



Green future for old tyres

New Zealand likes to brag about its unique emissions trading scheme but this country has a bad track record when it comes to recycling problem waste such as used tyres.

Every year between four and five million waste tyres have to be disposed of – usually buried in landfills (illegal in many other countries) or dumped on farms where they are used to hold unsightly silage stacks, or are simply thrown into the bush.

The Ministry of the Environment has talked about the problem for many years, but no one has taken responsibility for laws and rules about disposing worn-out tyres in this country.

Coming into this scene like an environmental white knight is Owen Douglas, now into his 70s, who has spent a decade looking into the problem before setting up his tyre collection services.

"I did my research, and the best way to solve the problem is to chip the tyres and use them for fuel," he says frankly.

Around the rest of the world 'end-of-life' tyres, as they are called, are processed into tyre-derived-fuel (TDF) chips which, when mixed with coal, wood or gas in a 10/90 per cent ratio, are used in very high heat operations like cement kilns, electricity power plants, paper mills, and steel manufacturing. The process is over 40 years old and a proven success.

With their high-energy value (20 percent more energy than coal by weight and five times less sulphur), tyre chips are sought after. Burning tyres at high temperatures (the temperature inside a cement kiln is 1800 Celsius) does not produce unacceptable atmospheric emissions and ensures complete combustion of the tyre.

Douglas set up Carbon Recovery, a Kiwi company based in Tauranga dedicated to tyre recovery and tyre recycling, which he says will have the capacity to recover and dispose of the country's entire worn tyre stock, if only we can shake our bad habit of just dumping them.

Carbon Recovery is expected to be up and running by the end of this month (December) with supplying lockable containers to any site with a used tyre problem, even for one-off cleanups, and charges per tyre. Targeted clients include quarry and mining operations, contractors, tyre retailers and council transfer

stations, with charges based on the size of the tyre. Large tyres of up to 50kg cost around \$30 to be collected, and mining truck tyres weighting up to a tonne cost around \$250, as they require special equipment to cut them up.

Carbon Recovery has already been collecting tyres, which it stores in an old quarry in preparation of a \$1 million tyre-shredding machine it has imported from Columbus McKinnon Corporation, based in Florida. The machine and tyre shredding operation will be set up in an old dairy company shed at the Waharoa Industrial Park in Tauranga.

To handle the bigger tyres, the likes of an excavator tyre with 75mm thick wire sides, Douglas turned to an engineering mate who built him a "a great tooth puller" – a seven metre long de-beader machine that literally pulls the wire out. Another machine will cut the heavy tyres into four pieces so they will fit into the American-made, electronically-controlled tyre shredder capable of chopping 12 tonnes, or the equivalent of 1500 passenger car tyres, into clean two or four inch 'chips' per hour. The rubber chips will be then fed directly into one tonne bags and then loaded into 40-foot containers.

The shredded chips from Kiwi waste tyres will be sent to South Korea as fuel for a cement plant 150 kilometres inland from Seoul. When the TDF chips reach the fuel site they will be fed in along with the other predominant fuel (coal). One tonne of tyre chips (TDF) is equivalent to 1.6 tonnes of coal to the cement plant, so reduces costs, says Douglas.

"The lime in the cement plants absorb everything and reduces the emissions. A tyre contains 25 percent steel and when it goes through a cement plant kiln it oxidises and becomes powder."

Douglas became involved with tyre recycling some 12 years ago when he was selling fly ash residue from the coal-fired boiler at the NZ Dairy Co in Te Awamatu. While at a cement industry conference in Las Vegas, which he attended to learn more about marketing fly ash, he heard about the use of tyres for creating energy. Once home, Douglas got the dairy company interested in

processing tyres at its coal-fired Waitoa factory but the project was brought to a halt as a result of Fonterra's restructuring.

Douglas says he took his TDF plan to Coalcorp, Genesis Power (Huntly), Golden Bay Cement, Holcim Cement, Pan Pacific and Kinleith Pulp and Paper Mill, but was knocked back for one reason and another. A deal was nearly closed at the Whakatane Pulp and Paper mill, but an environmental officer decided it wasn't a good idea.

Undeterred, Douglas was directed to Asia by the manufacturer of his shredding machine.

"I went to South Korea five years ago and at the first meeting they said they will take all the tyre chips I can provide. The meeting took 10 minutes."

Douglas, who displayed Carbon Recovery's tyre disposal services at the IoQ/AQA conference in Napier this year, says the quarry and mining industries are one of the main sources of large tyres that are a real problem to dispose of. Other sources for smaller tyres are transfer stations, landfills, and tyre retailers. The large tyre retail chains have, so far, shunned his approaches to take care of their tyre disposal.

"There are also millions of tyres lying around farms, and in the end they become a liability," says Douglas.

"Many of the tyres on farms are used for silos, but pukeko and other birds peck holes in the plastic, the moisture and mice get in, and the silage is ruined. To overcome the problem, all farmers need to do is tip soil over the plastic and seal the silo. They have no need for the ugly tyres."

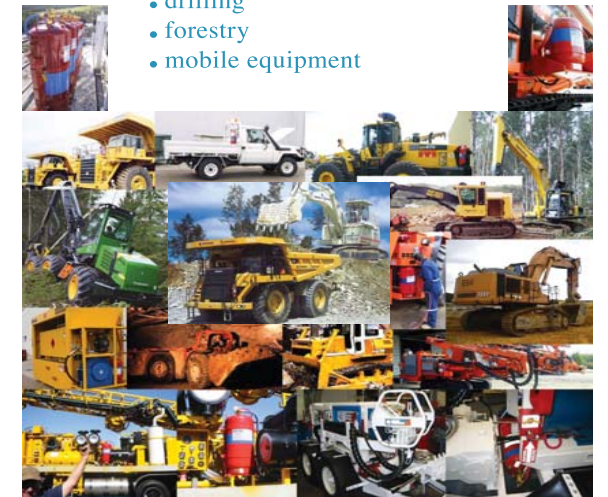
Since they got the worn tyres for free in the first place, farmers balk at paying for their collection, he adds.

"The authorities and, ultimately, the ratepayers may have to pay up if they want to improve the country's environment," says Douglas. "And there are piles of tyres in places you wouldn't believe."

Meantime, Carbon Recovery, "will deliver a container anywhere," he says, so if you have any big bald tyres cluttering up the yard – give him a ring. ■

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