

**Board of Directors Meeting Highlights
Held on March 16, 2017 at 9:00 AM
at the MRF Board Room**



Ontario Taking Next Step to Go Waste-Free

Ontario is working to create a zero-waste future with the launch of a strategy that will divert more waste from landfills, create jobs and help fight climate change.

On March 1st, Minister of the Environment and Climate Change Glen Murray announced Ontario's Strategy for a Waste-Free Ontario: Building the Circular Economy. This new strategy outlines the province's plan to fight climate change by reducing landfilled materials that could otherwise be reused, recycled, composted and reintegrated into the economy.

The strategy includes 15 concrete actions to build up the province's circular economy and help reduce greenhouse gas emissions from landfills, such as:

- Requiring producers to take full responsibility for the environmental and financial management of their products and packaging, including small appliances, electrical tools, batteries, fluorescent bulbs, mattresses, carpets, clothing and furniture
- Implementing a framework to reduce the volume of food and organic waste going to landfill
- Requiring industrial, commercial and institutional sectors to divert more of the waste they produce from landfills
- Banning certain materials, such as food waste, beverage containers, corrugated cardboard and fluorescent bulbs and tubes, from disposal and driving creative strategies to reuse and recycle these items
- Improving oversight and accountability in the waste management sector, including by requiring producers to register and report on their waste management activities
- Reducing waste and building a circular economy is part of our plan to create jobs, grow our economy and help people in their everyday lives.

Key issues for municipalities that are outlined in the Strategy are:

- New legislation makes Producers fully responsible for end-of-life management of designated products and packaging. Municipal governments have traditionally played a key role in waste diversion programs.
- Wind-up and transition of existing diversion programs for Blue Box, Municipal Hazardous and Special Waste, Waste Electrical and Electronic Equipment, and Tires to the Resource Recovery and Circular Economy Act. Regulations will be developed for each of these programs.
- The Organics Action Plan intends to ban food waste from disposal in 2022 and may also create new revenue opportunities with increased demand for renewable natural gas.

Province To Shut Down Ontario Tire Stewardship By 2018

Ontario's environment minister is closing the province's troubled tire recycling agency after stories exposed suspicious money transfers, allegations of fraud and wasteful executive spending.

Glen Murray, minister of the environment and climate change, said the Ontario Tire Stewardship, the smallest and least complex of Ontario's three government-created recycling programs, will be the first eliminated under new legislation designed to improve the recycling process in Ontario.

The stewardship spent thousands of dollars on luxury trips, fine wine and donations to the Ontario Liberals. Stories also exposed allegations of executive fraud and questionable bank transfers pinpointed by the federal intelligence organization that investigates money laundering and terrorism.

The money in question comes from "eco-fees" paid by Ontario drivers every time new tires are purchased. Every year, roughly \$70 million in fees from consumers is collected by tire retailers for the stewardship.

In a letter sent to the stewardship on Feb. 17, Murray gave executive director Andrew Horsman a deadline of Oct. 31 to submit a wind-up plan for the province's waste oversight authority. That plan, "requires the cessation of operations by Dec. 31, 2018."

Murray's statement said the stewardship must be "transparent and clear" with the public. It must "avoid disruption" of its tire recycling program until the end date and "not adversely affect Ontario's tire marketplace."

Another key point, according to the Ontario Waste Management Association, is the disbursement of the stewardship's surplus. Last year, the surplus hit \$49.5 million — ultimately from consumer eco-fees — and the association questioned where that money would go when the program eventually ended.

Murray's letter said assets must be managed in a "fair, open and transparent process."

Horsman, of the tire stewardship, said his office is "evaluating the direction provided" and referred additional questions to the minister or the oversight authority.

The Waste-Free Ontario Act, which came into force in November, will eventually dissolve all three government-created recycling programs for tires, old electronics and hazardous household waste.

