



Waste Diversion Task Force 2010

Industry Presentations Openhouse

April 12, 2001

Synopses of Presentations Delivered

WORKS and EMERGENCY SERVICES

**WASTE DIVERSION TASK FORCE 2010
Industry Presentations Openhouse**

Toronto City Hall, Council Chambers
100 Queen Street West, Toronto

Thursday, April 12, 2001
9:00 a.m. to 4:30 p.m.

SYNOPSIS OF PRESENTATIONS DELIVERED

	Presenter(s)	Company/Organization
1	Karl Mitchell	Waste Waiters Inc.
2	Richard Weldon	Canadian Natural Power Inc.
3	Mike Yorke	Carpenters and Allied Workers Union – Local 27
4	Peter Wehrle	Indaco Manufacturing Ltd.
5	Florabela Carvalho	Eco Island
6	Ian Greig	Greentec International Toners Supplies Inc.
7	Alfred Von Mirbach, Bob Argue	REIC Perth
8	Yurich Summer	Holiday Inn
9	Gary Bright	Superfast Composting Systems
10	Peter Mazur	Netafil Corp.
11	Harry Prenger	International Bio-Recovery Corp.
12	Maurice Deschamps, Dr. B. Anthony, Clayton Kass	Innovation Recycling & Solutek Environmental Inc.
13	Blair McArthur	Miller Waste Systems
14	Wil Leese	Wilcord Corporation
15	Mark State	Spaic/Air Systems ECD Systems Inc.
16	Roger Yates	Hatch Associates
17	Albert Wakim	H2 Flow Equipment Inc.
18	Derek Veenhof	American Refuel Company
19	Claude Marmen	Groupe Conporec Inc.
20	David Bergart	Sandworks
21	Steve Polous, David Murray, Ian Hood	Co-Existence Systems Inc.
22	Robert Cook	Ontario Waste Management Association
23	Wayne Byrd	All Treat Farms
24	Atto Fasthuber	SSI Schaefer International Ltd.
25	Peter Mann	City Clean 2000 Inc.
26	Darlene Hartung	Molok North America
27	Allan Twuddle, Mel Finstein	Arrow Ecology Ltd.
28	John Carter, for Al Dranky	Dixdale Financial Corporation

	Presenter(s)	Company/Organization
29	Rudolph Hirsbrunner	Swiss Design
30	Cathy Cirko	Environmental and Plastics Industry Council (EPIC)
31	Marty Grinstein	Planet Earth Recycling
32	Dave Douglas, Dave Gordon	The Clorox Company of Canada Ltd.
33	Peter Klaich Kevin Neumaier	Biocorp Ecology and Environment Inc.
34	Tony Hatzis	Pente Separation Systems

1. **Presenter(s):** Karl Mitchell
Company/: Waste Waiters Inc.
Organization

Background:

- o Waste Waiters Inc established in 1998 to address removal of Canada Goose dropping from parks and recreation areas, and offer collection of pet feces from private properties
- o Developed and patented a “vacuum cleaner” for material collection.
- o MoE Certificate (A841709) to dispose animal feces at Keele Valley Landfill site.
- o Offers services to private property owners: weekly back-yard cleanup by vacuuming; and, collection of owner-collected waste under company’s “Red Box” programme.
- o Have disposed of 4900 lb. (2227 kg.) of animal waste since July 2000
- o Currently investigating methods of converting animal waste into horticultural fertilizer, thereby diverting animal waste from landfill.

Comments:

- o Observation: Citizen compliance with by-laws prohibiting disposal of animal feces in MSW is low to virtually nil.
- o Recent study yielded an average waste production rate estimate of 9 lb. (4 kg.) per pet over a 10-week period.
- o Estimate: “pet waste” illegally disposed in MSW amounts to 25-50% of household waste from pet owners’ residences.
- o Estimate: only 1/3 of pets in the City are licensed.

Proposal:

Pilot project by, or contract from, the City to Waste Waiters Inc for collection of animal waste, curbside and by vacuuming, to divert it from disposal in landfill

Q&A by Councillors/staff:

-- none --

2. **Presenter(s):** Richard Weldon
Company/: Canadian Natural Power Inc.
Organization

Background:

- o Producer of an EFW system.

Comments:

- o City should consider EFW as mechanism for waste disposal
- o 3 potential sites for facilities identified in GTA.
- o Each facility has “feedstock separator” section, for removal/capture of recyclable and compostable materials.
- o Remainder of waste stream is “combustibles” which are dried and shredded to create “flaked or fluffed process engineered fuel” with an energy content of 5000-7000 BTU/lb (11630-16280 kJ/gm).

- o Elimination of plastics, etc. from waste stream alleviates problems with toxic emissions.
- o “Engineered fuel” can be densified into pellets and transported.
- o Co-firing of “engineered fuel” in existing fluidized-bed boilers, mixed with other fuel at rate at 25-30%, reduces NOx, PCB and like emissions.
- o “Engineered fuel” priced approximately 10% that of coal.
- o Modular facility design to permit sizing to match catchment area waste stream volumes. (range: 25/50 kilo-tonnes to 450 kilo-tonnes)
- o This design in use in Europe and at over 50 installations in the U.S.
- o Possibility of on-site heating and power production using “specialty boilers” developed at Ortech. Excess power can be sold onto hydroelectric grid.
- o Estimate potential 85% diversion from landfill. Residue (“tramp”) is 15% waste stream and would require landfilling
- o Modular design permits “start small and grow” approach.
- o Estimate cost of \$45-50 per tonne.

Proposal:

City should consider using Canadian Natural Power Inc.’s EFW equipment.

Q&A by Councillors/staff:

- o Terminology clarification: reference to
“Source separation” as used refers to processing at the facility, not at curbside.
- o Existing sites?
There are numerous sites in Iowa. Lundel Mfg., near Cherokee, IO, has a facility processing 100-150 tonnes per day.
“Waste-to-energy” only done at larger sites (400-500 tonnes/day) due to capital startup costs.

