The problem with plastics

Recycling process a big money loser
Ontario makes producers pay half

Toronto Star 5/24/05

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In a vast factory, heavy with dust and industrial clamour, the hands of a half-dozen workers are in quick, constant motion over two conveyor belts.

They grab bits and pieces from squalid rivers of junk — squashed pop bottles, crushed detergent jugs, torn margarine tubs — that flow along those grey rubber belts at a ceaseless 50 metres per minute.

They're sorting plastic collected from blue boxes across Toronto and trucked to this recycling plant in the northeast corner of the city.

Each worker is assigned to remove a specific type. What they select they fling backward, over their shoulders, into the appropriate large bin.

From there it will be compressed, baled and stacked, ready for shipment to another plant that will begin making it into something else.

The job requires stamina and focus, along with a high tolerance for noise and boredom. Some people last only 10 minutes or so before fleeing to seek work that's less taxing, that doesn't induce nauseating motion sickness, says Craig Bartlett, the city's manager of processing operations.

It's a picture to keep in mind when you toss plastic discards into a blue box.
This is the gritty heart of recycling — part of a long journey from trash to new product. The year-old plant, owned and operated by Metro Waste Paper Inc., handles every material that goes into blue and grey boxes — paper, cardboard, aluminum and steel cans, glass, plastic. It sorts and bales about half the nearly 200,000 tonnes collected by city crews each year.

The city delivers the wastes to the factory and pays Metro Waste $60 to $70 for each crushed and baled tonne that goes back out the door, destined for recycling rather than landfill.

The company buys all of the paper and cardboard to feed its own papermaking mills or to sell to others. The city finds customers for the rest.

Plastics make up less than 4 per cent of blue-box materials, by weight. But they're the trickiest, most dynamic, most controversial.

Demand — fuelled by soaring oil prices, growing markets and government policies — is strong. Huge quantities are shipped from North America and Europe to be processed in China, India, Vietnam and Thailand. Prices flirt with record highs.

That's good news for Toronto. The city — desperate to find alternatives to trucking its garbage to a Michigan dump, and committed to divert 60 per cent of wastes from landfill by 2010 — is pushing to expand all forms of recycling.

A second sorting and baling plant, with a capacity similar to Metro Waste's, is to be formally commissioned this month. Both facilities, each far larger than any other in Canada, accommodate "single-stream" collection, which lets homeowners put all recyclables into one box instead of separating them into blue and grey. Experience elsewhere shows this simplified system boosts collections.

By the end of the year, a new garbage fee is expected to spur recycling in apartments and condos, where collection rates are abysmal.

Plastics are getting special attention.
Tubs and lids for products like margarine and yogurt were just added to the list of wastes that can go into blue boxes. Before long, it could also include polystyrene — used in foam coffee and food containers and packing for electronic goods, and, in its rigid form, plates and cutlery — as well as grocery bags and other plastic film.

Last November, Kathy Palko, a Ph.D. student at Saint Mary's University in Halifax, travelled to China to research how plastics imported from North America and Europe, through Hong Kong brokers, are recycled.

With difficulty, she found nine processors in the southern province of Guangdong that would tolerate a visit. They range from family operations to small factories with up to 200 workers. Seven recycle bottles; the others, plastic film.

From her description, they make the Toronto plant seem like a holiday resort.
One employee told Palko she is paid the equivalent of $2 for an eight-hour day. Others said they earn $75 a month, working 12 hours a day, seven days a week.
They have little or no protection from corrosive materials and other contaminants in the trash they sort, or fumes from heaters that melt the plastic.

"They're just in pants and T-shirts, smoking cigarettes and operating the machines," Palko says.

Apart from one place with a small fan, she saw no ventilation.

At a couple of factories, she got a headache within minutes. One woman said she, too, suffers from headaches as well as nausea and "a burning sensation on her face."
Waste from the bales of plastic was simply piled nearby.

Not all Chinese factories are hellholes like those Palko visited. Beijing and Shanghai boast state-of-the art plants where old PET (polyethylene terephthalate, a form of polyester used in bottles) is transformed into carpets, insulation, T-shirts and other products for the home market and export.

The point is that China, its economy growing by leaps and bounds, has a ravenous appetite for all kinds of resources.

Every day, ships loaded with bales of plastic leave North America's west coast. It's a cheap voyage: China exports huge quantities of manufactured goods; the vessels have plenty of space for cargo on the return voyage.

They no longer all head straight for home. As of Jan. 1, China banned imports of used plastic bottles, so many are now sent to Vietnam or Thailand to be shredded.
India recently joined the competition.

On Internet sites, brokers plead for shipments. One-third of the U.S. supply goes to China. Rising demand and prices have forced some American companies out of business. "Chinese demand is continuing to grow. We get calls every day," says Dave Smith, at Canadian Plastic Recycling Inc. in Sarnia. His company buys plastics from Ontario municipalities, including Toronto, and converts them into flakes for sale to manufacturers, mainly in the U.S.

Smith doubts persistent rumours that Chinese importers dump many bottles and bags. "They don't buy things to throw them out."

For environmentalists, "Recycle" is the lowest-ranked of the "Three Rs" of waste diversion, the poor cousin of "Reduce" and "Reuse." But it has vaulted to the top, they lament, because it lets people feel they're protecting the environment even as they use ever more products and packaging.

The recycling symbol — three arrows chasing each other around a circle — suggests a closed loop. The ideal is that cast-offs are processed over and over, eliminating much of the environmental damage and energy consumption involved in making virgin material. That works for glass, steel and aluminium, and somewhat for paper. But not so well for most plastics.