The tire stewardship is currently the only program that has been given a timeline to end its operations. It is headquartered in Etobicoke, where stewardship staff control the collection and movement of used tires. The goal of the new law is to force producers and retailers to take individual responsibility for their products by creating innovative recycling programs.

Murray said the issues raised "certainly put a red flag in the middle of this. I think the industry wants to put this behind it and get a clean start."

In January 2016, a story revealed credit card statements and invoices that showed tire executives spent consumer-paid eco-fees on expensive trips and dinners with copious drinks, along with donations to the Liberals and NDP.

One invoice showed the stewardship paid \$3,200 to send four executives to the Liberal's 2015 Summer Golf Classic "with special guests Hon. Kathleen Wynne & Members of the Ontario Liberal Caucus."

Last year, stewardship chair Glenn Maidment said they were "absolutely" justified in paying to see Wynne on the golf course and share concerns about plans for the \$49.5-million surplus. Maidment

called the additional donations to the Liberals and NDP “modest contributions as a way of supporting the democratic process.”

The stewardship later filed a lawsuit against its former chief financial officer, Perminder Kandola, alleging that he transferred \$346,565 from a tire collector to a personal account named “Ontario Tire.”

A few months later, a second former executive, a chartered professional accountant, contacted the stewardship with an offer to return additional money — with a request to remain anonymous. The stewardship’s decision to remove all other accountants from related meetings (to avoid professional reporting rules) sparked an outcry by the oversight body.

Despite two identified cases of missing money, the stewardship balked at the waste authority’s call for a full forensic investigation.

Instead, an accounting firm hired to examine spending produced a report called a “Partial Evaluation of Controls,” saying the stewardship didn’t give time or access to investigate fraud allegations. The report concluded that the multimillion-dollar recycling program was rife with problems that invited “manipulation” of large sums of money.

Last fall, after the waste oversight authority threatened to go to court in order to force a forensic audit, the stewardship agreed and hired Ernst and Young to do the job. The Waste-Free Ontario Act created a new oversight body, called the Resource Productivity and Recovery Authority, with greater enforcement powers.

In November, the ministry filed provincial charges against Kandola, the former CFO, for “failing to pay into” the stewardship fund. A second provincial charge was filed against Kandola and former director of audit Frank Fragale, both related to \$220,149 that went missing. Sources say all of the money has been returned.

The most recent investigation detailed a report by the federal intelligence agency that scrutinizes money laundering and terrorism, which uncovered millions of dollars in suspicious bank transfers from the tire stewardship to an auto recycling firm.

The report by the federal Financial Transactions and Reports Analysis Centre said bank records showed that “74 direct deposits” totalling \$2.6 million were sent from the stewardship to a small eastern Ontario auto recycling company. The stewardship has previously said it has no record of that amount.

It’s unclear when the current forensic audit will be completed. Its findings will be reported to the new waste authority.

Michigan Landfill Report

Michigan released their latest Landfill Report - http://www.michigan.gov/documents/deq/deq-wmrpd-sw-FY2016-SW-Landfilled-Rpt_552961_7.pdf. The report shows another annual increase of just under 10% to waste imported from Canada. This means Canadian waste shipments have increased by 31% since 2012 to roughly 2.7 million tonnes.

Here's What 7 Billion Smartphones in 10 Years Looks Like

Smartphones have undeniably changed our lives—and the world—in a very short amount of time. Just 10 years ago, we took pictures with cameras, used maps to plan routes and kept in touch with friends and family using text messages.

If you're among the more than 2 billion people in the world that now uses a smartphone, chances are pretty good you remember your first smartphone. You remember how your life changed when your phone suddenly became connected to the Internet and became a tool to find your way around almost anywhere instantaneously, send emails on the go, stay in touch with loved ones 24/7 and answer all your random curiosities.



But do you remember when you got your second smartphone? Or your third? Do you remember how many smartphones you've had since 2007?

We wanted to find out how many smartphones had been made since Apple's first iPhone came on to the market in 2007 and the answer surprised us—more than 7 billion. That means that if every smartphone ever made was still operational, there would be roughly enough for every person on the planet.

