

Chemist Dr Paul Connor is something of a connoisseur of landfill sites. He has visited them the world over, yet in his experience the site in Nova Scotia was unique.

"I had never come across a landfill site without any seagulls and hardly any odour before," said the British expat, now a professor at St Lawrence University in New York state.

The key to the lack of aerial scavengers and stink was the ban that the Nova Scotian provincial authority had placed on compostable material being dumped in landfill sites.

Nova Scotians are encouraged to home compost garden waste, but it is also collected from the kerbside in the majority of the province as part of a three-stream collection that has recyclable material and residual waste as its other components.

Garden waste plus meat, fish, bones, dairy products and some non-recyclable paper products are taken to a central composting facilities where contaminants are removed and the material is shredded and composted. The end product is used to enhance soil.

An attempt is also made to turn residual waste into a useful product, Dr Connett said: "This starts with a conveyor belt manned by well-protected workers who separate recyclables that escaped source separation, bulky items and toxic materials like batteries and paint cans which should have been to hazardous waste drop off points. They leave on the conveyor belt a dirty, organic fraction and non-recyclable plastics."

This is then shredded and then composted in a closed vessel. The aim of this treatment is to render any organic materials inert, rather than to produce saleable compost. However, if contamination is low, the material can be used to as low-grade compost or as landfill cover. If this is not possible, the treated residual waste - now much reduced in volume - can be landfilled with a far lower risk of methane and leachate production.

The landfill site, the composters, plus the residual waste treatment are elements of a wider project to reduce waste within Nova Scotia.

Another important aspect is the promotion of returnable drinks containers. There are deposits on all containers except milk cartons. The customer receives the equivalent to 2p for every returned container while another 2p goes towards the cost of the 95 collection centres and recycling the material. Four out of five containers are returned.

The province has also tackled tyre-tipping, a problem that could escalate in the UK as an EU directive to ban tyres going to landfill kicks in. Nova Scotia's solution is to place a deposit equivalent to £1.30-£3.90 on tyres, which are then re-used or re-cycled.

Add these policies up and the result is a 50 per cent diversion of waste arising in a province of 950,000. In the provincial capital of Halifax, the diversion rate reaches 61 per cent. This has grown in five years from less than ten per cent. Of course, such a deluxe scheme is not without its costs. Bob Kenney, solid waste resources analyst with the Nova Scotian provincial authority, said its difficult to estimate because of the number of municipalities involved, each with

different accounting headings, contract lengths, and, in two cases, in-house refuse collections. However, he said: "There was an increase of about 12 per cent when we went from two-stream waste collection service to include compostable material."

But householders seem prepared to bear that cost, perhaps because the other significant characteristic of this scheme is the role that the community has played in devising it. Dr Connett said: "In Nova Scotia, they started a community stakeholder committee that basically designed the whole process. They said that, if as a community, they wanted to do the right thing, they should reduce waste as much as possible."

And it was a community group that went through a report on rubbish and replaced every mention of "waste" with the word "resources" - as reflected in Mr Kenney's job title.

The other bonus has been the creation of 1,000 jobs since the province's waste strategy was adopted in 1996, bringing the total number in waste processing to 3,000.

Nova Scotia's way with waste has attracted worldwide interest, but other authorities have achieved equally impressive figures – again without incineration. Edmonton, Alberta, has achieved a 70 per cent diversion; Canberra, Australia has reached 66 per cent.

Each requires its citizens to sort their waste differently. Dr Connett and his colleague Dr Bill Sheenan, from the US-based GrassRoots(Correct) Recycling Network, advocate as much sorting by the householder as possible.

Dr Sheenan said: "In our view, the most successful public collection scheme for an urban setting is a three-container kerbside system. This has been used in pilot projects in San Francisco and throughout Nova Scotia.

"However, if communities opt for only two, then it is critical to put the emphasis on sorting the organics.

"This is critical for two reasons: it is the organic material that causes so many of the problems in landfill and it is very difficult if not impossible to pick out clean compostables from the residual fraction.

"Unfortunately, most communities put the emphasis on recyclables and dramatically reduce the amount of material they can divert from landfill and eliminate the chance of getting good, clean, organic material for composting."

However, Edmonton, with the highest diversion rate in Canada, has not followed this route. It collects garden and kitchen waste in with the residual waste, only requiring householders to sort hazardous waste and recyclables.

The residual and organic waste are taken to a plant where large items, such as furniture, are removed. The waste is then mixed with sewage sludge and composted for one to two days before further screening for non-biodegradable material and four weeks of composting.

A final screening leaves material which Edmonton city council describes as "high-quality compost", although 30-35 per cent of the material that enters the composter will have been landfilled.

This figure needs to be compared with the amount of ash left after incineration. The amount will vary according to composition of the incoming waste, but Kent County Council estimate that about 25 per cent by weight remains.

Canberra's system probably requires the most thought from its residents. Each household has a wheelie bin for recyclables that is split in two. The front of the bin is for paper and cardboard. The back is for all other recyclables. The advantage of separating the paper is that it's kept dry and free from glass or metal shards.

The citizens of Canberra are not permitted to put garden waste in with their residual waste, although food scraps can be added. All garden waste has to be taken to waste collection point for composting, although home-composting is encouraged along with vermiculture, the use of worms to convert organic waste into what the Aussies tactfully call "castings".

A variation on this is a tiny, but effective scheme in Kent. WyeCycle services 1,000 homes in the neighbouring villages of Wye and Brook. The not-for-profit company is run by Richard Boden who collects garden waste separately from kitchen waste – and charges residents for the service. The separation of garden and kitchen waste enables him to mix the kitchen and garden waste in the best proportions for composting.

Source separation requires education, motivation and maybe a little coercion too!

Greenpeace advocates that collection staff speak to householders individually, rather than just dropping of containers and instruction leaflets. There is also a need to monitor households afterwards to see who needs further advice.

Rockford, Illinois, came up with a novel way of encouraging compliance. A household was picked at random each month and its residual waste was checked. If no designated recyclables were found the householders won US\$1,000.

If this doesn't work, try a little pressure. A Greenpeace spokesman said: "Some European cities return bins unemptied, with an explanatory sticker, if organic waste has not been separated. "

If you think such an authoritarian approach would not work in the UK, think again. It already has.

Wealden, East Sussex, increased its recycling rate from four per cent to 53 per cent in two years in areas where it introduced kerbside collection. It has three containers: a wheelie bin for garden waste, peelings and cardboard, a box for recyclables and a wheelie bin for the remainder.

Householders were given individual advice for the first six weeks of the scheme, but those who persisted in mixing their waste found their bins left full.

They didn't persist for long.