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Partneriaeth Cydwasanaethau
Shared Services Partnership

Clean Room Decontamination

LESSONS FROM THE INTRODUCTION OF IONIZED HYDORGEN PEROXIDE

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Background

- USA 2001 Anthrax attacks
- Five dead and dozens of buildings contaminated
- IHP developed in response funded by the U.S. Defense Advanced Research Projects Agency (DARPA) in preparation for possible future attacks
- After the attacks, IHP began to establish itself in a more mainstream capacity with registration as a Hospital-Healthcare disinfectant with exceptional efficacy against viral pathogens beyond Anthrax

iHP - How does it work?

- Process begins with a low concentration hydrogen peroxide (less than 8%) solution
- Cold plasma technology used ionize the solution creating highly reactive hydroxyl radicals – potent oxidisers
- Ionized particle is about **2 microns** in size and will move around the room like a gas and float into cracks and crevices much more effectively than a larger particle
- Almost immediate kill time
- Decomposes to water and oxygen

Why are we using iHP?

- Existing methods
  - Time consuming and operator dependent
  - Cleaning agents require specific contact time and leave residue
  - Corrosive
  - Health and Safety
  - Difficult to assess
  - Loss of production capacity
  - Expensive - > £500k / year across Wales
- iHP
  - Can achieve 6-log reduction (99.9999%) and is quantifiable
  - Semi-automated
  - Non-corrosive – breaks down into water and oxygen

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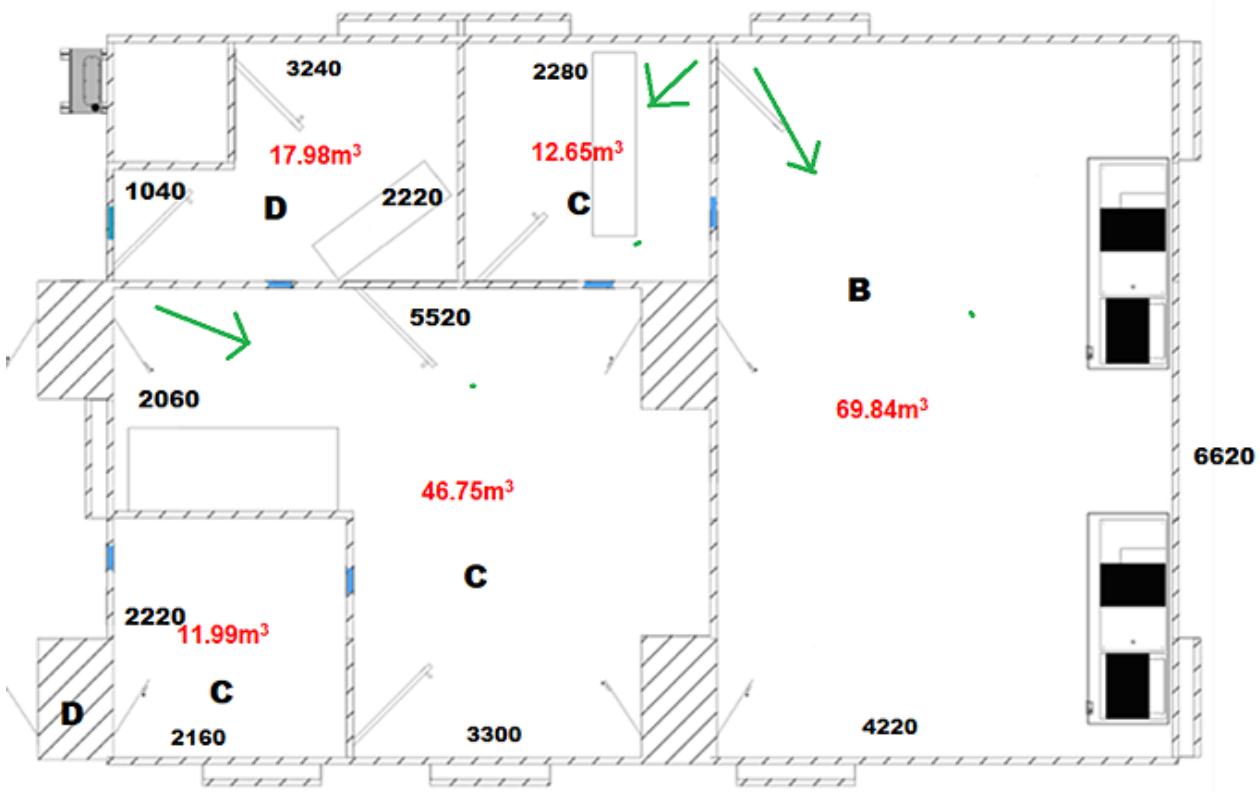
IN 2019 THE WELSH GOVERNMENT SET THE TARGET DATE OF 2030 FOR NET ZERO FOR PUBLIC SERVICES