Of course, this is not the case. The average phone in the U.S. is used for just more than two years, despite the fact it can function for longer. Phone users are often lured into prematurely replacing their phones—either because they are up for a new contract and the new phone appears to be “free” or because of a single failing part, such as the screen or battery, that's too complicated or expensive for the average person to repair.

At this rate, we're all on track to use at least 29 phones in our lifetimes.

This rapid turnover of devices is what leads to record profits for smartphone manufacturers year after year. It also leads to many damaging impacts on people and our planet.

Miners in remote landscapes extract tons of metal ore and precious metals for these devices. From there, these materials pass through a complex refining, processing and manufacturing supply chain. Workers in electronics factories are often unknowingly exposed to hazardous chemicals that damage their health. These facilities are powered by an energy mix that is dominated by fossil fuels, which furthers the impacts of climate change.

\$100,000 Found Inside Old TV At Ontario Recycling Plant

More than \$100,000 in cash was found inside an old television that was being processed at a recycling plant in Barrie, Ont., and police say the money was a man's lost inheritance.

The shocking discovery was made in January by an employee, who uncovered a cash box inside the TV as it was dismantled. The recycling company then contacted police.

"There was like, four stacks of \$50 bills, and I knew it was a large amount of money," Rick Deschamps, general manager for GEEP told CTV Barrie.

Inside the cash box were documents that helped lead police to the money's rightful owner: a 68-year-old man from Bolsover, Ont.

When investigators spoke with the man, he told them that he stored the money inside the television about 30 years ago. The plan was to pass along the money to family members as an inheritance.

That is, until he forgot about the cash and gave the TV to a family friend.

The recycling company has praised the employee for her honesty.

"She's representative of all our employees and it's what we stand for and this kind of behaviour is really what we would expect from everyone here," said Lew Coffin, GEEP vice president of operations.

Now that the owner has his money back, police offered him a word of advice.

"Hopefully he's put it in a savings account now," Barrie Police Const. Nicole Rodgers said.

The Good, the Bad, and the Ugly about Ontario's Blue Box

The good news is that the reported recovery rates for almost every single material category in Ontario's Blue Box have improved over the last 13 years, some by as much as 20 percentage points. The bad news is that several categories have made very little progress and lag way behind the others, and that the real recovery rates are much lower than those reported.

Here is our Report Card by material group, based on the latest recovery numbers from Stewardship Ontario. Please note that this is not a judgement on the merits of individual materials but rather an assessment of how well they are being recovered in Ontario's Blue Box system. There is clearly room for improvement.

Printed Paper: A

Printed paper has been a consistent good performer, rising from 67% reported recovery back in 2003 to 82% today (2015). The recovery rate for old newspapers and old telephone books is in the 90s.

Somewhat further back, and dragging the printed paper category down, is the recovery rate for printing and writing paper (Other Printed). This has ranged from 39% up to 59% and is currently at 55 per cent.

Glass Packaging: B+

The reported recovery rate for clear and coloured glass is an impressive 80 per cent. Years ago, all we heard about was glass going to landfill or being used as road fill. Beyond talk of glass breaking in the collection process and contaminating loads of other materials, however, glass recovery is apparently in good shape. A lot of recovered glass these days goes into blast and filter media rather than higher end uses such as fibreglass and cullet which have more demanding quality requirements.

Paper Packaging: B

Old corrugated containers (OCC) or boxes have the highest reported recovery rate of all Blue Box materials (98%). From there it's a drop back to paper-based gable top cartons which have surged from a 10% to a 61% recovery rate; boxboard at 43%; followed by aseptic cartons (made of paper, plastic and aluminum), and laminants. The relatively low recovery rate for old boxboard is a concern. It reached as high as 65% recovery in 2008 but has dropped back to 43% since. Stewardship Ontario did target boxboard toothpaste cartons, toilet paper roll tubes, tissue boxes and other toiletry packaging in an advertising campaign in 2015.

