

CASE STUDY: NORTHWELL HEALTH

TREATMENT OF REGULATED MEDICAL WASTE USING GENERATIONS™



OVERVIEW

- Northwell Health is New York State's largest health care provider and private employer
- Northwell Health's 101,000-square-foot core laboratory, located within its Center for Advanced Medicine (CFAM), features a Roche Diagnostics automated testing line which is considered one of the largest in the world.
- The core laboratory processes 20,000 patients per day and is capable of processing up to 55 million tubes per annum.
- The core laboratory generates approximately 500,000 lbs (226,796.185 kilograms) of regulated medical waste (RMW) per annum.

LABORATORY GOALS

- Reduce carbon footprint of waste management process by increasing waste recycling rates to 25% by 2027 and reduce overall GHG emissions by 50% by 20230
- Eliminate public health and reputational risk associated with landfill, incineration and transportation of RMW

SUCCESS FACTORS

- Adoption of GENERATIONS technology to treat RMW onsite
- Reduce carbon footprint associated with waste treatment processes
- Enable Recycling of RMW

CLIMATE-FRIENDLY TECHNOLOGY TO TREAT REGULATED MEDICAL WASTE

The healthcare sector, whose mission is protecting and promoting health, makes a major contribution to the climate crisis. Healthcare's climate footprint is equivalent to 4.4%* of global net emissions. One key component of healthcare's carbon footprint is the amount of waste produced, particularly plastic waste. The issue of regulated medical waste has gained significant public awareness over the last number of years and is a concern for the community and environment.

Northwell's Core Laboratory at CFAM operates as the primary testing hub of a multi-hospital network and processes samples from over 20,000 patient per day. Given Northwell's leadership position in healthcare, the organization recognizes that urgent action is necessary for hospitals to transition towards a sustainable healthcare future. Specifically, Northwell is focusing on its core laboratory, which is the largest commercial laboratory in New York, to address the approximately 500,000 lbs of regulated medical waste generated every year.

The core laboratory produces over 500,000 lbs of regulated medical waste per annum. In May 2023, Northwell took a practical step forward in to fulfill their climate goals by adoptitng Envetec's GENERATIONS technology to treatt RMW onsite, at their CFAM building.



"Current methods of treating biohazardous waste are financially and environmentally unsustainable, whereas the implementation of the Envetec **GENERATIONS** technology is an investment in the future health of the communities we serve"

Michael Dowling, CEO, Northwell Health

A commitment to ESG

Northwell's latest goal to reduce emissions by 2030 as part of the White House Health Sector Climate Pledge is a further example of Northwell's public commitment to reducing greenhouse emissions. Northwell has been consciously working toward reducing its emissions since a 2010 emissions mitigation pledge made with the EPA. In the last decade plus, Northwell has taken a three-pronged approach to reducing its emissions — mitigation, resilience and leadership — partnering with local providers and its staff, many of whom are passionate about climate issues, to create programs and raise awareness with greening in mind.

Source: "Healthcare's Climate Footprint", Health Care Without Harm (2019)

SYSTEM THROUGHPUT

In a single day at CFAM, GENERATIONS processed 2123lbs of RMW:

- 2123 x 5 days per week = 10,615lbs per week.
- X 52 weeks = 551,980lbs per annum capacity in a double shift.
- Additional capacity is available at the weekend and during a third shift.

Day 1 9.15 am-1.15 am | 16 hrs shift / 52 cycles completed = 18.5 mins per cycle = 3.25 cycles per hour