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3. **Presenter(s):** Mike Yorke
Company/: Carpenters and Allied Workers Union – Local 27
Organization

Background:

- o Union has approximately 10,000 members across southern and central Ontario
- o Union members involved in all sectors of construction industry (Residential, ICI, roads, etc.)
- o Union very active in training young people.
- o Union is training people in “green” approaches (e.g.: building and infrastructure retrofits)
- o Local 27 was among first of building trades to establish an Environmental Committee.
- o Local 27 is a member of TREC (Toronto Renewable Energy Coop)
- o Union recognizes value of green jobs for the environment and the economy.
- o Local 27 endorses work of Task Force 2010.

Comments:

- o Important issues: “green” jobs, and jobs for youth
- o Don’t want to see City budget crisis impact Task Force 2010 waste diversion initiative.

- o City should consider searching for funding alternatives. E.g.: Federal government should contribute to Task Force 2010 through Infrastructure programmes.
- o Landfill, whether in Adams Mine or in Michigan, is not an acceptable alternative.
- o Kudos to this Committee and the City for undertaking this project.

Proposal:

Union supportive of, and will to assist in promoting, the work of Task Force 2010.

Q&A by Councillors/staff:

-- none --

4. **Presenter(s)**: Peter Wehrle
Company/ Indaco Manufacturing Ltd.
Organization

Background:

- o Toronto-based manufacturer of compostable bags for waste collection.

Comments:

- o Existing product on the market since 1996, and was used in the City's pilot project at Ontario Science Centre.
- o Developed a newer version of the compostable bag product that breaks down faster (14 days vs. 28) in response to processing profile of composting facility. That product is currently in use Nova Scotia.
- o Product is used as a liner in collection containers and carts.
- o Product is compatible with windrow, in-vessel and fast-reactor digester system.
- o A version of the product with an even lower decomposition time in under development.

Proposal:

City should offer this product to the residents of Toronto.

Q&A by Councillors/staff:

-- none --

5. **Presenter(s):** Florbela Carvalho
Company/: Eco Island
Organization

Background:

- o Inventor/Manufacturer of “a new system of underground bins”
- o Bins of up to 3 cubic metres capacity are installed in groups in pits in a concrete “island” such that most of the bin is below grade.
The top of each bin is plastic or metal, as desired, and can be colour-coded and/or labeled to designate the type of material that should be put into it.
- o The raised concrete island in exterior applications protects the bins, and people putting material into them, from vehicular traffic.
- o Suitable for using in a “depot” for collecting recyclables and organics.
- o In use in industrial facilities.
- o System has been successful in Europe. (Photo shown of installation at Biscay (?) Airport in Spain)
- o System is patented.
- o No North American installations to date.

Comments:

- o System encourages residents to recycle.
- o Reduces or eliminates the problems associated with storing waster/recyclables in a residence between collections.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

- o Describe the “system”
System is concrete lined bin/pit into which plastic collection bins are inserted, then a plastic or metal exterior cover is put in place. A system of “shock absorbers” raise that inserted bin when the above-surface cover is removed, facilitating removal and emptying of it using a truck-mounted crane/hoist. Collection trucks would have to be retrofitted with a crane that can pick up the bins, but there are no other special requirements.
- o What happens to the material collected?
This “system” is for material collection; no processing or disposal of the materials is involved.

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6. **Presenter(s):** Ian Greig
Company/: Greentec International Toners Supplies Inc.
Organization

Background:

- o The company recycles ink-jet and toner cartridges – currently, over 2.4 million per year.
- o The company offers the C.A.R.E. programme – Collect And Recycle Empties. Under the programme, a monetary credit accrues to the persons or organizations sending cartridges to Greentec.

- o The company has a relationship Tree Canada – one tree is planted for each 12 cartridges recycled. The persons/organizations sending cartridges to Greentec can, additionally, donate/direct their monetary credit to Tree Canada and receive a tax receipt and/or carbon credits.
- o An estimated 30 million cartridges are disposed annually, usually ending up in landfill. Resolving this situation requires: (1) a collection system; and, (2) a company capable of recycling the cartridges.
- o Greentec is a leader in the cartridges recycling industry, currently handling 2.4 million cartridges per year, and has programme in place for pick ups of spent cartridges (6 or more at a time) from businesses and schools.
- o The relationship between Greentec and Tree Canada offers a means to help alleviate air quality problems, an issue of particular concern in urban centres.

Comments:

- o City participation in the C.A.R.E. programme would: yield a revenue source for the City; reduce waste disposed in landfill; and, help to address to air quality problems.
- o Greentec would provide all the logistics (cartridge collection and processing).
- o City participation in the programme could be leveraged by Greentec to encourage participation by other businesses.

Proposal:

The City, and its agencies should participate in Greentec's C.A.R.E. programme.

Q&A by Councillors/staff:

- o Could cartridges be collected through the blue box system and made available to Greentec?
The presentation today was oriented towards soliciting City participation in terms of the spent cartridges generated in their municipal offices. (No further response offered)
- o What does Greentec do with the collected cartridges?
They are packaged, sent to "an organization that refills them", and end up back on the market.
- o How does Greentec earn revenues?
By selling the empty cartridges to the organization that does the refilling.
- o How is pick up done at schools?
Clients are issued plastic containers – Rubbermaid "Totes" – for accumulating spent cartridges. When a pick-up is scheduled, the driver drops off an empty container and takes away the full one.
- o Where are you located?
1100 Courtney Park Drive, Mississauga.
- o Does the organization doing the refilling of cartridges have some sort of arrangement with the original equipment manufacturer (OEM) so that there won't be legal action over this practice?
Yes, the refiller is a competitor with the OEM's in the cartridge sales market. A number of OEM's have recycling programmes of their own, and people have the option of their sending cartridges to them. Greentec has experienced no legal actions in the 6-year history of the company. Typically, the OEM's only recycle parts of the cartridges, while Greentec reuses the entire unit.

7. **Presenter(s):** Alfred Von Mirbach, Bob Argue
Company/: REIC Perth
Organization

Background:

- o Presentation regarding “YIMBY” (“Yes, In My Back Yard”) project – composting organic portion of residential waste stream with *in situ* composters (i.e.: on resident’s/waste generator’s property).
- o Von Mirbach and Argue have been working with “leading edge” waste diversion programmes for the past 10 years, and “other leading edge programmes” for the past 25 years, including: composting projects (Port Colbourne Earthworks, Blue Box 2000), Norseman Plastics (composting unit supplier).