Steel Packaging: B

The latest reported recovery rate for steel food and beverage cans is a respectable 71 per cent. Other steel packaging such as aerosols and paint cans drag the overall steel category down 10 per cent. In fact, paint cans are the only category in the Blue Box whose recovery rate has declined over the last 13 years.

Aluminum Packaging: D

The low reported recovery rate for aluminum food and beverage cans in Ontario (42%) has always been a bit of a puzzler and is frequently compared unfavourably with its far higher recovery rates in Canada's many deposit provinces where recovery ranges between 61% and 97 per cent. One reason offered for the difference is that the recovery rate for cans in Ontario is only for those that end up in the home. It doesn't include those used at public events, in offices, or factories. The aluminum stewards also reported residential sales some 13% lower in 2015 than what various waste audits used to provide a provincial total suggested was in the home. But even if you allow for this difference, the reported recovery rate only rises to 48 per cent. We doubt that Blue Box scavengers are grabbing the other 52 per cent.

Plastics Packaging: D

The reported recovery rate for plastics packaging reached 32% in 2015. The highest rate was for PET bottles (66%) and the biggest increase over the years was turned in by the "Other Plastics" category with one-third now being reported as recovered. Apart from PET and HDPE bottles, however, the plastic recovery rates are poor.

The far uglier truth about all reported Ontario Blue Box recovery rates, however, is that they don't tell the real story. They are basically "sent for recycling numbers," in most cases, what was sent to an end-market from a material recycling facility or MRF. These reported "recovery" rates don't deduct the various yield losses that occur in remanufacturing that curbside material back into new products, or the contamination that must be removed (and is normally landfilled) before remanufacturing can actually take place.

For example, all reported paper numbers need to be shaved by at least 10% because paper fibres shrink in the re-pulping process. When a municipality sends 100 tonnes of paper to a paper recycling mill, only 90% of it will come out the other end. And with single-stream collection there is a lot more plastic, glass and metal contamination in the paper bales. This is usually sent to landfill. And you can chop maybe 30% off the reported PET bottle "recovery" rate since PET yields at the end-market range, at best, between 60 and 70 per cent.

A recent attempt by the Canadian Standards Association to grapple with this issue and come up with a definition of recycling, falls short in our view, and is one of the reasons why PPEC is developing a more accurate and real measurement of what paper materials are actually being recycled in this province.

Four Trends Determining What's Next for the Ever-Evolving Ton

The disruptive impact of the “evolving ton” is by now well known in our industry. Changes to our raw materials include less paper, more plastic, product and package lightweighting and zero waste initiatives by manufacturers and retailers. This evolution has dramatically reduced waste generation and transformed how we process recyclables and pay for recycling programs.

Granted, some of these long term trends may have run out of steam. The decline in the use of printed paper has slowed but not stopped. The reality that a package's first and foremost duty is protecting the product puts a crimp on lightweighting. The move towards zero waste is far from over, but the closer a company comes to zero, the harder it is to reach zero. The one exception is that the increased use of plastic, however, looks like it will continue unabated.

Nonetheless, the ton won't stop evolving, it will just evolve in new directions. Let's look at several of these new trends and see where they might be taking us.

The ongoing growth of flexible packaging is the first of these trends. These are the pouches, bags and other packages that collapse when empty, as opposed to glass, metal and plastic bottles and cans that are rigid when empty. Flexible packaging has the second largest share of the packaging market. These packages are popular because their low weight allows more product to be shipped in less packaging while fully protecting the product.

Even though they are not recyclable, they often create less waste from cradle to grave than their recyclable competitors. Their use has prevented the creation of millions of tons of waste while, perhaps, stunting the growth of recycling.

