



Singapore Healthcare Management 2024



Singapore General Hospital
SingHealth

Bringing Hospital Food Waste Back to Life with Black Soldier Flies (BSFL)

Theng Le Xin Chloe, Environmental Services, SGH
Lim Su Kian Grace, Food Services, SGH
Nathaniel Phua, Ento Industries

INTRODUCTION

In Singapore General Hospital (SGH), Central Kitchen serves an estimated amount of **1,972,854 meals** per year to patients.

AIM

To promote sustainable practice that supports a **CIRCULAR ECONOMY** through transformation of food waste into organic fertilisers for agriculture in Singapore General Hospital (SGH). This project aims to treat at least 5% of pre-served food waste in 8 months.

METHODOLOGY - DMAIC

1. DEFINE

Hospital food waste is currently incinerated and landfilled. Though an efficient solution of disposing waste, the process undermines the valuable nutrients present in food waste.

2. MEASURE

General Waste generated from kitchen is estimated at around 19% of SGH's General Waste load in year 2023. Out of the total waste generated in kitchen, 12% are pre-served while the rest are post-served food waste and packaging. In-line with the GreenGov requirement to reduce hospital's waste by 2030, we target to reduce waste disposed through valorisation of food waste.

3. ANALYSE

Off-site processing of pre-served food waste was explored due to space constraint. Recording of the food waste in two categories: Pre-Served and Post-Served starts from May 22 for the project baseline.

4. IMPROVE

Project commenced from Sep 23 to Apr 24. Food waste produced while preparing hospital meals are sorted and pre-treated using microbes. These nutrient-rich food waste are then sent off-site, weighed, proportioned, and fed to larvae raised in a controlled environment that optimises growth. After processing, the bioconversions' output will develop into valuable organic fertilisers which are used to fertilise SGH Landscape.

5. CONTROL

In order to ensure proper segregation and recording of the waste, food waste records are monitored on a routine basis.

RESULT

With the valorisation effort, food waste that are currently incinerated and landfilled are being upcycled into valuable feeds. As of current, an estimate of **7%** of total food waste are being upcycled. Through an efficient solution of disposing waste, the process undermines the valuable nutrients present in food waste. In addition, fertilisers generated were sent for SGH Landscape.

CONCLUSION

Proper management of food waste promotes environmental sustainability and reduced general waste for incineration, lowering carbon footprints. Valuable nutrients from uneaten food are cycled back into production process in the form of sustainable and functional agricultural ingredients used locally in farms. Hence, decreasing the dependency on imported feed material. Overall, this initiative raises greater possibility for the treatment of various types of food waste that have yet been explored for valorisation.



FOOD WASTE GENERATED FROM KITCHEN MAKES UP **~19%** OF SGH GENERAL WASTE



\$70,034 IS SPENT TO INCINERATE WASTE GENERATED IN KITCHEN PER YEAR

Valorisation Process



Food Waste Data (Sep 23 - Apr 24)