Recycling does extend their life. But it's a complicated business.

For a start, plastics come in many categories. For recycling, they're labelled 1 to 7, but the seventh is a catch-all of "other" types. All spring from refined oil or natural gas, but each is formed in a different way, with unique additives.

They must be separated before they can be melted and formed into flakes, pellets or fibres for new products. Any mixing makes them, at worst, unusable, at best, fit only to be processed into low-grade stuff like doorstops or cheap fence lumber.

Even if perfectly sorted, they can rarely be reformed back into their original form. Many simply degrade. Even when it's technically possible — for example, new pop and water bottles can be made from old — the melting temperature isn't high enough to kill bacteria, so government regulators prohibit it.

`We must say: ``If you're going to produce a package, it must go into the blue box, and you're going to have to pay for the blue box."'
Clarissa Morawski, recycling consultant

It's called "down-cycling": Industry people say it's fine, since the lower-grade stuff would be made in any case. And, they say, it takes less than one-quarter as much energy to create those products from recycled plastic.

Others, though, contend it's an artificial market that merely delays the trip to a landfill. All this helps to make recycling plastics a financial struggle. For most of the two decades since the blue box was launched in Ontario, markets have been hard to find and prices low.

Aluminum, now worth nearly $2,000 a tonne, has been the only material to turn a profit. The rest have required a heavy subsidy, usually from taxpayers.

Many plastics couldn't even be given away and, for the most part, only two of the seven grades — PET from drink bottles and HDPE (high density polyethylene) from containers for milk, juice and household products — were accepted in blue boxes.

The boom has brightened the economics picture. But only PET and HDPE, which comprise 85 per cent of the plastic put into blue boxes but less than half the total produced, are even in sight of the break-even point.

"People can't get their hands on enough of it," says Mark McKenney who runs MGM Management, a Toronto-based environmental consulting firm.

The others remain big money losers.

How bad is it?
Last year, Ontario began requiring companies that produce or sell blue-box materials to cover half the cost of recycling them. This year, their contribution will total $58.8 million.

Firms that generate plastic pay by far the highest fee — nearly 14 cents per kilogram.

The recycling cost isn't available for each type of plastic, but for all of them, it's $800 to $900 a tonne, says Geoff Rathbone, the city's director of solid waste policy and planning. Their market value is, at best, only $500 to $600.

"That still leaves a gap in terms of us having to cover the cost," Rathbone says.
On top of that, collection rates remain low. In Ontario, more than half the PET and HDPE are recycled, but the others languish at 5 per cent or worse.
Less than one-fifth of all plastics are diverted from landfill. By comparison, the figure for newspapers is 75 per cent.

Things are even worse in the United States.
There, over the past decade, the collection rate even for PET has tumbled from 30 per cent to less than 20. More is being picked up.

But the amount recycled is dwarfed by the billions of new containers sent to store shelves each year.

To make matters worse, items are increasingly made of combinations that are difficult, if not impossible, to recycle.

Critics wonder if the rates can ever climb much higher. And even if every scrap of plastic were recycled, they argue, there are better options.

"Refilling and reuse are always best," says Joanne St. Godard, executive director of the Recycling Council of Ontario, a non-profit group that promotes waste reduction.
But, she says, "The stuff isn't going away."
On that basis, "Toronto is doing the best they can."

This year, the city will collect more than 6,000 tonnes of plastics. Three years ago, the total was 3,600.

Until this year, it collected only PET and HDPE, which it currently sells to Canadian Plastic Recycling.

"We add new materials only when we're confident we have a market," Rathbone says.
Tubs and lids are now on the list because Haycore Canada Inc. will buy a forecast 2,000 tonnes a year, at $35.50 a tonne, to turn into plastic lumber and pallets at its plant in Prescott.

Last year, the City of Ottawa banned tubs and lids from its blue boxes, complaining it cost $700,000 to recycle them in 2003.

But Rathbone says that at the price Haycore has contracted to pay, Toronto's cost will be about the same as sending the material to landfill.

Next up for recycling might be polystyrene and plastic film, he says.

Canada's only polystyrene recycler is in Mississauga. It has operated since 1989 with subsidies from companies that make or use the plastic.

"They've indicated ... they could expand to absorb our material" — about 500 tonnes a year, Rathbone says.

First, though, the city must figure out how to fit polystyrene and film — both light and voluminous — into blue boxes.

The solution might be large, wheeled bins or blue bags that would take all recyclables, he says.

Industry people expect recycled plastics to stay in demand but predict prices will fall a bit. Unless, MGM Management's McKenney says, "oil and gas go crazy."

Without a big increase, recycling won't shake free of subsidies.
Many critics argue the industry should pay the entire cost.
Ontario's 50 per cent charge is a first in North America, says Clarissa Morawski, a Toronto-based recycling consultant. "Industry hates it."

But they're paying.
"Progressive people believe it's the only way to start to reduce the impact" of packaging, she points out. "We must say: `If you're going to produce a package, it must go into the blue box, and you're going to have to pay for the blue box.'"
Such a move would at least discourage products that are hard to recycle.
At the Toronto Environmental Alliance, Gord Perks figures "producer pay" would do even more.

It would, he says, spark a comeback for "Reduce" and "Reuse" as people realize the true costs of using and recycling plastics. That's already happening in Europe.
The energy and money expended to make and then "down-cycle" bottles and bags that are used for only a few minutes is absurd, he says.
"If companies had to manage the materials themselves, they'd stop using them for packaging."

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