Flexible packaging poses a fundamental challenge to our thinking. Is an unrecyclable package acceptable if the alternative is more waste of energy and materials? I think the answer is yes. We should design for the environment, not just for recycling. Whatever the result of that debate, flexible packaging will continue to grow because its advantages far outweigh its disadvantages.

E-commerce is the next trend. Its rise and the decline of sales at bricks and mortar stores continues. Online purchasing now accounts for a bit more than eight percent of all retail sales and that market share continues to increase. E-commerce has been a godsend for the corrugated box industry for a simple reason: the amount of linerboard and corrugated medium needed in the small boxes used to ship purchases to individual homes is greater than that needed by larger boxes used to ship those products to a retail store.

Ameripen recently published a paper on the impact of e-commerce on waste and recycling. Fulfilling online sales requires more touchpoints (e.g., shipping the product in large boxes to fulfillment centers that then ship the product in smaller boxes to final purchasers) which means that packaging must be bulkier to protect the product throughout its journey.

The good news for recyclers is that these fulfillment centers will provide quality OCC for end markets. The “bad” news is that you and I will put more corrugated boxes in our recycling bins, mixing them with other grades of paper. MRFs will be challenged to separate this mix into different grades of recyclable paper.

Drones will provide the next trend, even if it is further down the road. You can go online and see videos of test runs using drones to successfully deliver products to houses in both the United Kingdom and the United States. These videos are impressive although it is worth noting that the houses getting deliveries don't have overhead power lines or many (if any) trees. I don't know how well they will operate in more traditional suburbs or urban settings.

Drones face legal and regulatory challenges before they can be used to deliver products on a routine basis in this country. However, if they survive those tests, what kind of packages will be used? Will the drone require a sturdier package to protect its shipment on landing? It's fair to say that the companies exploring the use of drone delivery are already trying to figure out what kind of packaging they will need to ensure safe delivery. We won't know the answers to these questions for several years. But if drones become a viable delivery option, even only in certain neighborhoods, expect an impact on our industry.

3-D printing is the last trend I want to look at. This form of "in-house" manufacturing has failed to live up to early forecasts. Its widespread use is definitely further down the road than that of drones. But if 3-D printing becomes widespread, what kind of plastics and other materials will be used? What will their impact be on recycling and waste management?

The rise of flexible packaging and e-commerce are already having an impact on recycling and waste management. Drones and 3-D printing haven't yet. But I can't wait to see what that will be and how we will adapt. The one certainty we face is that our raw materials will continue to evolve. We will have no choice but to evolve with them.

Spain's 100% Recyclable Plastic Roofeco Tiles Win EPRO 'Best Product' Award

Fully recyclable and seven times lighter than traditional roof tiles, 'nanotech' roof shingles manufactured by Spanish company Roofeco España claimed first prize for 'best recycled plastic product' in the European Association of Plastics Recycling and Recovery Organisations (EPRO) competition taking place in Vienna.

The tiles are 100% free of PVC and heavy metals, attendees of the biannual Identiplast conference were told. The patented shingles are made from recycled polymer compounds, low-density polyethylene with minerals and



nanometric components which improve on the original properties of the raw materials. The shingles do not break, are not toxic, require no exposed screws and can resist hailstorms, it is claimed.

Besides being 100% waterproof, a translucent version of the tiles has also been created by Roofeco España so that light may enter rooms below.

Recycling Vs. Incineration: How To Maximise The Value Of Plastic Waste?

'In Austria, every twentieth job is a green job,' according to Christian Holzer of the country's ministry of environment. More than 11% of the nation's GDP is being generated in this sector, he pointed out at the Identiplast conference in the Austrian capital Vienna.



Austria has a plastic recycling rate of just under 30% while some 70% of material is directed into waste-to-energy operations, Holzer quoted from 2014 figures. 'I cannot stress enough the need for landfill taxation or, better yet, a full-on landfill ban,' the official said. 'We have already enacted a ban in Austria, with good results.'

