

MDC / Earth Ethics Institute / CT&D

Green Studies Immersion

Veolia Resource Recovery Plant with Hank Clements (Fuel Processing Manager WTE-North America / Veolia) & Joyce Dibenedetto-Colton (MDC)

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The Bad News

No market for recyclable paper, plastics, steel (currently ~\$100/ton), aluminum (~\$0.20/lb)

The Good News

Plastic has high BTU value = good to burn for energy! But recycling is still the right thing to do!

Q. Where does all the county's recyclables go?

A. Don't know; the privately-owned processing facility is actually in Broward; with such a low market value for recyclables, wouldn't be surprised if it was landfilled (Broward public or Broward private) as happens in other states – depending upon market demand.

Q. What about mercury batteries?

A. get sorted out with other non-ferrous metals

Q not asked: doesn't shredding them release the mercury?

Veolia / Doral Plant

- Veolia Environmental Services Company (2nd largest in world environmental services company; French-owned)
 - 152 WTE plants in Europe
 - 11 in USA
 - 2 in Caribbean
- Doral = world's largest waste to energy (WTE) facility
 - Uses RDF = refuse-derived fuel
 - Built in 1984 to reduce landfill volume and secondarily to produce energy
 - Result? 95% reduction in volume of waste
 - 40 acres
 - processes 1, 206,000 tons of waste/year = 4,200 tons/day
- Miami Dade County controls (picks up) 2 million tons of the county's total of 3.5 million tons of waste annually
 - 1.5 M tons picked up by proprietary haulers
- Veolia processes 62% of MD County waste (= 100% of Veolia capacity right now)
 - Remaining 38% goes to landfills (South Dade and Hialeah)
 - South Dade landfill estimated to have 9-11 yrs life remaining before max capacity and capping (6" of soil cover required by law). Life extended in poorer economy as there is less consumption
- US average waste / person / day = 3.5 lbs
- Miami Dade County average = 5.2 lbs due to increase in service/tourism industry
- Options when South Dade landfill is full:
 - Increase capacity of Veolia (more, bigger boilers on site)

- Truck the waste North to other counties? = \$\$
- Mining the landfill not an option due to higher than acceptable rate of decomposition = poor fuel source (lots of methane gas generated = global warming and air quality issues)

Waste Management Processes at Veolia

Trash = commercial waste, used lumber (esp from construction industry), yard waste = 30% of entire waste stream.

- Veolia processes 120 tons/hr every day (hand + machine)
- Sorted for non-organics (plastics, metals, glass) and turned into mulch for burning on site (with garbage stream) or sold to off-site customers esp. Dixie Sugar for burning in sugar cane mills when they don't have bagasse (sugar cane stems) during off-harvest season. 99.1% of volume is reduced to ash which is then spread on fields as fertilizer (rich in potassium)
- Soil sifted out is used to cap landfills, esp at South Dade.

Garbage = household waste;

- all burned on-site with high-tech pollution control
- 100 tons/hour; takes 23 minutes from start of conveyor to finish as electricity.
- Furnace burns at 1700-2000 degrees F to heat water to 750F @750 psi (superheated steam) -> turns turbine -> generates electricity used at Veolia and into FPL grid
 - 50-55 megawatts of electricity go into the FPL grid every minute.
- Emissions cleaned by scrubbers that remove sulfur oxides and dioxides, nitrogen oxides and dioxides via activated charcoal, limestone and water
- Ash is landfilled on site; non-toxic; good source of additive to concrete (can be added at ~2% of volume of cement) but construction has slowed in South Florida and Veolia couldn't produce enough to meet demand. Solution = look for companies that need only a "little bit" of ash for additives.
- Federal emission standards = 20ppm; Veolia standards = 6ppm = one of cleanest facilities in the world.
- Generating electricity from waste reduces the need to burn more coal to generate same electricity therefore reduces global warming gases (CM note: fuzzy...more accurate to say burning waste contributes to reduction of global warming gases by keeping coal out of the furnaces)
- Q. What about CO2 emissions?
- A. this temperature range breaks down CO2 into C + O that combines with other elements. (CM note: this part was answered very fuzzily; followup needed)
 - Q for Hank C
 - How does the WTE process (with high organic content of fuel) actually reduce the amount of CO2 released into the air upon burning? What happens to it.
 - Acknowledge the indirect reduction of CO2 that may have come from coal.
 - Ask what % of power plants in FL burn coal as opposed to petroleum, natural gas. Nukes at about 20% of state demand?

Overall Benefits of WTE at Veolia

- 95% reduction in volume of waste that would have gone to landfill, thus shortening their lives
 - 25 cubic yards of waste in -> 1 cubic yard of ash
- production of electricity for 45,000-50,000 homes via FPL grid
- recycling of
 - 34,500 tons of steel/yr = for enough autos to stretch bumper-to-bumper from Miami to Key West
 - 3, 500 tons of aluminum/yr = to make an engine block for each of the above cars
 - 22,000 tons of tires shredded annually. Rubber chips shipped to North Florida to burn for energy in another WTE facility.
 - Q. Why not burn at Veolia?
 - A. (+) would generate lots of energy (1 lb of tire = 15,000 BTU)
 - A. (-) would take up huge part of Veolia generating capacity and reduce the amount of waste that could be burned (remember – waste volume reduction is big goal of the plant)
- Burning waste (as Veolia does) =
 - 30% less particulate emissions than oil for same amount of electricity
 - 25% less sulfur dioxide emissions (key culprit in acid rain formation)
- Veolia has exceptionally high air quality emissions standards
 - No coal-burning power plant could operate under these standards
 - Mass-burn WTE plants don't sort prior to burning and produce significant amounts of toxic ash and higher toxic emissions' levels (but are accordingly cheaper to operate, esp in personnel (1/4 people vs Veolia model)

For more information:

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