Regional Solid Waste Management Plan Review:
Engaging solutions for tomorrow

Garbage School 301:
Composting

Why Compost?

- Meet waste diversion goals
  - Organics are a significant part of waste stream
- Address waste liabilities
  - Removing organics from landfill reduces leachate
- Beneficial reuse of organic matter
  - Improve soil condition
  - Reduce greenhouse gas emissions

How does it work?

- Organic materials are separated from waste stream
- Ratios of carbon and nitrogen are adjusted to optimal level
- Moisture level and particle size are adjusted
- Naturally occurring microorganisms digest the organic matter, creating a stable product that improves soil condition

Types of composting

Increasing complexity

- Static piles
- Turned windrows
- Aerated static piles
- Bays, beds and runnels
- In-vessel systems

Static Piles

- Rudimentary
- Piles must be large enough to heat up, small enough to aerate by convection
- No controls
- Not recommended

Turned Windrows

Turned Windrows

- Best suited for yard and garden waste
- Can be at almost any scale
- Small capital investment and low operating costs
- Large land requirement
- Most common option in North America
- Currently used by City of Vancouver for residential yard waste

Aerated Static Piles

- Applicable to a wider range of materials
- Air is forced in or out with fans
- Piles built on platforms
- Rate of air flow is often controlled by temperature or oxygen feedback
- Capital costs are higher than windrow

Covered Aerated Static Piles

- Covers reduce odours and energy requirements
- Expanding usage in North America, well established in Europe

Bays, Beds and Tunnels

- Usually inside
- A variation on windrows
- Good odour control

- Suitable for a wide range of materials, including sewage sludge

In-Vessel Systems

- Highest level of containment and control
- Recent opening of a facility in Squamish
- Feedstock mixing is critical

How to Choose?

- Costs
  - Capital
  - Operating
  - Land Requirements
- Flexibility
  - Adaptable to seasonal variations
  - Ease of expansion
- Public Acceptance
  - Ease of Siting
  - Reputation
  - Proven Technology
- Process Simplicity
  - Process Duration
  - Front end processing

How to Choose?

- Environmental Controls
  - Leachate
  - Odors
  - Vectors
- Feedstock Variability
  - Yard and Garden
  - Food Wastes
  - Bio-solids / Manures / Mortalities
  - Mixed MSW
- Product Marketability
  - Process Control
  - Product Quality
  - Market Value of End Product

Cost Comparison

	Static Piles	Turned Windrows	Aerated Static Piles	Bays, Beds, Tunnels	In-Vessel
Capital Cost (excluding land)	$0.5 million	$2 million	$6 million	$10 million	$13 million
Operating Cost	$15	$25	$30	$50	$50
Land requirement	Medium	High	Medium	Medium	Low

Costs are based on a capacity of 20,000 tonnes per year