

Biodegradation Won't Solve the Landfill Crunch

- ▶ *Modern sanitary landfills are managed so that little material actually degrades.*
- ▶ *Landfill excavations have uncovered newspapers that are still readable after almost 40 years, ten year-old carrots that are brown on the outside and bright orange on the inside, and 20 year-old steaks with meat still on the bones.*
- ▶ *As people become better informed about solid waste issues, the focus of attention will shift away from the degradability myth and toward real solutions such as source reduction, reuse, recycling and recovery of energy – solutions in which plastics play an important role.*

What happens deep below the surface of a landfill?

What doesn't happen would be a more accurate description. More than two thirds of the garbage going into landfills may be theoretically "degradable", but little change actually occurs once it gets there.

"Here today, gone tomorrow – that's what many people believe biodegradability really means.

Bury newspapers, wood or food scraps and they'll disappear over time through decomposition.

"Not so," says Dr. William Rathje, an archaeologist at the University of Arizona who believes biodegradability is North America's favourite myth next to Santa Claus.

"Nothing has as popular an image as biodegradability in landfills. Unfortunately, though, it simply doesn't happen."

Scientific research has demonstrated that very little biodegrades in modern sanitary landfills.

The Buried Evidence

Excavations of landfill sites across North America have uncovered some startling facts: newspapers are still readable after almost 40 years; ten year-old carrots are brown on the outside but bright orange on the inside; and 20 year-old steaks still have meat on the bones.

While some food debris and yard waste may degrade at a very slow rate – perhaps about 25 per cent in the first 15 years – there may be little or no additional change for at least another 40 years. Put another way, trash entering landfills essentially retains its original weight, volume and form for the entire active life of the landfill. This confuses people – they think things biodegrade rapidly in landfills; yet a head of lettuce stuck in the back of a refrigerator for ten weeks may look worse than one buried in a landfill for ten years.

Why aren't materials – even raw organic debris – rapidly biodegrading in landfills? The answer is simple.

Many people believe that landfills are just big, carefully controlled compost piles. They are not! In compost piles, the garbage is chopped, kept moist and stirred. No one chops garbage in a landfill and no one adds fluids – it's usually illegal. And no one has figured out a way to stir it. The result is very little biodegradation. There's another problem: the micro-organisms in a compost heap are aerobic – oxygen breathing – and they could biodegrade metal. The anaerobic bugs in a landfill just don't receive the proper balance of moisture, nutrients, temperature and particle size to biodegrade much of anything.



Solid waste entering a landfill typically contains only 25 to 30 per cent moisture, whereas it takes about a 65 per cent moisture level to trigger biodegradation.

Modern landfills are designed to entomb municipal garbage. They are not, nor for safety's sake should they be, biological reactors, which promote decomposition.

Waste Diversion is the Answer

Biodegradation won't enable us to extend landfill space. In Europe legislation has been enacted to reduce the quantity of biodegradable materials permitted to go to landfill. The solution to the landfill "crunch" lies in greater reliance upon integrated resource management strategies such as source reduction, reuse, recycling and the safe recovery of energy from garbage.

Some rubbish will always have to go to the dump, but the real challenge is to divert as much waste as possible from our landfills while ensuring that what does end up there occupies as little space as possible.