Comments:

- o No organics collection infrastructure required.
- o YIMBY is not a completely “new idea” – Composter distribution/availability programmes have already been used by municipalities – but it adds components that enhance programme adoption, programme sustainability and waste diversion measure longevity, such as: free delivery of composting units, on-going follow-up and comprehensive support/“trouble shooting.”
- o YIMBY encourages adoption beyond the “keener” segment of the population and help to sustain use of the composters (i.e.: diversion of organics from the residential waste stream) beyond the typical
- o YIMBY helps to encourage better use of composters municipality has already distributed.
- o A big, widely scoped project makes better use of advertising and communications resources since fixed costs are spread over a large number of units and the net cost/unit is reduced.
- o YIMBY currently implemented in “a number of municipalities in Ontario” (with <100,000 population).
- o An 8-year study, and numerous waste composition studies over the past 10 years, show:
 - o Door-to-door solicitation and personal contact yields >80% programme up-take
 - o YIMBY typically diverts 50% of kitchen waste and 95% or yard waste (across total waste stream, not just those properties participating in the programme).
 - o Ongoing follow-up and support ensures continued participation.
- o Waste diversion achievable through backyard composting:
 - o WDO standard is 100 kg/unit/year.
 - o Studies in Ontario report 144-350 kg/unit/year.
- o YIMBY programme analysis for three implementation scenarios (basic/moderate/aggressive):
 - o Total cost is \$50/unit (includes: cost of unit and 10-year follow-up support)
 - o Diversion achieved: 350/550/900 kilo-tonnes per year
 - o Net waste disposal savings: \$5-400 million
 - o Up-front costs payback period: 8/6/3.5 years
- o YIMBY:
 - o Actively involves residents in addressing waste diversion activities
 - o Is compatible with any other waste diversion programmes the City may implement
 - o Can be implemented right away (this summer, if desired)
 - o Is acceptable to, even desired by, the public
 - o Provides a “local solution”
- o Possible options for implementation (especially in light of up-front costs involved):
 - o Performance-based RFP/Tender with payments based on number of units actually distributed and waste diversion actually achieved.
 - o Creative financing options – arrange with manufacturers to spread cost to City of units purchased over a 3-5 year period.

Proposal:

The City should implement a YIMBY programme.

Q&A by Councillors/staff:

- o Is REIC Perth the composter unit manufacturer?

No, we are consultants to municipal waste diversion programmes, and developer/administrator for YIMBY programme. Norseman Plastics is a local manufacturer of the units, but just one of many.

- o Is YIMBY successful?

Yes. The barrier seems to be accepting that the public can take responsibility and become seriously involved in waste diversion programmes. With proper support and promotion, the public does become, and stay, involved.

- o How is public concern about rodents and pests and “composting gone wrong” addressed?

“Handholding” and the ongoing support programme are key. Once a resident has successfully gone through one cycle’ and actually harvested finished compost, they tend to keep on doing it. The ongoing support programme by “compost doctors” helps to address any minor problems that may subsequently crop up, and strongly motivates continued participation.

Rodent and pest problems are most often perceived, rather than real, but where they do occur can be addressed by education and by composter unit design.

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8. **Presenter(s):** Yurich Summer
Company: Holiday Inn
Organization

Background:

- o Runs Holiday Inn on Queen Street.
- o Operates tourist helicopter-rides company in Niagara Falls.
- o Loves Toronto and is concerned about impact on perceptions and tourism of negative image of Toronto’s garbage problems and programme of trucking garbage to landfills in Michigan.

Comments:

- o Promotion of composting and recycling is vital.
- o LCBO should take back empty bottles.
- o Switzerland, a country renowned for efficiency and cleanliness employs EFW – Toronto should do the same.
- o Handling “garbage” should not be a cost to the City – there are ways for it to be a revenue source.

Proposal:

Can facilitate access to a Swiss expert with 30-40 years experience in waste diversion/disposal.

Q&A by Councillors/staff:

- o Lawson Oates will contact Mr. Summer.
 - o Is there an asphalt recycling programme in Switzerland?
Yes.
-

9. **Presenter(s):** Gary Bright
Company/: Superfast Composting Systems
Organization

Background:

- o A relatively new company.
- o Recently rec'd patent on a "super fast" composting process.

Comments:

- o This process controls material piece sizes (through shredding and screening), moisture content, oxygen content and temperature in order to avoid anaerobic decomposition and the resultant odour problems.
- o The process involves an in-vessel system that produces stabilized materials in 10-14 days (which becomes finished compost after 30 days of curing), and costs 80% less than comparable units on the market today.
- o The unit can be constructed in 2-3 weeks.

Proposal:

The City should consider purchasing the Superfast Composting Systems units.

Q&A by Councillors/staff:

- o Where is Superfast located ?
Baltimore, Michigan.
 - o Any units in operation?
A proto-type 2-bay unit is about 80% completed and should be in operation by June 2001.
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10. **Presenter(s):** Peter Mazur
Company/: Netafil Corporation
Organization

Background:

- o A "fledgling company" involved in "air pollution control and energy recovery."
- o Primary product: PHVAC™ air filtration system – process invented in 1995, patented in 1996, and certified to ASHRAE Standard 52.2p
(see: www.ashrae.org/about/522pub.htm and www.ashrae.org/research/1088-trp.htm)

Comments:

- o The PHVAC™ system addresses emissions control and process by-product recovery, using a high-pressure mist to “clean and condition air”, and remove particles down to 1 micron in size.
- o Key features of the system:
 - o Zero pressure-drop since no physical filter materials used.
 - o Potential for energy recovery.
 - o Self-cleaning.
 - o Computer controlled.
 - o Add-on available: UV unit to destroy viruses and bacteria.
 - o Collected particulate is capture and can be recycled/disposed.
 - o Water used in the system is recovered and reused.
 - o Minimize emissions of chemical vapours that contribute to acid rain.
 - o Environmentally friendly since no filter media (bags, mesh pads, etc.) used which require subsequent disposal.
 - o Low maintenance requirements.
 - o Can be incorporated in facilities being built, or retrofitted into existing air circulation systems.
 - o Can handle industrial air circulation systems up to the 50000-80000 CFM range, and is adaptable to residential systems

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

- o This system is a “scrubber,” not a waster disposal/diversion system. Recovery and recycling of particulate in industrial/residential air systems is a separate matter.
Yes.
- o Information sent to City’s Corporate Services Department?
Yes.
- o Can the system be used with, or attached to, equipment that generates dust which operates outside of a facility?
Yes, a mobile version is possible.

