



Case Study

University Hospitals Plymouth NHS Trust

Overview

How a leading NHS Trust in the south west of England is using air quality monitoring systems from EarthSense to help address air pollution challenges and achieve Clean Air Hospital status.

The Challenge

UHP is committed to safeguarding the health and well-being of its patients, staff and the local community. As part of its Green Plan, the Trust aimed to closely monitor and optimise air quality levels, and make improvements where necessary.

By collecting and using this air quality data, the Trust planned to work with suppliers, patients and staff to develop clean air initiatives and pollution prevention schemes.

The Solution

To provide air quality monitoring in and around Derriford Hospital, the largest specialist teaching hospital in the south west peninsula and the region's major trauma centre, UHP selected EarthSense, the air quality expert.

As part of its efforts to become a Clean Air Hospital, UHP deployed four EarthSense Zephyr® monitors and the company's data



access web application, MyAir® to better understand air quality at key locations around the Derriford Hospital site.

UHP installed three external air quality monitors, located near potential sources of air pollution: the main entrance, which has a large bus interchange; near the onsite incinerator; and outside the goods-in department. An indoor monitor, located in the emergency department, helped UHP to understand the impact of ambulances idling just outside the entrance, in the ambulance courtyard.

Outcomes

The study of air pollution levels in and around Derriford Hospital over the course of 12 months measured a range of pollutants, including oxides of nitrogen (NO, NO₂), ozone (O₃), and particulate matter of varying sizes (PM₁, PM_{2.5} and PM₁₀). These pollutants - often associated with vehicle emissions and urban activity - are known to contribute to, or exacerbate, respiratory conditions like asthma, making ongoing monitoring in healthcare settings particularly important.

Through the assessment of this air pollution data, UHP was able to scientifically demonstrate that the air is of good quality, and that it meets the standards necessary to ensure a safe environment for patients and staff.

This study also supported the Trust's ongoing progress towards an 'excellent' score in the Clean Air Hospital Framework, as set out in its Green Plan.



Quotes

Kirsty Wavish, Sustainability Manager at UHP said: "There is no doubt that cleaner air in and around the hospital can impact the health of patients and staff. Some pollutant particles such as sulphur dioxide and nitrogen dioxide are small enough to inhale and they cause significant harm when breathed in. Such particulates are known to cause inflammation of the lungs, decreased lung function, aggravated asthma and irritation to the nose and throat lining. By working with EarthSense, the hospital gained access to real-time, granular air quality data, enabling informed decision-making and the implementation of targeted interventions to improve air quality conditions.

"The project has significantly contributed to our understanding of the air quality at UHP and the work we need to do to become a Clean Air Hospital. The data collated has been reassuring to know for a healthcare environment, however, we can always do more, such as encouraging patients, visitors and staff to opt for sustainable ways to travel to our sites, and working with our suppliers and contractors to ensure they take into account clean air when operating on or delivering to our sites.

Long Term Benefits

The deployment of EarthSense's Zephyr® monitors and the MyAir® application is aligned with UHP's Green Plan, which sets out to achieve net zero carbon emissions by 2040 for the emissions it controls, and 2045 for indirect emissions. As a whole, the NHS has set ambitious sustainability targets, recognising the need as an organisation to act responsibly, reduce climate impact and ensure sustainable systems are in place going forward.

Selected findings from the air pollution research were presented as part of a wider air quality project at the international Clean Air Conference in October 2024. It could also help to establish a foundation for potential future research and funding opportunities at UHP.

"The Clean Air Hospital Framework sets out six categories including travel, procurement, design and construction, energy, air quality and leadership, all of which include actions to complete to contribute to a cleaner and healthier environment. Some of these actions have already been put in place and progress to hit the 'excellent' target is monitored on a regular basis. Many of these actions will also reduce our carbon footprint, getting us closer to the net zero carbon emissions by 2040 set by the NHS."



The Future

Under the Clean Air Hospital Framework, UHP will continue to use air pollution data to inform considerations around what time deliveries are dropped off, where ambulances drop off, construction methods, dust and a drive for zero emission transport.

UHP is now looking at the impact of construction projects. Following the award of Government funding for a new £200 million state-of-the-art Emergency Care Building at Derriford Hospital, air pollution levels will also be measured during the process of demolishing existing buildings on site and the construction of the new building.

Get in Touch

info@earthsense.co.uk

www.earthsense.co.uk