



envetec
create clean change

Sustainable treatment for
biohazardous waste

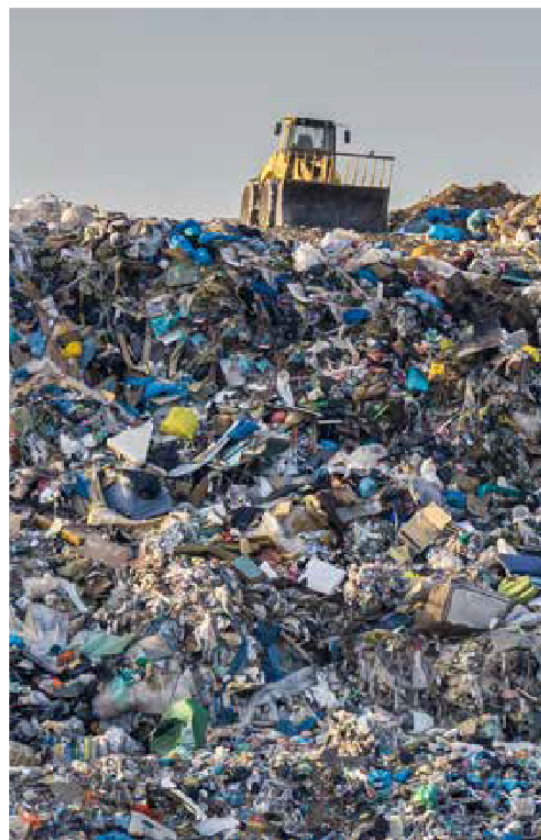
GENERATIONS[®]





The Challenge

The Life Science sector, whose mission is to protect health by combating causes of illnesses and enabling healthcare practitioners to innovate and operate, makes a major contribution to the climate crisis. The Biotech & Pharmaceutical industries alone are estimated to produce over 200 million tonnes of CO₂e annually.¹ Additionally, facilities such as microbiology laboratories use 10 times more energy and 4 times more water than a standard work environment.² A key component of the Life Science sector's carbon footprint is the amount of waste produced, particularly biohazardous waste.



Millions of kgs of CO₂e are produced every year through the treatment of biohazardous waste.

Huge amounts of biohazardous waste are generated every day and are transported to disposal sites. This waste will end up being autoclaved and/or incinerated, both processes release huge amounts of CO₂e. In many countries, the waste will end up in landfill, either as ash or treated waste.



GENERATIONS

Envetec have developed a novel clean technology called GENERATIONS that enables facilities to eliminate the current carbon intensive transport and thermal treatment processes traditionally involved in the management of biohazardous waste. Facilities can now send material to be recycled that otherwise would end up in landfill.

GENERATIONS is a novel technology that simultaneously shreds and disinfects biohazardous waste at source. The system's unique treatment process leads to waste prevention by converting biohazardous waste into a recyclable flake that is safe to handle and transport for recycling.

Envetec GENERATIONS treats biohazardous material with an organic, biodegradable,³ chemical compound which is commonly used as a disinfectant in healthcare, food and water treatment sectors. The shredding process ensures that all parts of the waste are subjected to the chemical treatment process.

¹. "The Carbon Impact of Biotech & Pharma" - My Green Lab (2022)

². "Building a Global Culture of Sustainability in Science" - My Green Lab (2023)

³. The proprietary organic chemical used in the GENERATIONS treatment process naturally breaks down into water and ethanoic acid meaning it does not bioaccumulate.



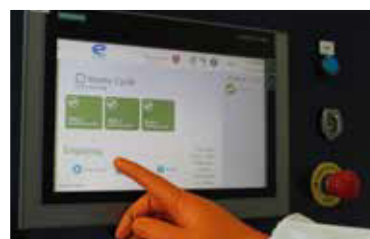
The GENERATIONS Process

Step 1: Biohazardous waste in bags or rigid containers is loaded into the GENERATIONS treatment chamber.

Step 2: The user initiates the validated treatment process by pressing the “run” button.

Step 3: As the treatment process begins, GENERATIONS automatically adds the Envetec chemical and water to the treatment chamber as shredding commences.

Step 4: Upon completion, the treatment chamber rotates, transferring the processed material to a dewatering auger, which separates solid and liquid material. The solid flake is now ready for recycling and the effluent, which has been treated and is safe, is sent to the drain.