11. **Presenter(s)**: Harry Prenger
Company/ International Bio-Recovery Corp.
Organization

Background:

- o A private company established in 1993. (see: www.ibrcorp.com)
- o Product: “enhanced” aerobic digestion system.

Comments:

- o The system, based on ATAD (autogenous thermophilic aerobic digestion) technology, addresses “[the] waste disposal problem through a proprietary process that efficiently converts biodegradable waste into valuable organic fertilizer products”.
- o System can withstand up to 20% non-biodegradable materials in the feedstock.
- o System generates no odour problems.
- o System produces a marketable end product.
- o City-desired “Local solution” is possible: several 3-acre (1.21 ha.) sites, each capable of handling 150 tonnes/year, around the City.
- o Currently in-use in the Vancouver area.
- o Federal and/or Provincial funding assistance is possible. Or, the City may wish to make application to the “Superbuild” programme for funding infrastructure development.
- o System can also process sewage sludge.
- o The cost to the City, absent financing arrangements or assistance from other levels of government, is comparable to that of sending waste to landfill.

Proposal:

Enter into a long-term “put or pay” contract for International Bio-Recovery to accept and process the City’s waste

Or

The City can purchase the technology, use it to process waste in their own facilities, and join the Co-op which markets the end-product

Q&A by Councillors/staff:

- o Are you aware of Ontario’s provincial standards for compost (as compared to those in BC)?
The end product is considered to be a Class 1 Fertilizer. Pathogens are killed. Heavy metal are not concentrated; if they’re not a problem in the feedstock, they’re not a problem in the end product.
- o How would the “put or pay” arrangement work?
A plant operates most efficiently at about of 150 tonne/year. With a guaranteed stream of feedstock, the company could arrange private financing for three plants in the Toronto area, accept 275 tonnes/year from the City, find ICI sources of waste for the remaining design capacity, and there would be no up-front costs to the City.
A variation on this approach would be the City co-venturing with area municipalities to process their combined waste streams.
- o Who collects the waste in your Vancouver operation?
We do, for historical reasons. The plant there also accepts some drop-off loads.
- o How would collection be carried out in Toronto?
The City, and private sector haulers, would deliver source-separated materials to our plant.
In the alternative, the City could purchase the technology, operate its own facilities and market the end product through the Co-op.

12. **Presenter(s):** Maurice Deschamps, Dr. B Anthony, Clayton Kass
Company/: Innovation Recycling Inc.& Solutek Environmental Inc.
Organization

Background:

- o Product: thermal reduction system.
- o Proprietary process uses (anaerobic) “destructive distillation,” incineration.

Comments:

- o System takes garbage as input, extracts recyclables, shreds remaining material and “cooks it.”
- o No sort of feedstock required.
- o Paper and recyclables extracted.
- o System produces gas (used as fuel for generating electricity) and inert “char”.
- o Plant in operation in Oceanside, California, and others under development in Philippines, South America and other locations in California.
- o System meets CARB (California Air Resources Board) 2010 requirements and has DoE (US Department of Energy) approvals.
- o Waste not handled: tires, batteries, chemical wastes.
- o The system can

Proposal:

Contract from City for a pilot/”proof of concept” project.
(No cost to the City aside from providing a 1 ha. Site and a guaranteed waste stream of at least 100 tonnes/day, since private financing already in place).

Q&A by Councillors/staff:

- o Feedstock processing requirements?
No curbside sort needed. On-site MRF extracts recyclables, metals and inert materials.
- o How are large objects handled?
Sorted out and then broken down or disposed/sold “as is.”
- o What is the difference, if any, between this system and “gasification”?
No batching of feedstock is required since a continuous feed is used. This system is expandable.
- o The Province classifies incineration and gasification together for the purpose of standards, etc..
This system is anaerobic so there is no flame. The U.S. EPA now recognizes this distinction.
- o What is the “char”?
The char is similar to a pumice rock and it encapsulates any heavy metals in the feedstock.
- o Your documentation mentions Aylmer, Ontario.
They have asked us to look at their situation – a composting system plagued by heavy metals and glass chard contamination. Our system would replace that composting system.
- o What is done with the “char”, and isn’t it contaminated with heavy metals?
It can be used as road base material.
A process has been developed to remove the heavy metals, if desired, or required by regulation.

13. **Presenter(s):** Blair McArthur
Company/: Miller Waste Systems
Organization

Background:

- o Miller Waste Systems is a “diversified waste management company.”

Comments:

- o Three-stream waste collection (recyclables, organics, MSW/ residue) is better than a 2-stream (Wet/Dry) approach – lower cost, similar diversion rates initially, and more upside potential to increase diversion rates in the future.
- o Analysis of the two approaches indicates that a two-stream system requires:
 - o 30% more property for handling/transfer facility sites
 - o 25% more building infrastructure at handling/transfer facility sites
 - o 200% more staff
 - o 30% greater capital investment
 - o \$300 million more for operating cost outlay over 20 years
- o Suggestion: weekly collection of organics and bi-weekly collection of recyclable and MSW streams.
- o Suggestion: the City should develop a 2-pronged approach to waste management: a 3-stream system for residential and townhouse dwellings; and, a combination of “Blue Box” with a “modified mixed-waste” system for multi-residential (high-rise) buildings.
- o Consider the costs of entire waste management system, not just the individual costs of components in isolation from each other.
- o Suggestion: conduct a study to find a way to utilize the existing transfer stations better.
- o Suggestion: Consider a “hub and spoke” approach where all three waste streams are collected on a route by a single truck and the waste streams put into transfer vehicles at the transfer station, rather than having individual trucks for each stream which then individually take materials to the appropriate processing facility.
- o Key/critical factors to the success of any waste management program:
 - o They must be mandatory (no “opt out” allowed)
 - o Use of proven technology.
 - o Residents are a “source of free labour” for waste separation at source.
 - o Education.
 - o Enforcement of regulations.
 - o Sustainable end-markets for collected materials.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

- o Under your proposed approach, can the Blue Box be expanded to take additional materials such as toner/inkjet cartridges.
That would have to be analyzed. The key is being able to process materials cost effectively.

