

Compaction and Landfill Life

The most valuable commodity in a landfill is airspace. Once your airspace is gone, so is your business. Ideally you should utilize every available cubic metre. You can do that through compaction – packing more waste in less space.

The benefits of successfully compacting waste include:

- Extended landfill life
- Decrease in settlement
- Reduced voids
- Reduction in windblown litter
- Fewer insects and rodents
- Less waste washed away by rain
- Reduced daily cover requirements
- Reduced leachate and methane migration
- More stable surface for machine and vehicular traffic
- Less land taken out of productive use

Two things considerably affect compaction density: moisture content and waste type.



Guidelines to Achieving Compaction

How do you utilize every inch of airspace? Through proper placement, blending and compaction techniques. Waste placement aids such as surveys and electronic systems like Caterpillar's Computer-Aided Earthmoving System (C.A.E.S.) are valuable tools that can help extend the life of your landfill.

It's also critical to train operators to properly handle various types of waste (MSW, construction and hazardous) to achieve maximum density. Training should include machine operators use of appropriate pass, pushing and blending techniques. Operators must consistently run over the waste in a set pattern and apply cover material to reach proper lift requirements.

Techniques for Proper Compaction

Passes And Patterns

Perform three to five passes over each layer of waste, depending on waste composition and density. Some waste requires more passes and takes longer to compact. Use a set pattern and stick to it. Running patterns means compacting all un-compacted waste before adding more. Run over or compact the entire area and remember to compact out and back in the same tracks. It's also important to compact the full length of the layered material—until the wheels run off the layer. Limit turning on top of the compacted waste. Always remember to compact in first gear. You'll achieve better and more efficient compaction, use less fuel and decrease heat load. In addition, blend wetter material with drier material. You may often have to set aside some materials until others arrive before blending in order to achieve higher densities.

Compaction passes are defined as one trip over the waste in one direction. For Cat compactors to achieve four-pass coverage, operators must make one pass forward then a second pass in reverse over the same tracks. Then, move over one wheel width (approximately half the blade width) and perform the same pattern.

Because the space between the wheels is approximately the width of wheels on Cat machines, this pattern achieves a full machine pass.

Once the compactor moves over one more wheel width and the operator begins the next pattern run, the right wheel performs two passes because it is running over uncompacted waste. The left wheel is running over previously compacted waste and is therefore performing a third pass when moving forward and a fourth pass when in reverse over the same tracks. However many passes you perform or patterns you run, the best tip to remember during peak periods is to keep moving and compacting. To help compaction, material must be pushed and layered properly.

