



HaPPE Earth, founded by Dr Mary O’Riordan and Lisa O’Riordan has developed a novel innovative compostable PPE product, the HaPPE Apron. HaPPE Earth helps the healthcare industry make the shift from single use plastic consumables to medically approved compostable alternatives to reach their sustainability goals. Dr Mary O’Riordan explained her motivation in developing this product: *“As a result of COVID-19, it became very important to me and my co-founders that we take immediate steps to tackle the single use plastic increase due to PPE usage, and so HaPPE Earth was born.”*



## About Health Innovation Hub Ireland

Health Innovation Hub Ireland (HIHI) was established by the Department of Business, Enterprise and Innovation and the Department of Health and is supported by Enterprise Ireland (EI) and the Health Service Executive (HSE) to drive collaboration between the health service and enterprise. We offer companies the opportunity for pilot and clinical evaluation studies and we provide the health service access to innovative products, services and devices that they may not otherwise be exposed to.

HIHI is built on the recognition that collaboration with enterprise can benefit patient care, patient pathways

and outcomes. We assess all concepts for healthcare innovation from those on the frontline – from clinician to porter. We encourage healthcare professionals to get in touch with HIHI if they have an idea or solution to how something in your job might work better.



## The Healthcare Challenge

There is increasing global pressure at an economic, environmental and regulatory level to reduce single use plastics. At present, only 10% of healthcare plastic is recycled.

During 2020, Ireland used 70 million and England 900 million PPE aprons. Billions of PPE aprons are used globally each year. The global market is still 98% **Low-density polyethylene** (LDPE) usage with very little in the way of credible alternatives.

This usage is set to continue year on year causing significant environmental and long term health harms.

Responding to this problem Dr Michael Ryan, Executive Director, WHO Health Emergencies Programme explained: *“It is absolutely vital to provide health workers with the right PPE. But it is also vital to ensure that it can be used safely without impacting on the surrounding environment.”*





# The Healthcare Solution

The HaPPE Apron is CE approved for use in healthcare. The HaPPE Apron protects healthcare staff and adheres to water repellence, density and tensile strength of current LDPE single use apron. However, in contrast to the LDPE apron currently being used in healthcare, the HaPPE Apron is **entirely compostable**. The standard LDPE apron, used across healthcare takes about 50 years to degrade whereas the HaPPE apron composts in just 5 weeks with **zero toxic residue**.

The HaPPE apron is made from HaPPE Proprietary Resin composed of an

innovative family of compostable materials. Initial calculations on the compostable HaPPE apron sees a reduction of 75% in CO<sub>2</sub>e (CO<sub>2</sub> emissions) when compared to the standard LDPE single use apron due to:

- compostable resin (lower CO<sub>2</sub>e in the manufacture of the resin)
- localised manufacturing
- localised transport
- no waste in the manufacturing process (all off cuts are reusable)
- manufacturing plant using sustainable energy sources for production.

## HIHI Role

The objective of this pilot was to assess the usability, durability and acceptability of the HaPPE apron with users in hospital settings by inviting healthcare and catering staff to use the HaPPE aprons in their normal duties. HIHI conducted pilots in hospitals and nursing home settings in the South Infirmary Victoria University Hospital (SIVUH) in Cork and Tallaght University Hospital (TUH) in Dublin and Brindley Manor Nursing Home in Donegal, part of the Orpea group.

HIHI supported this project by assisting the project team to engage with stakeholders, collecting and analysing feedback and usage data and providing project management expertise during the project.



## Impact on Healthcare

The HaPPE aprons were well accepted by the hospital staff. They were very satisfied with the usability and durability of the HaPPE apron. The results of the pilot can be summarised as follows:

- the staff would prefer to use compostable aprons
- the staff were confident in the performance of the HaPPE apron
- the HaPPE apron is more breathable and a better fit
- the HaPPE apron is easy to remove from the wearer
- the HaPPE apron is easy to separate from the roll.

The HaPPE Aprons are not only preferred by the staff but they are also good for the environment. In a typical year pre-pandemic, SIVUH used over 150,000 LDPE aprons. Every standard Low-density polyethylene (LDPE)

apron has a carbon footprint of 95g CO<sub>2</sub>e, which means 14.25 tonnes CO<sub>2</sub>e is produced by LDPE aprons in one year in SIVUH. If these aprons were replaced by the HaPPE Aprons, the impact would be a reduction of over 10.5 tonnes CO<sub>2</sub>e per year, which is the equivalent to driving 63,000 km in a diesel car.

Dr Ruth Lernihan, Director of Nursing and Chair of Green Committee in SIVUH recognising this potential said "sustainability is an essential part of our lives... a significant advantage of the HaPPE apron is that it is compostable and biodegradable thus reducing the waste burden to the non-clinical waste streams in healthcare and also it aligns with Green Procurement guidance... using the HaPPE apron will assist us to minimise negative impacts on the environment and creates an opportunity to promote and lead on improvements in sustainability in healthcare."

## Testimonial

*"It was such a fantastic experience for HaPPE Earth to be part of the Health Innovation Hub Ireland (HIHI). To see our compostable apron being used by frontline staff in the Irish Health Service and to get such support from the HIHI team was invaluable to us. It is through collaboration like this that we bring practical solutions to our health system. The HIHI programme is extremely well organized and supportive. We were delighted to be part of it and would encourage other innovative companies to participate. We give it a big HaPPE highly recommended."*

Dr Mary O'Riordan,  
Co-founder, HaPPE



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