14. **Presenter(s):** Wil Leese
Company/: Wilcord Corporation
Organization

Background:

- o Wilcord Corporation has been in business of plastic injection moldings and consulting for over 25 years
- o Developed a “carbonizer system.”
- o MSW is shredded, two dry chemicals are added, and the system reduces the material to “a carbon state.”
- o The process is exothermic so no energy/heat is required after start-up.
- o Can process up to 400 tonnes/day.
- o No source separation required.
- o Steam generated by the system is condensed and can be used as a fertilizer.
- o The solid material produced by the system is inert, stable and rigid, and it can be extruded into posts, patio blocks and landscaping blocks. The material is durable and doesn’t absorb water or break down.
- o 75-80% reduction in volume of waste stream.

Comments:

- o Use of this system would boost Toronto’s reputation for responsible waste management, and reduce or eliminate the need for landfills.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

- o How does your process work?
I don't know. It just does.
- o Processing cost?
Approximately USD \$20/tonne.
- o Any current sales of end product?
I have buyers for the landscape blocks and other items when a facility has been constructed that produces sufficient quantities of the material.

-
15. **Presenter(s):** Mark State
Company/: Spaic/Air Systems
Organization

Background:

- o Company produces emission control/abatement devices.

Comments:

- o Suggestion: the City should adopt an entrepreneurial approach to addressing the solid waste management problem. There are economic/monetary benefits accruable to the City by doing so.
- o Suggestion: the City needs more aggressive extraction of recyclables from the MSW stream.
 - o The technology to do so is currently available.
 - o The collected materials would provide a revenue stream.
- o Suggestion: the City should consider SWERF ("Solid Waste Energy Reclamation Facility")
 - o Co-generation of electricity would provide a revenue source.
 - o Private sector interests would be willing do erect such a facility in return for the profits from it, or the City could do so itself and benefit, in the long-term, from the revenue stream.
- o Suggestion: the City should consider "harvesting" landfill sites to feed these EFW facilities.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

- o The City is currently examining a number of EFW systems (Enwave; Dufferin Transfer Station Digester; CCR in Newmarket; etc.)

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16. **Presenter(s):** Roger Yates
Company/: Hatch Associates
Organization

Background:

- o The company facilitates/promotes collaboration and "eco-efficiency" though a programme/approach entitled "By-Product Synergy."
- o This programme involves coordination of cross-company and cross-industry exchanges of materials and "waste products" such that no materials are discarded as waste and, to the greatest extent possible, all materials eventually become useful end products. (Several examples of successful implementations of this concept were offered verbally and are apparently detailed in the submitted printed materials.)

Comments:

- o A number of groups of facilities based on this approach are currently active in the U.S. and Canada.
- o A key emphasis of the programme is discussion and active investigation of opportunities to eliminate waste disposal, reduce virgin materials extraction and discover economic benefits revenue streams.

Proposal:

Representatives from the City are hereby invited to the April 17, 2001 meeting of the 'Golden Horseshoe Project Plan' – Canadian companies involved in this initiative – to learn more about this programme.

Participation of the City is eagerly solicited.

Q&A by Councillors/staff:

-- none --

17. Presenter(s): Albert Wakim
Company/: H2 Flow Equipment
Organization

Background:

- o The company is the local supplier of anaerobic MSW treatment equipment manufactured by Passavant-Roediger.

Comments:

- o Features of the Passavant-Roediger equipment:
 - o A proven technology from an industry leader.
 - o Source separation of feedstock to remove metals, plastics, recyclables, etc. preferred, but not required. (Some degree of extraction of these materials is provided by the system.)
 - o This system can handle very high solids content in the feedstock.
 - o Continuous run process; i.e. no "batching" and no shutdowns required.
 - o Unlike other systems currently on the market, periodic shutdowns of facility to clean digester tanks are not required.
 - o End product is marketable fertilizer.
 - o The system produces 2.5-3 times the amount of heat required to sustain the digestion process, providing revenue opportunities.
 - o Bio-gas (methane) produced by the system provides opportunity for energy/electricity generation.
 - o Odour problems are eliminated through the use of bio-filters.

Proposal:

City should contract through H2 Flow to handle MSW either in a turnkey facility that would be created by a consortium assembled by H2 Flow, or in a City-owned facility constructed on a design/build/operate basis.

Q&A by Councillors/staff:

-- none --

18. Presenter(s): Derek Veenhof
Company/: American Refuel Company
Organization

Background:

- o The company operates "Waste To Energy" (EFW) facilities in the northeastern U.S.

- o The company's system incorporates:
 - o Generation of steam that can be used for heating, process power and electrical generation.
 - o Separation of metals from the end product ash.
 - o Acid gas scrubbers using water and lime showers and bags.
- o The system achieves a 90% reduction in the volume of material that must be landfilled.

Comments:

- o American Refuel is the "backup site" for the Michigan landfill where Toronto currently sends MSW.
- o The company gets involved in local community programmes, organizations and sponsorships where its facilities are located.
- o "WTE is [waste] diversion," and provides a revenue source – The company's facilities annually provide energy equivalent to approximately 1 million bbl. of oil (USD \$30 million), and recover 25,000 tons of ferrous metals (USD \$875,000) and 1,800 tons of non-ferrous metals (USD \$1.08 million).
- o The system is price-competitive with landfilling.

Proposal:

American Refuel would like to have the City as a client.

Q&A by Councillors/staff:

-- none --

19. **Presenter(s):** Claude Marmen
Company/: Group Conporec Inc. (www.conporec.com)
Organization

Background:

- o Company is located in Sorel-Tracy, northeast of Montreal, PQ.
- o Performs waste management for the several municipalities in the county (approx. 50,000 people).
- o Activities include: waste , recyclables and organics collection, materials separation in an on-site MRF and composting of organics.
- o Operates aerobic digestion composting facility, with all processes in enclosed structures to control/prevent odourous emissions.