The 'key challenge' is to achieve both high-quality material and a higher quantity of recycling. 'Somehow, this must be possible,' Holzer insisted. He went on to underline the importance of strengthening the recycling market by increasing confidence in recycled products as well as stimulating the willingness of companies to incorporate recycled content.

The 483 incineration plants across Europe processed 88.6 million tonnes of household, commercial and industrial waste that remained after recycling in 2014. This is enough to supply 17 million people with electricity and 15 million with heat per year.

It's basic chemistry - you burn the material so you waste the material. The value disappears. Waste-to-energy is nothing more than a 'euphemism'.

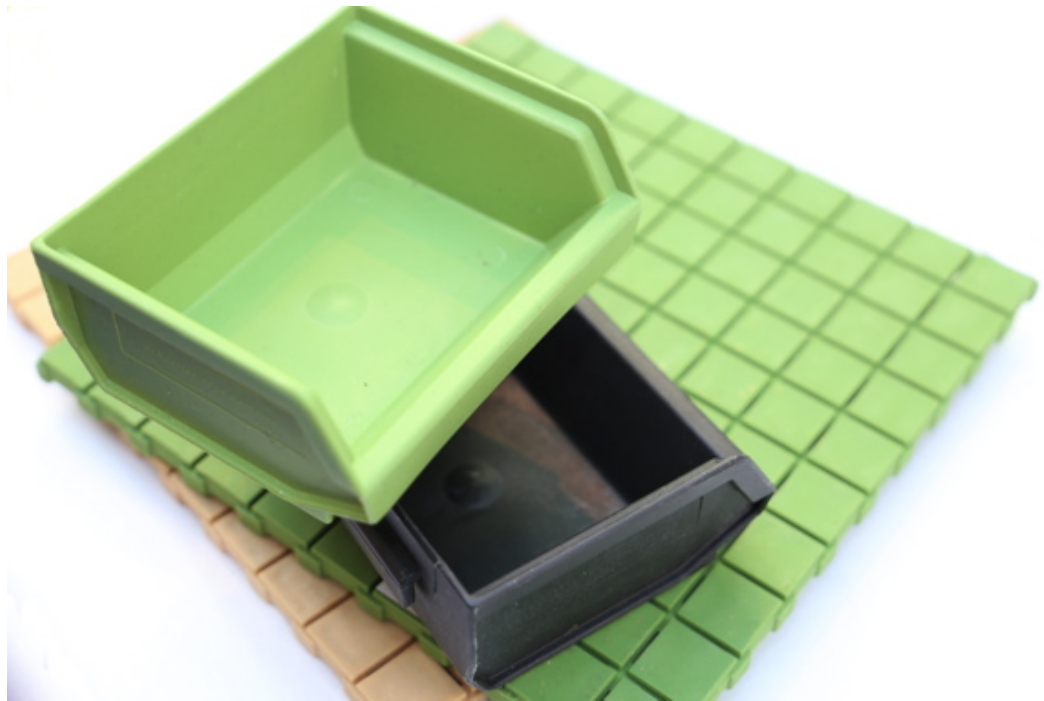
The circular economy is a 'powerful concept'. US companies are certainly trying to incorporate circular economy principles into their products and services.

However, it is not having a major legislative impact. There is more focus on extended producer responsibility schemes, with producers trying to stimulate voluntary initiatives. Generally speaking, however, the government is not yet 'warming' to the circular economy lobby.

Paper To Plastic?

Researchers look to develop ways to turn paper waste into usable plastic.

Okay... it's not as simple as taking a crumpled wad of paper and adding a chemical and turning it into plastic, but the 75-year-old VTT Technical Research Centre of Finland Ltd. is seeking ways to develop the multiple types of sludge and fly ash (airborne particles of ash) generated by the paper and paperboard industry could be turned into plastic.



During the general manufacture of paper and paperboard, waste elements are created, some of which are being used now instead of natural aggregates as a raw material in concrete or asphalt, or other construction materials.

But, large amounts of paper and paperboard side streams still end up in landfills and incineration.

