MEDTECH COLLABORATION SERIES

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RECYCLING BIOHAZARDOUS WASTE

HOW ENVETEC IS RE-THINKING LABORATORIES APPROACH TO WASTE

H B2B

TECH ORIGIN

MERCURY

SUSTAINABILITY PARTNERSHIPS


WHAT TO
EXPECT

1. ENVETEC & THE NHS

2. SOLVING THE WASTE DILEMMA

3. BRINGING THE WASTE TREATMENT TO THE SOURCE

4. TARGETING SCOPE 3 EMISSIONS

5. SHIFTING MINDSET TOWARDS SUSTAINABILITY

6. LOOKING TO THE FUTURE

In the move to a greener era, waste is always a topic of discussion. Improper waste management can hinder the environment in a number of ways, from land degradation to air pollution stemming from incineration. Globally, the healthcare industry produces millions of tonnes of waste each year, and 15% of this is considered hazardous material that may be infectious, chemical, or radioactive.

HG As opposed to current practices that have significant environmental impacts, Envetec is taking an eco-friendlier approach with their disruptive CleanTech solution that is reshaping how biohazardous laboratory waste is managed.

We spoke to Sunny Uberoi, Head of Communications and Public Affairs, and Conor Connolly, VP of Business Development, to investigate this emergent technology and uncover how they are supporting laboratories across the globe.

EV "At Envetec, we're on a mission to transform how laboratories handle biohazardous waste, especially single-use plastics. With laboratories generating an estimated 12 billion pounds of plastic waste globally each year underscored by legacy treatment methods, the Envetec team designed and engineered the GENERATIONS® technology to tackle the increasingly adverse effects of lab waste on both the environment and local communities.

We introduced GENERATIONS —our innovative technology—within weeks of the pandemic. It embodies a decade of research and development, conducted in collaboration with industry and hospitals. GENERATIONS was meticulously designed and rigorously tested by laboratory specialists, offering the laboratory community a fresh approach to safely managing biohazardous waste while helping our customers significantly achieve their sustainability objectives." - **Conor Connolly**

ENVETEC & THE NHS

Health services have an integral role to play in avoiding negative environmental change and are intrinsically linked to the consequences of climate change. As the Earth experiences continued global warming, people's health is directly impacted, and this relays back to the health service that deals with this additional pressure. The UK's health service contributes to around 4-5% of total UK carbon emissions and therefore has the responsibility to reduce emissions and waste to safeguard the health of future generations.

EV "Despite the NHS's commitment to reducing emissions by 80% across all scopes by 2032 as part of its climate goals, recent data indicates that roughly half of NHS Trusts are currently not on course to achieve their decarbonization objectives.

We support the research conducted by the Centre for Circular Economy at Exeter University, which proposes that the NHS has an opportunity to engage in close collaboration with its suppliers. This collaboration should go beyond mere improvements in energy efficiency and incremental innovations and instead embrace systemic innovation. The NHS needs to apply more pressure on its suppliers to demonstrate how they measure and reduce their Scope 3 emissions and present solutions aligned with the principles of a circular economy. This approach is crucial for attaining the NHS's ambitious sustainability targets."
- **Sunny Uberoi**

SOLVING THE WASTE DILEMMA

As a society, we understand that all industries are contributing to climate change and require a complete step change in practices to limit carbon emission release. However, healthcare presents its own challenges when it comes to the climate crisis. Conor Connolly explores the challenge that is faced.

EV "The healthcare sector significantly contributes to the climate crisis, accounting for 4.4% of global net emissions according to a report by Healthcare Without Harm. For instance, facilities like human diagnostic laboratories consume ten times more energy and four times more water than standard work environments.

Another substantial element of the healthcare industry's carbon footprint is the creation of biohazardous waste, which poses a significant challenge. Enormous quantities of biohazardous waste are generated daily, requiring transportation to disposal sites. The subsequent autoclaving and incineration processes release large amounts of CO2e. Typically, this waste ultimately ends up disposed of as ash or treated waste. In the U.K., clinical waste treatment within the NHS alone emits approximately 100,000 tonnes of CO2e annually.

Biohazardous waste is far from uniform, and conventional methods of treatment include high energy steam sterilisation and/or incineration. At Envetec, a significant portion of our research and development is analyzing the complexities of laboratory waste streams from diverse sectors spanning hospitals, diagnostics, and pharmaceuticals.

Using our knowledge of these waste streams we have developed an intelligent blade system purposely designed to treat biohazardous materials. These blades are meticulously engineered to ensure the complete shredding of all pertinent materials."

BRINGING THE WASTE TREATMENT TO THE SOURCE

HG The volume of waste being removed from health services and laboratories continues to grow year on year, and more often than not there is a lack of transparency in terms of what happens to the waste once it's off-site. This lack of insight makes it difficult for health services and laboratories alike to navigate those all-critical Scope 3 emissions, and more importantly, mitigate the associated harmful impact.

Unlike traditional methods that require transportation away from a site, Envetec's validated technology is installed on-site, in a convenient, all-encompassing unit that breaks down the waste in a low-energy, non-thermal format, with minimal water draw. Instead of incinerating the biohazardous waste, they utilise a biodegradable chemical process that converts the waste into recyclable polymer flake, while still killing all biohazardous agents.