Comments:

- o End product: compost from MSW.

Proposal:

x

(None explicitly stated.)

Q&A by Councillors/staff:

-- none --

20. Presenter(s): David Bergart
Company/: Sandworks
Organization

Background:

- o Developed patented process to utilize glass rejected by MRF separation processes.
- o Product: a silica sand that can be used in a variety of industrial processes.
- o

Comments:

- o Glass is not amenable to commingled collection and MRF handling systems since it is subject to breakage. Currently, only about 50% of the material collected can be marketed.
- o The Sandworks system provides an alternative to the sole current purchaser of recovered glass.
- o Green glass collected in the Blue Box is largely from imported wine bottles. There is virtually no domestic market for recycling this material, and the LCBO refuses to implement a deposit/return system. This material could be processed by Sandworks and generate revenue.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

-- none --

21. Presenter(s): Steve Polous, David Murray, Ian Hood
Company/: Co-Existence Systems Inc.
Organization

Background:

- o Company is the Ontario representative of International Environmental Technologies
- o Product: process/equipment for "oxygen-starved natural state reduction" of MSW (a form of anaerobic digestion).

Comments:

- o Input to process is mixed MSW; outputs are heat, inert ash and methane gas.
- o Demonstration facilities in five locations, including Kentucky; Operating facilities in Alaska, Kentucky, Kuala Lumpur, England, etc.; Facilities under consideration/development in Peel Region and Leamington, Ontario.
- o System is expandable to meet capacity required to process feedstock volume.
- o Cost is USD \$27-39/tonne.
- o Average waste volume reduction of 95%; with pre-sort to remove metals and glass, ash is about 1.5% of input volume.
- o End product ash meets/beats regulatory limits on contaminants.

- o Process absorbs CO2 – a benefit in reducing Greenhouse Gas Emissions.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

- o Is this process compatible with the MSW from a 3-stream source-separated collection system?
The system can accept mixed or separated waste. The “wet waste” is not required.
- o Have you begun the discussion with Enwave mentioned in your presentation literature ?
Yes, for a steam-producing facility.

22. Presenter(s): Robert Cook
Company/ Ontario Waste Management Association
Organization

Background:

- o The Association represents organizations and firms from many sectors of the waste management industry.

Comments:

- o Some things for the Task Force to think about:
 - o Waste diversion is a “good thing” but 100%, while laudable, in *not* achievable.
(60-70% may be possible with strong political will and financial support but even that is unlikely)
 - o Diversion costs more than disposal, especially for recyclable materials that have no sustainable after-market value.
 - o Consider private sector investment and involvement in collection and processing rather than large-scale public expenditures in infrastructure projects.
 - o Be cautious about the claimed diversion rates of new “black box” technologies.
 - o Consider using RFP’s to attract innovation and investment from the private sector.
 - o Composting is good, but the City must ensure there are end-markets for the resultant product.
 - o Education (of the public) is essential.
- o The private sector is “wiling and able” to come forward and enter into partnerships with the City for addressing the waste management problem.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

-- none --

23. **Presenter(s):** Wayne Byrd
Company/: All Treat Farms
Organization

Background:

- o Company operates a family-owned/operated outdoor aerobic composting facility.
- o Company is licensed, and cited as a model site, by MoE.
- o Company currently processes all leaf and yard waste from Region of Peel and local municipalities into unrestricted, grade 'A' compost.

Comments:

- o Company applied to City issued RFP to process leaf and yard waste, but was rejected at the short-list stage by City Solicitor for, "failure to meet mandatory screening criteria" – the company refused to provide a bond. The company was proposing solely the provision of a service to the City, not construction of a facility, and felt that having to provide a bond was inappropriate since the City was being required to make capital investment or take an interest in the facility.
- o Company is disappointed at this development, but nonetheless endorses the work of the Task Force.

Proposal:

All Treat can immediately receive and process, on an interim basis, all yard waste tonnages produced by the City.

Q&A by Councillors/staff:

-- none --

24. **Presenter(s):** Otto Fasthuber
Company/: SSI Schaefer International Ltd.
Organization

Background:

- o Company manufactures waste and recycling carts, and equipment for waste collection and material handling.
- o Company developed "Compostainer" a ventilated cart for storage of source-separated organics. (www.ssi-schaefer.com/waste.htm)

Comments:

- o City should implement 3-stream waste collection, and should use carts rather than bags for organics component.
- o Compostainer cart facilitates implementation of bi-weekly collection with incurring odour and pest problems.
- o Compostainer in use in approximately 300,00 households in municipalities across Canada.

- o Benefits of using Compostainer include:
 - o Lower costs versus bags.
 - o Lower collection costs since a bi-weekly schedule is possible.
 - o Bag removal equipment not required for material collections.
 - o "Pre-conditioning"/decomposition of organics which speeds processing after collection and, though evaporation of water, reduces mass that must be transported.
- o Compostainer maximizes public participation and facilitates up to 70% diversion.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

- o Send a Compostainer to Mayor Mel Lastman.
Ok.
- o Is the unit rodent proof?
Yes.
- o Is there an odour problem is the unit is stored inside a garage?
It is recommended that the Compostainer be stored outside. The facilitate ventilation and the decomposition of the contents.
- o Outside storage not an option in townhouse developments.
In that situation in other municipalities, a "community cart area" is set aside.
- o The unit appears larger than a normal garbage pail. Is special handling equipment required on the collection truck?
The unit is equivalent to a standard 65 gal. (240 litre) garbage container. Many municipalities' trucks already have the hoist equipment on their trucks is needed for dumping the Compostainer.
- o How are odour problems addressed?
The design of the unit maintains aerobic conditions for up to 14 days, avoiding the odour problems that arise from anaerobic decomposition such as occurs when organics are stored in bags.
- o You stated that liquid from the decomposition process collects in the bottom of the bin ?
Yes, that is true. And, the liquid evaporates of the 14-day period between pick-ups, thereby reducing the weight of the material to be transported.