Waste Streams Treated - All Biohazardous Waste



Bagged
Biohazardous Waste



Sharps
Waste



Rigid Container
Biohazardous Waste

Waste Streams Not Treated



Cytotoxic/
Pharmaceutical
Waste



Anatomical
Waste



Efficacy

The globally accepted efficacy protocol for the treatment of biohazardous waste is STAATT III (4log10 reduction of pathogens). GENERATIONS achieves the superior STAATT IV (6log10 reduction of pathogens) by combining our unique shredding technology and our proprietary, organic, biodegradable disinfectant solution.

Envetec has designed a novel validation process that verifies the efficacy of treatment during the live processing of waste.

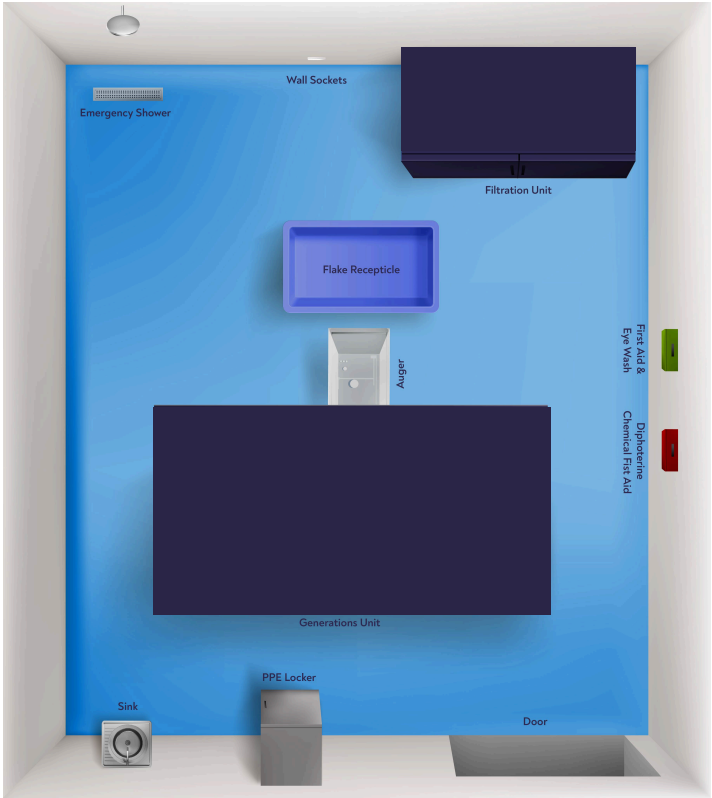
Regulatory Approvals

- U.S. EPA
- New York State Department of Health

Environmentally Friendly Treatment

- GENERATIONS utilises a proprietary, organic, biodegradable chemical for disinfection.
- The active ingredient is one of the most common chemicals used in water treatment and the food industry globally.
- The GENERATIONS process leaves waste water at a pH between 6.5 - 7.5 post treatment. Effluent can be safely sent straight to drain.





Independently Assessed Environmental Benefits



Carbon Action, an independent carbon consultancy firm, conducted an analysis of carbon emissions associated with treatment of biohazardous waste. The studies compared the carbon impact of traditional biohazardous treatment methods and biohazardous waste treated with GENERATIONS. Multiple studies across several industries have shown an average 90% reduction of Scope 3 emissions related to treatment of biohazardous waste.



Recycling single use laboratory materials

- My Green Lab estimate that every year the plastic waste alone from laboratories could cover an area 23x the size of Manhattan ankle deep
- Envetec GENERATIONS enables the recycling of previously incinerated high value plastic
- Treated plastic flake from the GENERATIONS process can become a high value commodity for recycling companies

Install Requirements

Envetec GENERATIONS has been designed for ease of installation. The requirements for installation are a power source, a water source and drainage.

Height	1.91 metres
Length	3.57 metres
Depth	1.65 metres
Weight	2200 kgs

System Specifications

Recommended weight per cycle	≤ 30 kg
Recommended capacity per cycle	~100L
Water usage per Treatment*	20L
Energy usage per cycle	0.71 kw/h

Standard Treatment cycle time*	12-14 mins
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*Not including the optional rinse cycle



Aggregated Findings From Carbon Action Analysis

- Carbon Action found that GENERATIONS lowered CO2e emissions by 90% on average for equal quantities of waste treated traditionally by autoclave, incineration and landfill
- GENERATIONS is an essential link in the laboratory plastics recycling chain, as treated plastics are suitable for recycling
- GENERATIONS used up to 70% less water per cycle on average compared to on-site autoclave and rotoclave technologies
- GENERATIONS significantly supports scope 1, 2 and 3 initiatives, some of which were previously inaccessible.



Reduce Scope 3 emissions by 90% on average.



