and food waste)
- 2) Percolate and bacteria recirculated during digestion process
- 3) Biogas collected at top of building, and is extracted
- 4) Gas cleaned to become methane and either sold or burned for electricity



## HIGH SOLIDS AD FACILITY



## BEKON FACILITY, GERMANY



## ACCEPTABLE ORGANICS FOR HSAD FACILITY

- Meat, Fat, Bones
- Dairy, Milk, Ice Cream
- Fruit, Vegetables, Legumes
  - Breads, Grains
- Soiled Paper, Cardboard, Waxed Paper/Cardboard
- Bamboo Wood Cutlery, Plates, Bowls
- ASTM D6400 Bin-Liners

## UNACCEPTABLE MATERIALS FOR HSAD FACILITY

Film plastic and plastic  
Metal  
Glass  
Clothing/Textiles  
Medical, Pharmaceutical  
Sharps (Epipens, Syringes)  
Human Fecal, and Pet Waste

## BIO-PLASTICS, CORN PLA, POTATO, ETC. UNDER CONSIDERATION

Due to difficulty in identifying biodegradable cutlery, plates, cups, bin liners, etc. some HSAD facilities only accept such materials on a case-by-case basis

## WASTE AND RECYCLING CONTRACTS

- Definition of “Acceptable Organics”
- Definition of “Unacceptable Materials”
  - Surcharge for contaminated loads
  - No penalty for recycling
- Reduction in size of waste container and cost
- Reduction in frequency of waste collection and cost
  - Compliance with sustainability policies
- Compliance with provincial/municipal recycling mandates

## SECURE CONTAINERS

- Keep organics dumpster locked
- Authorize trained staff only to use organics bin
- Keep locked if temporary or un-trained employees
  - Signs: “authorized employees only”
- Keep locked for construction or other contractors

## LOCKED DUMPSTER



## STOP & SHOP SUPERMARKETS (MA) SUCCESSFUL PROGRAM 10+ YRS.

- Use waxed cardboard boxes for food scraps
  - Stack full boxes on rolling cart until full
- Authorized staff with key wheel full cart to dumpster
  - Unlock dumpster
  - Put boxes of organics in dumpsters
  - Lock dumpster

## ODOUR CONTROL

- Collection of bins at least 1-2 X per week (or more)
- Hauling compactors at least 1 X per week in summer
- Include soiled paper and cardboard to absorb liquid
  - At store or restaurant store in walk-in cooler
  - In residential units store in freezer
- Provide container of sawdust to cover food scraps
  - Keep lids closed between uses
- Use odor control agents such as ZEP Prevail



## INSECT AND RODENT CONTROL

- Collection of bins at least 1-2 X per week (or more)
- Hauling compactors at least 1 X per week in summer
- Include soiled paper and cardboard to absorb liquid
  - At store or restaurant store in walk-in cooler
    - In residential units store in freezer
- Provide container of sawdust to cover food scraps
  - Keep lids closed between uses
- Contract with pest control specialists

## COMPOST QUALITY WOULD YOU USE THIS COMPOST?

- Consider end-users of compost on lawns and gardens
  - “You can’t sell that bread until you bake it”
- Until the compost is produced and tested the facility operator won’t know how good it is and what markets are available
  - Must meet Alberta compost quality standards

## COMPOST STANDARDS

### 3.3 Foreign Matter in Compost

Foreign matter detracts from good quality compost. As most compost feedstocks and products contain foreign matter, the following quality criteria are important to protect human health, and to be an incentive for source separation of residuals or sorting out of foreign matter in the final product.

#### a) Sharp Foreign Matter

**Category A** - Compost shall not contain any sharp foreign matter of dimension greater than 3 mm per 500 ml. sample of compost.

- **Category B** - Compost shall have a sharp foreign matter content less than or equal to three (3) pieces of sharp foreign matter per 500 ml sample of compost, and the maximum dimension of the sharp foreign matter shall be 12.5 mm. However, this compost shall not be used in pastures, parks or for residential purposes.

## COMPOST USES AND MARKETS

- Landscaping
- Lawns and turf
- Vegetable gardens
- Flower gardens
- Greenhouses
- Mined land reclamation
- Erosion control
- Stormwater management

## ADDITIONAL SOURCES OF INFORMATION

- Edmonton Waste Management Centre of Excellence
  - Canadian Compost Council
  - United States Compost Council
- BioCycle, Journal of Organics Recycling



## THANKS A ROT & KEEP YOUR SENSE OF HUMUS!

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