25. **Presenter(s):** Peter Mann
Company/: City Clean 2000 Inc.
Organization

Background:

- o Company based in Fort Meyers, Florida.
- o Company has North American marketing rights for the patented Arliss System produced by Terra Recycling and Energy Corporation (TRE).
- o The Arliss System involves a gasification process to render MSW into "synsephus gas" and vitrified slag in a closed system that releases no emissions.
 ("Syn gas" is mostly CO and H², and up to 15% CO₂ and CH₄)

- o In operation: MSW is sorted, recyclables extracted and the residue dried in a centrifuge before processing.
- o The Arliss System is delivered in modular format. Each unit needs 1.5 acres (0.6 ha.) of land and can process 36,000 tons (32,652 tonnes) of MSW per year.
- o

Comments:

- o "Gasification is not incineration."
- o Europeans far ahead of North America in waste management, recycling and composting due to little available landmass for landfilling.
- o "Syn gas" can be used as fuel directly, as an additive in petrochemical industry processes, or added to low energy-value feedstocks to improve their combustibility.
- o The energy created from "sun gas" can be used to heat the downtown Toronto core.
- o The Arliss System is compatible with a "reduce, recycle and compost" approach, can be sited at the City's transfer stations.
- o TRE is building a plant on an industrial site in Berlin, Germany; Task Force representatives are invited to visit and tour the facility.
- o

Proposal:

The City should consider a pilot/demonstration project of the system.

Requirements are that the City provide, by the end of 2002: space for a site; a minimum of 36,000 tons of MSW per year at a tipping fee at least close to the current City rate; and, assistance in finding a source for the electricity generated by the plant.

Q&A by Councillors/staff:

-- none --

26. **Presenter(s):** Darlene Hartung
Company/: Molok North America
Organization

Background:

- o Providers of "the original deep collection system" – waste is deposited into a "silo" that is 2/3 below grade.
- o Benefits: lower sub-surface temperatures slow/eliminate decomposition and odour generation; and, compression of the waste.
- o This system is appropriate for multi-residential buildings and collection depots.

Comments:

- o Collection depots need to be attractive, odourless, conveniently accessible and not an attractant to pests and rodents in order to promote wide-scale use by residents.

- o This system is used in over 20 countries (predominantly, but not exclusively in Europe), and in most instances it replaces curbside collection.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

-- none --

27. **Presenter(s):** Allan Twuddle, Mel Finstein

Company/: Arrow Ecology Ltd.

Organization

Background:

- o Product: "Arrow Bioprocess" – water-based anaerobic digestion of MSW using UASB (Upflow Anaerobic Sludge Blanket) Reactor system developed in Israel.

Comments:

- o Contaminant/material separation in water is more effective. Pre-sorting of feedstocks is not required.
- o This system is different from, and better than, traditional anaerobic digesters in terms of biogas production and removal of contaminants through more efficient processing by bacteria.
- o UASB is a proven technology and provides high-rate digestion.
- o A production facility is under construction in ???, Israel.

Proposal:

Company will build and operate as many 200 ton/day facilities as required to handle the City's MSW in return for, for instance, a "put or pay" contract.

Q&A by Councillors/staff:

- o What happens to the contaminated water produced by the process?
Efficient digestion and production of methane purifies the water used in the process.
 - o There is a composting system in Newmarket that mixes water with organics, and sounds similar; how is your system different?
Not familiar with the Canada Compost operation, but it sounds similar. The Arrow Bioprocess system is not a composting system.
-

- 28. Presenter(s):** John Carter, Al Dranky
Company/: Dixdale Financial Corporation
Organization

Background:

- o Product: Vanukov Furnace developed in Russia for smelting non-ferrous metals and later developed to disposal of MSW.
- o System uses a high-temperature, oxidation process.

Comments:

- o Meets/exceeds Russian and Ontario emissions standards.
- o Heat generated by the system can be used for heating and/or electrical generation.
- o "Ash" produced by the system is processed into usable products on-site – that differentiates this approach from other oxidation systems currently available.
- o Facilities are designed/customized according to the composition of the MSW feedstock.
- o Financing assistance is available.
- o Russia is interested in exporting this technology.

Proposal:

Company would be happy to enter into discussion with the City.

Q&A by Councillors/staff:

- o Any plants in operation processing MSW?
Yes, in Russia since the 1990's. For example, there is a pilot plant processing 600 tons and a production plant processing 120,000 tons per year of municipal and industrial solid waste.

-
- 29. Presenter(s):** Rudolph Hirsbrunner
Company/: Swiss Design
Organization

Background:

- o Product: The KVA System – a super-efficient incineration system used in Switzerland for 15 years.

Comments:

- o Installations in inner-city locations throughout Switzerland, each processing 300,000-600,000 tons of MSW per year.
- o System is 99.8% emissions free.
- o System produces revenue sources in the form of heat, electricity and tipping fees.
- o For example: A plant located at the hydro generation station in the Portlands could provide sufficient heat to service the entire down-town Toronto core and process MSW for a significant portion of the province.
- o 3 plant configuration sizes based on service area population currently available: 1,000,000, 400,00 and 200,000 inhabitants.

Proposal:

Company would be an intermediary between the City and the patent-holders in Switzerland to facilitate bringing this system to the Toronto.

Q&A by Councillors/staff:

- o Please provide written documentation of the environmental organization endorsements.
-

30. Presenter(s): Cathy Cirko
Company/ Environmental/Plastics Industry Council (EPIC)
Organization

Background:

- o EPIC is sub-component of trade-association that serves resin suppliers and converters of plastic products – suppliers to brand-owners in Ontario.
- o EPIC, in operation for about 12 , has a Canada-wide interest on solid waste issues.
- o EPIC encourages “a ‘sound’ approach” to finding integrated waste management solutions.
- o EPIC, “has an interest in insuring that decisions around waste management have a good, ‘sound’ environmental as well as economic basis,” and ensuring that ‘solutions’ chosen by municipalities and other governmental levels, “optimize performance,” and are those where, “all options have a ‘valid role’.”
- o Product: Integrated Solid Waste Management tool (ISWM) – a computer-based model permitting “what if” scenarios evaluation that takes information on “inputs” (MSW materials stream compositions) and the processes used to manage/process that material (recycling, composting, etc.) and provides information on the system “outputs” (emissions of the waste management system including Green House Gases, energy consumption and recovery, products and by-products, etc.).

