

Envetec Advances Research on Comparing Plastics Recovered from Biohazardous Lab Waste to Newly Manufactured Plastics

Research demonstrates that recycling one metric tonne of polymer waste generates a net emission saving of 2,104.52 kg CO₂e.

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If we are serious about climate health, we must help laboratories transition from a throwaway culture concerning plastics by collaborating across the entire supply chain"

Malcolm Bell, Chairman & CEO

Technologies Limited ("Envetec"), a leading innovator in climate-forward technology, today announced the first study of its kind to explore the impact of using recycled plastics sourced from biohazardous waste, as a sustainable alternative to virgin (newly manufactured) plastics derived from fossil fuels.

With laboratories generating an estimated 12 billion pounds of plastic waste globally each year, the study showed that by recycling just 1 metric tonne of recycled laboratory plastic waste, there is a net emission saving of 2,104.52 kilograms of CO₂ equivalent (kgCO₂e). This

represents a substantial reduction, amounting to a 91% decrease compared to the greenhouse gas emissions generated when producing virgin plastic. These findings highlight the immense potential of recycled biohazardous waste materials in combatting climate change and lessening the environmental impact of plastic manufacturing.

In response to the urgent need for creating a more circular and sustainable biohazardous waste management system, researchers examined legacy waste treatment methods such as autoclaving, incineration, and landfill. The study contrasted these legacy approaches with Envete's GENERATIONS™ (1) technology. GENERATIONS is an onsite shredding and disinfection system capable of transforming biohazardous waste into clean flake composed of various polymers, including polyethylene terephthalate (PET), one of the most commonly used plastics in the world. Advanced technologies can now separate various plastic types into distinct streams, enabling the creation of a recycling loop.

"If we are serious about climate health, we must help laboratories transition from a throwaway

culture concerning plastics by collaborating across the entire supply chain," said Malcolm Bell, Chairman and CEO of Envetec. "We are identifying pioneering, sustainable approaches that drive biohazardous waste away from outdated treatment methods and landfills. The latest research underscores the significant potential of GENERATIONS in advancing meaningful circularity and reducing reliance on new plastic materials."

To provide context for this new opportunity, a clinical waste study report from the NHS reveals that English hospitals alone produce roughly 156,000 tonnes of clinical waste annually. (2) Typically, this waste is disposed of through high-temperature incineration (HTI) or alternative treatment (AT) methods. According to the calculations outlined in the study, the adoption of Envetec's GENERATIONS technology to manage approximately 70,200 tonnes of recyclable clinical waste from the NHS would be suitable for recycling. By incorporating this recycled material into manufacturing processes instead of using virgin polymers, a substantial carbon emissions reduction of 152,482,420 kgCO₂e could be achieved.



Transforming biohazardous waste into clean flake

ABOUT ENVETEC GENERATIONS™

Given the life science industry's commitment to zero operational waste, including eliminating single-use plastics and the ability to recover waste through circular routes such as reuse and recycling, the standard treatment path has remained unchanged for almost 50 years. It involves removing the bagged, untreated waste by road freight for incineration and landfill.

The GENERATIONS technology simultaneously shreds and disinfects infectious waste and materials directly at the source which can then be recycled. GENERATIONS, which is non-thermal and utilises a proprietary biodegradable chemical, converts biohazardous waste into a confetti-like material that is entirely safe to handle and transport for recycling. GENERATIONS is designed to help laboratories begin phasing out today's unsustainable activities, including incineration, autoclaving, landfill, and the public health risk associated with the transportation of biohazardous waste.

ABOUT ENVETEC SUSTAINABLE TECHNOLOGIES

Envetec's vision is to create clean change with the world's first validated clean technology for the treatment and sustainable repurposing of biohazardous laboratory waste materials at source,

significantly reducing dependency on landfill, incineration, road haul and autoclaving. The commercial launch of the Envetec GENERATIONS technology follows significant investment spanning 10 years of research and development. Laboratories currently have no choice but to generate biohazardous waste [2]. Our mission is to transform those choices by enabling laboratories to move towards zero waste.

[1] GENERATIONS is subject to registered trademarks and trademark applications in the EU, UK, US and Japan

[2] NHS clinical waste strategy, March 2023

Sunny Uberoi

Envetec Sustainable Technologies

+1 917-747-2018

info@envetec.com

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