Finding alternative uses for the waste products could be used to lower composite manufacturing costs, reduce the environmental impacts of production, and lower the total amount of waste.

The VTT is looking at ways to do all that while also reducing the production of oil-based plastics.

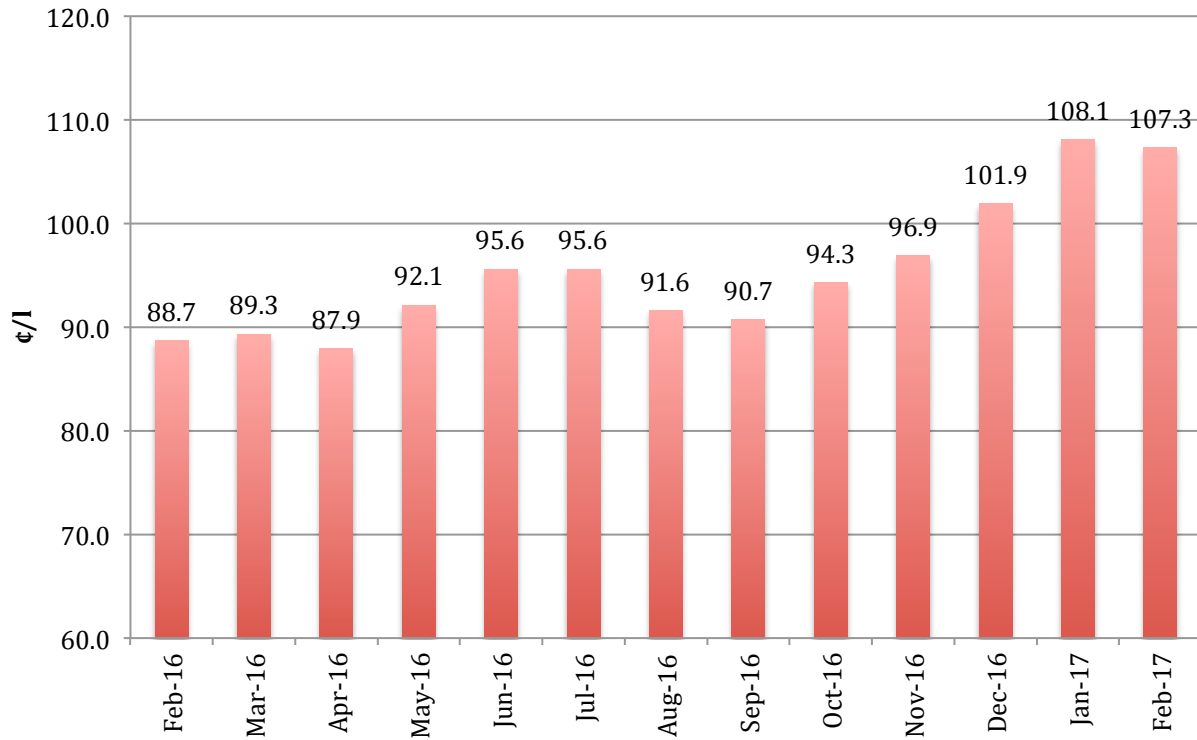
The VTT researchers have found that these waste side streams such as the paper sludge can replace up to 50 percent of oil-based polypropylene (PP) plastic, as a raw material in plastic composites made using injection molding and extrusion.

Of course, the amount of side stream material used will have an effect on a plastic products properties, such as strength, stiffness, heat resistance, appearance and the texture of the surface.

Testing the viability of using side stream material, Plastec Finland Oy and Wiitta Oy produced floor tiles and storage containers, of which side-streams accounted for 30 percent (see image above). New applications are continually being sought – in the future, they may include pallets and crates, and who knows, plastic packaging.

VTT Technical Research Centre of Finland Ltd. is the leading research and technology company in the Nordic countries, serving both private and public sectors. Company information available at www.vttresearch.com.

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