INDUSTRIAL COMPOSTING

This video presents an overview of industrial composting and how businesses can divert organic waste from landfill to reduce their greenhouse gas emissions.

Hi, I'm Gen and I've been working with small to medium-sized businesses in Tasmania to help reduce their consumption of resources and minimize waste streams.

This video is part of a series from the Business Resource Efficiency Program, delivered by Business Action Learning Tasmania in partnership with the Tasmanian government.

It is a key action from Climate Action 21, the Tasmanian Government's climate change action plan.

Each video shares successful strategies and other lessons we've learnt from BREP.

According to the Australian Standard, composting is…

"…the process whereby organic materials are microbiologically transformed under controlled aerobic conditions to achieve pasteurization and a specified level of maturity."

Basically, organic materials break down to create a nutrient-rich material that can be used as a natural fertilizer.

A key feature of composting is the "controlled aerobic conditions" under which it is produced. Aerobic means that oxygen is involved in the process and this is important for reducing greenhouse gas emissions.

When we put organic materials in landfill, they are mixed in with materials that don't break down, like plastic, concrete and metals. Organic materials become sealed off from available oxygen. Without oxygen, organic materials decompose under "anaerobic conditions".

When organic materials decompose under anaerobic conditions, they produce high levels of methane, which is a greenhouse gas that contributes to global warming.

When organic materials are separated from other materials and broken down under controlled aerobic conditions, we can significantly reduce the production of methane.

When any carbon-based material decomposes it produces carbon dioxide, which is also a greenhouse gas, but methane has 25 times the global warming effects of carbon dioxide.

Right now, a large proportion of organic waste from commercial and industrial activities is going to landfill.

There are opportunities for businesses to divert this waste and significantly reduce their greenhouse gas emissions.

Compost is made up of organic matter, which is carbon-based, this is commonly referred to as 'brown' material,

examples include timber and plant wastes…

…and humus, which is high in nitrogen and commonly referred to as ‘green’ material. This includes food wastes and animal manure.

Good composts have a combination of brown material and green material in a ratio of between 25:1 to 30:1.

But the most important ingredient in compost is the bugs.

Various microbes do the hard work of converting raw organic material into a rich nutritious humus.

Moisture content and temperature of a compost heap are critical factors to support the bacterial and fungal activity that transforms the compost heap.

Temperature is also critical to pasteurization of the heap to kill any pathogens and weed seeds in the compost.

There are three techniques used for industrial composting:

windrow, in-vessel, and aerated static pile composting.

Windrow composting is an open-air process that places composting material into long piles approximately one and half metres high called “windrows.”

Dulverton Waste Management in the state’s North West, and Hobart City Council, use windrow composting in their commercial composting facilities.

The windrows are turned regularly to ensure that all the composting materials spend some time in the warm, moist center of the pile, where bacterial activity encourages further breakdown, and that oxygen is readily available to prevent the pile becoming anaerobic and producing dangerous greenhouse gases.

In-vessel composting takes place in an enclosed environment.

In-vessel composting can process large amounts of waste without taking up as much space as the windrow method and it can take virtually any type of organic waste — meat, animal manure, bio-solids, and food scraps, for example.

In-vessel composting involves feeding organic materials into a drum, silo, or concrete-lined trench, so we can control temperature, moisture, and airflow.

The composting material is mixed to make sure it is aerated, encouraging bacterial activity, and eliminating dangerous greenhouse gases.

The waste is then transferred to a maturation pad for the final stage of composting.

In aerated static pile composting, organic waste is mixed in a large pile.

The City of Launceston uses aerated static pile composting at its commercial composting facility.

Piles of organic waste are placed over a network of pipes that keep oxygen flowing in and out of each pile using blowers that can be activated by a timer or temperature sensors.

Aerated stack composting is suited to homogenous mixes of organic waste and works well for larger quantity generators of compostable waste, such as waste from commercial food operations, paper products, and bioplastics.

Aerated static pile composting produces compost relatively quickly, generally within three to six months.

Kerbside collection of municipal food and garden organics is growing in Tasmania.

Some of you may already be separating your organics at home.

There are opportunities for businesses to participate in large-scale composting of organic waste, particularly commercial food waste, and by doing so, significantly reduce their greenhouse gas emissions.

To get started:

- Check with your local council to see what services are available in your area.
- Conduct a waste audit to estimate the amount of organic waste you produce
- Reducing contamination is key, so you need to consider how you can effectively and efficiently separate organic and inorganic materials at as close as possible to the source
- Contact a service provider and get a quote – you might find there are ongoing savings that can offset your initial setup costs for diversion of organic waste

This video has presented an overview of industrial composting and how businesses can divert organic waste from landfill to reduce their greenhouse gas emissions.

For more ideas and practical information about improving resource efficiency, watch one of our other videos or visit the Tasmanian Climate Change Office website at climatechange.tas.gov.au

or the BALT website at businessactionlearningtas.com.au.

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