Run No.	Waste Type	Weight In (Lbs)	Run No.	Waste Type	Weight In (Lbs)	Run No.	Waste Type	Weight In (Lbs)
1	Tubes	40.5	18	Roche	38	35	Tubes	41.5
2	Tubes	43	19	Roche	41.5	36	Sharps	33
3	Tubes	49	20	Roche	51	37	Tubes	54
4	Tubes	47.5	21	UA CUP WASTE	39.5	38	Tubes	42
5	Tubes	39	22	Roche	41	39	Tubes	44
6	Tubes	38	23	Roche	41.5	40	Tubes	46
7	Sharps	15.5	24	Roche	46.5	41	Tubes	43
8	Tubes	38.5	25	Sharps	25	42	Tubes	36.5
9	Tubes	51	26	Roche	44.5	43	Tubes	45
10	Tubes	38	27	UA CUP WASTE	39.5	44	Tubes	29.5
11	Tubes	39.5	28	PPG/ REMSTAR WASTE	31	45	Tubes	43.5
12	Tubes	39	29	UA CUP WASTE	45	46	Tubes	35
13	Tubes	37.5	30	Roche	47.5	47	Tubes	41.5
14	Tubes	37	31	Roche	50	48	Tubes	43
15	REMSTAR	35	32	Roche	51.5	49	Tubes	38.5
16	Roche	36.5	33	PPG/REMSTAR	43.5	50	Tubes	38
17	Roche	36	34	Sharps	37	51	Tubes	41.5
						52	Tubes	42
							Total (LBS)	2123

Example results table from capacity testing

Client	WNWN international
Project	Northwell Core Labs
ASI Project#	7072.8

Client Sample ID	ASI Sample#	Matrix	Analyte	Sample Composition	Result
Blank Sample 1	70728-01	Water	Biological Indicators	Vial	Negative
Blank Sample 2	70728-02	Water	Biological Indicators	Vial	Negative
Blank Sample 3	70728-03	Water	Biological Indicators	Vial	Negative
Positive Control	70728-04	Water	Biological Indicators	Vial	Positive
Negative Control	70728-05	Water	Biological Indicators	Vial	Negative
Neutralizer Control	70728-06	Water	Biological Indicators	Vial	Negative
Run 1 Sample A 1	70728-07	Water	Biological Indicators	Vial	Negative
Run 1 Sample A 2	70728-08	Water	Biological Indicators	Vial	Negative
Run 1 Sample B 1	70728-09	Water	Biological Indicators	Vial	Negative
Run 2 Sample A 1	70728-10	Water	Biological Indicators	Vial	Negative
Run 2 Sample A 2	70728-11	Water	Biological Indicators	Vial	Negative
Run 2 Sample B 1	70728-12	Water	Biological Indicators	Vial	Negative
Run 3 Sample A 1	70728-13	Water	Biological Indicators	Vial	Negative
Run 3 Sample A 2	70728-14	Water	Biological Indicators	Vial	Negative
Run 3 Sample B 1	70728-15	Water	Biological Indicators	Vial	Negative

Table resulting from Northwell Unit Validation Testing

EFFICACY & VALIDATION

- Envetec's GENERATIONS system has U.S EPA and New York Department of Health approval.
- As part of the validation of onsite treatment for RMW, efficacy testing is conducting in alignment with international STAATT guidelines and submitted to NY DOH for approval.
- Northwell Health also run weekly verifications to ensure the system is treating the waste effectively.



Traditional Workflow



STEP 1

REGULATED
MEDICAL
WASTE
PRODUCTION



STEP 2

INTERNAL
GATHERING



STEP 3

EXTERNAL
COLLECTION
OF RMW



STEP 4

TRANSPORTED
TO
STERILISATION



STEP 5

LARGE SCALE
STERILISATION



STEP 6

DRIVEN TO
LANDFILL



STEP 7

LANDFILL

GENERATIONS Workflow



STEP 1

REGULATED
MEDICAL
WASTE
PRODUCTION



STEP 2

PROCESSING
VIA
GENERATIONS



STEP 3

REUSABLE
MATERIAL
COLLECTION



STEP 4

MATERIALS
RECYCLED

CONCLUSIONS

Northwell is demonstrating a leadership position by prioritizing environmental responsibility. The hospital is significantly eliminating regulated medical waste from the largest core laboratory in New York by adopting GENERATIONS technology.

Furthermore, the benefits extend beyond eliminating RMW. Based on independent, peer-reviewed data, Northwell is anticipated to lower its Scope 3 carbon emissions related to waste processing by up to 90%. GENERATIONS will also enable Northwell to recycle plastic that would otherwise end up in landfill.