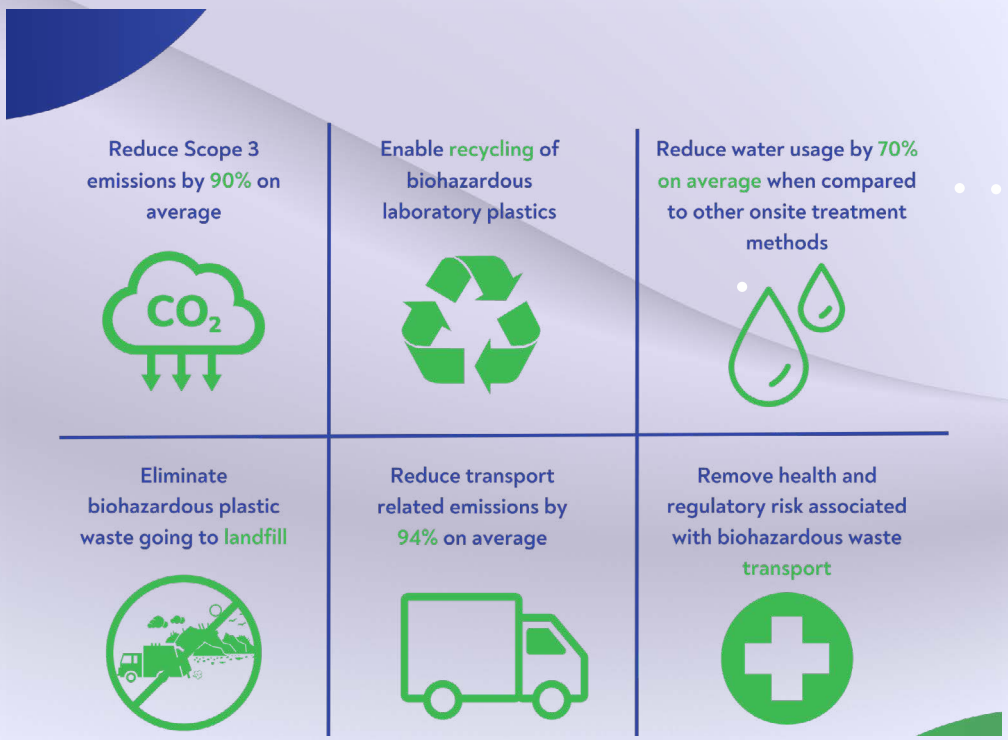
EV "There are multiple reasons why it is important to bring biohazardous waste treatment closer to healthcare facilities. From a sustainability perspective, the disposal of biohazardous waste has always been a black box process. In most cases, healthcare facilities aren't even fully aware of the destructive, carbon intensive treatment chain that their waste is sent into. By bringing the waste treatment closer to healthcare facilities you give them more control over the environmental impact of their waste as well as increased transparency into the treatment chain. Secondly, biohazardous waste is currently bagged, stored and then transported on public roads. The more steps biohazardous waste takes through the waste cycle the greater the risk of operator exposure or environmental contamination. By converting this waste to non-biohazardous on site, it greatly reduces the public health and regulatory risk." - **Sunny Uberoi**

TARGETING SCOPE 3 EMISSIONS

HG Scope 3 emissions are often considered the most difficult to both track and reduce as it involves elements outside of an organisation's direct control. However, to combat this, Envetec is supporting laboratories with a unique approach to waste management that not only brings the waste treatment closer to the individual locations, but also demonstrates a significant reduction in Scope 3 emissions by 90%.

EV "Carbon Action, an independent Carbon consultancy firm based in the UK, conducted an analysis of greenhouse gas emissions associated with treatment of biohazardous waste. The research compared the carbon footprint of traditional biohazardous treatment methods to GENERATIONS. The data gathered from multiple sites across the U.K., Ireland and the U.S. showed that on average scope 3 emissions were significantly reduced by 90%.

Based on GENERATIONS environmental footprint, the impact of the technology on the NHS could be key to unlocking their clinical waste strategy goals as outlined in NHS England's Clinical Waste Strategy Document released in March 2023. For the first time the NHS can achieve meaningful circularity by enabling the recycling of biohazardous material. Based on Carbon Action's analysis, that would represent approx. 72,000 tonnes of the NHS's biohazardous material that would be otherwise incinerated or buried." - **Conor Connolly**



SHIFTING MINDSET TOWARDS SUSTAINABILITY

HG The subject of sustainability has been in the ether recently. But as the saying goes, action speaks louder than words, and we need to ensure that the discussions surrounding sustainability is followed by actionable change, and in this case, the adoption of revolutionary technology that will mitigate excess carbon emissions and waste. Conor Connolly provides his insight on GreenTech adoption in the healthcare landscape.

EV "Covid really brought clinical waste to the forefront of public attention. The increase in biohazardous waste also highlighted the inadequacies of legacy treatment methods. As well as this, increased regulation from international bodies has expedited the need for organisations to find sustainable solutions for every facet of their operations. Incoming legislation, such as CSRD, will hold organisations accountable for the accuracy of their emission reporting, so to avoid greenwashing accusations organisations need to utilise new technologies that provide validated results and are backed up by hard data.

On the other side, however, the biggest barriers for adopting climate positive technology is business culture and awareness of new technologies. We are pleased that new regulations are being introduced to force the supply chain to upgrade the rigor of what is being measured, which in turn will upgrade the potential impact of how a hospital will manage its emissions."

LOOKING TO THE FUTURE

HG The move towards net-zero is no small feat and will require substantial investment and collective actions from leaders in the healthcare space. Yes, it's a challenge, but it's not impossible.

EV "We agree, we think this will be challenging but through a combination of innovation and collaboration we can make a real change. The journey to net zero emissions is a complex and long-term goal that requires sustained effort incorporating technological innovation, capturing robust Scope 3 data, behavioural changes and working across the entire supply chain." - **Sunny Uberoi**

Envetec is on a journey to create clean change, and as we move towards the future, adopting practices that prioritise recycling and minimise waste will become crucial.

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