The system was developed by EPIC, CSR, City of London and Environment Canada, and is in a number of municipalities use across Canada.

Comments:

- o The ISWM tool provides data for evaluating the “environmental performance” and economics of solid waste management strategies.
- o The ISWM tool is being enhanced to include capability for modelling enable anaerobic digesters.
- o Output from ISWM can be used for “State of the Environment” reports.
- o US EPA is using “life cycle approach” to evaluating Green Houses Gases (GHG’s) emitted from waste management practices. Finding show that:
 - o Food waste and paper – not plastics – are the major contributors to GHG’s.
 - o Recycling reduces of materials, including plastics, reduces GHG emissions.

Proposal:

The City is encouraged to use the ISWM modelling tool.

Q&A by Councillors/staff:

- o The City is currently telling resident to put all plastics into the Blue Box in hopes of collecting, and thereby diverting from landfill, more Type 1 and 2 (PETE and HDPE) materials. Why do manufacturers continue to use other types of plastics for containers, which cannot currently be recycled since there is no market for the material, and what is EPIC doing to correct that practice?

EPIC encourages the City to only accept Type 1 and 2 plastics. Collection of "all [plastics]" tends to "confuse" residents, and leads to lower capture rates – collect only bottles.

The choice of material rests with the brand-owner, and may be based on required physical characteristics of the container. EPIC does not "prejudge" brand-owners' choices of materials.

- o If the City were to make recommendations to residents about product to purchase based on the containers they are sold in, would EPIC get involved (to protect their members) and be interested in being a part of that process?

"If there is an issue, and an impact that is going to impact the recycling of a very good, marketable product, we have brought that to the attention of the brand-owner."

"We also have container design guidelines for bottles, put out in association with our colleagues in The States, so as to help the recycling of bottles."

- o Can your model isolate a specific material collected in the Blue Box to determine handling costs?
Yes.

-
31. **Presenter(s):** Marty Grinstein
Company/: Planet Earth Recycling
Organization

Background:

- o Presenter is owner/operator of the company and Regina's Delicatessen.
- o The company is:
 - o located in Concord, Ontario;
 - o in business for about 12 years;
 - o member of Ontario Waste Management Association (OWMA); and,
 - o licensed by Canadian Food Inspection Agency to process food waste.
- o Company uses the SSI Schaefer Compostainer – 14,000 bins out to 1,100 customers.

Comments:

- o The company is a hauler, composting facility operator, and an ICI-waste transfer station operator.
- o Recommendation: don't collect organics less frequently than once per week, due to material decomposition and resultant odour problems.
- o Recommendation: implement mandated source separation and collection of organics by the City.
- o Recommendation: do not permit "opting out" (especially with respect to restaurants, food stores and ethnic community establishments).

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

-- none --

32. Presenter(s): Dave Douglas, Dave Gordon
Company/ The Clorox Company of Canada Ltd.
Organization

Background:

o

Comments:

- o Suggestion: use "Blue Bag for collection of recyclables.
- o A pilot project in Markham (the 1994/5 "Model Community Demonstration" 3-stream project) indicated Blue Bag, as compared to the Blue Box, achieves 68% diversion, 98% participation and 30% lower collection costs.
- o Suggestion: "Residents should be given a choice" (Blue Bags vs. Blue Box)
- o In Northumberland County, residents' choice has drifted towards the Blue Bag over the Blue Box.
- o "Recycling must be perceived as simple and convenient to succeed," and education is key.
- o "Curbside recycling is the most economical system."

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

-- none --

33. Presenter(s): Peter Klaich
Kevin Newmeyer
Company/ Biocorp (www.biocorpusa.com) /
Organization Ecology and Environment Inc. (www.ecolen.com)

Background:

- o Producer of biodegradable bags and food service containers (cups and plates).
- o In business in the U.S. since 1997, and for seven years in Europe.

Comments:

- o Company provided all biodegradable products at Sydney Olympics.
- o Company's products endorsed by Green Peace at Sydney Games.
- o Over three hundred cities and MacDonald's Corp. Europe using Biocorp's bags.
- o Bags are transparent and help eliminate materials contamination by permitting visual inspection.

Proposal:

City should consider specifying Biocorp bags for collection of yard waste and pre-consumer food waste collection.

City should consider commissioning a food waste collection pilot project.

Q&A by Councillors/staff:

- o Product cost differential versus conventional items?
It depends on the product. 25-35-45% greater cost, initially, but “pretty close to a ‘wash’ when the entire life-cycle including disposal is considered.”
- o Why would a consumer or company choose a more expensive product?
Yes, consumers are cost-driven. In Europe, taxes on non-recyclable/non-biodegradable materials equalize the cost.
- o Shelf life of product?
1-2 years in the original package.
- o Time to breakdown in a composting facility?
12-22 days.
- o Breaks down completely or into small pieces?
Completely, and twice as fast as paper bags.
- o Impact on Compost?
Improves quality of it.
- o Cost of product to retailer?
Approximately USD \$1.50 per 5-bag package. Quantity discounts are available. Custom tinting and pre-printing with organization/municipality logos are available.

-
34. **Presenter(s):** Tony Hatzis
Company/: Pente Separation Systems
Organization

Background:

- o Developer of a system for source-separation of waste streams in apartment buildings.
- o A system of push-buttons on a control panel in each floor's garbage chute room in a building rotates a nozzle attached to the bottom of the chute to direct waste into an appropriate bin.

Comments:

- o Design permits desired number of separate waste streams.
- o System provides an alternative to recycling bins in building lobbies.

Proposal:

(None explicitly stated.)

Q&A by Councillors/staff:

- o System Installed and tested?

No. The system is currently under development and enhancement.

- o Any interest in this system expressed to date?

Apartment owners and residents have been surveyed. The latter are enthusiastic, the former are receptive to the concept but concerned about the potential, as yet undefined, costs.

- o System cost?

Estimated at under \$25,000 for a 12-story building.

- o What if residents on different floors try to use the system at the same time?

The buttons are illuminated to show which waste stream setting is currently in effect. Configuration is determined by selection of whichever person first pushes a button. The system is locked into that selection for some pre-determined period of time, after which another selection can be made.