Enable recycling of biohazardous laboratory plastics.

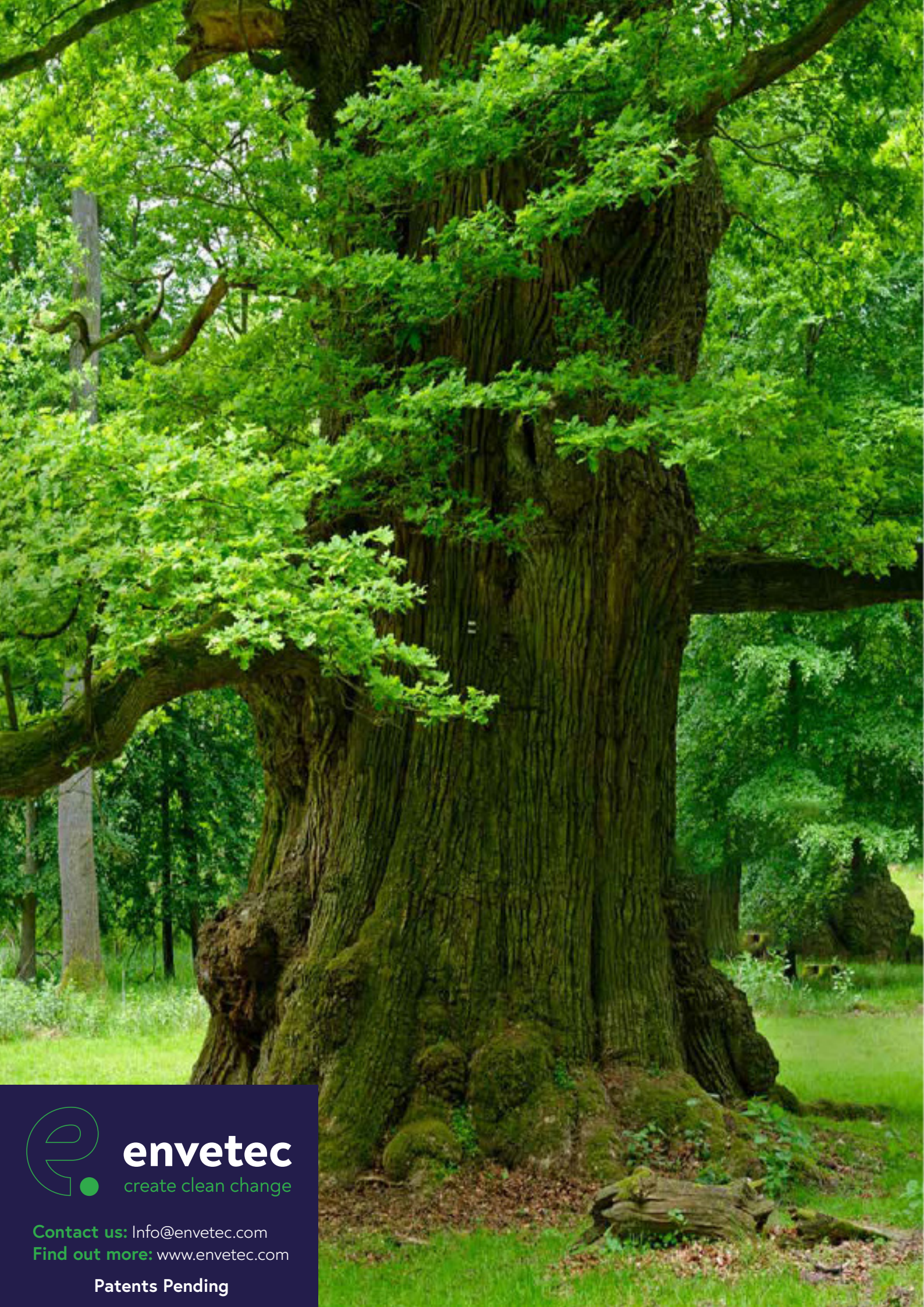


Reduce water usage by up to 70% when compared to other on site treatment method.

Ease of Use & Peace of Mind

- GENERATIONS novel shredding technology can reduce the volume of biohazardous waste by up to 90%, meaning less space and organizational management is required when storing your waste.
- GENERATIONS utilizes a unique internal validation system which allows validation to be carried out during a live waste cycle.
- On site treatment greatly reduces the amount of regulated medical waste leaving facilities which eliminates public health and reputational brand risk associated with transportation of untreated biohazardous waste.





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Contact us: Info@envetec.com

Find out more: www.envetec.com

Patents Pending