iHP validation

- Minimum three successful cycles
- Cycle determined by pre-programmed parameters
- Aeration study
- Enzyme indicators – instant results
- Biological indicators – 7+ days
- Routine monitoring
- Validation commenced across 3 different sites

iHP applicator locations



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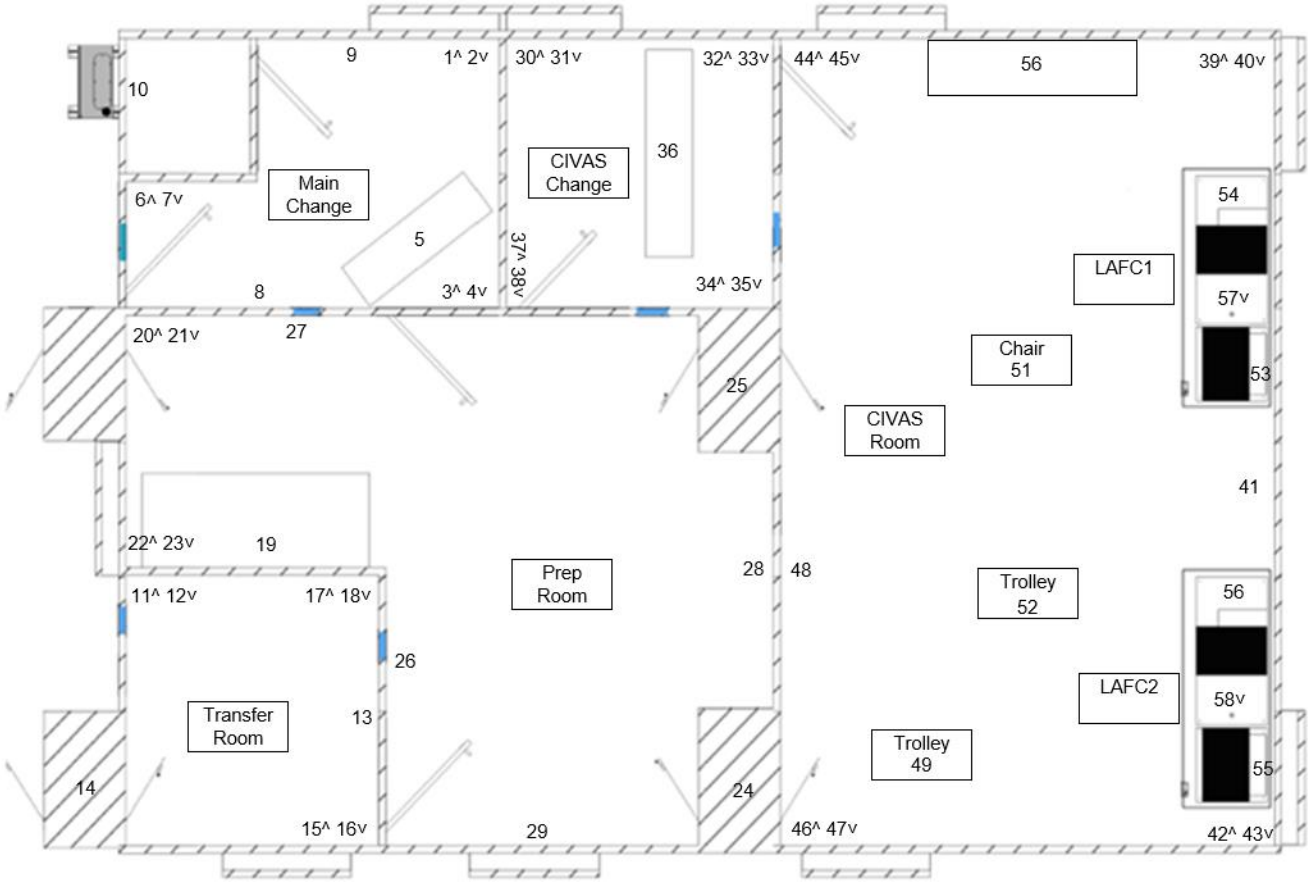
Enzyme and biological indicator positions



iHP set-up

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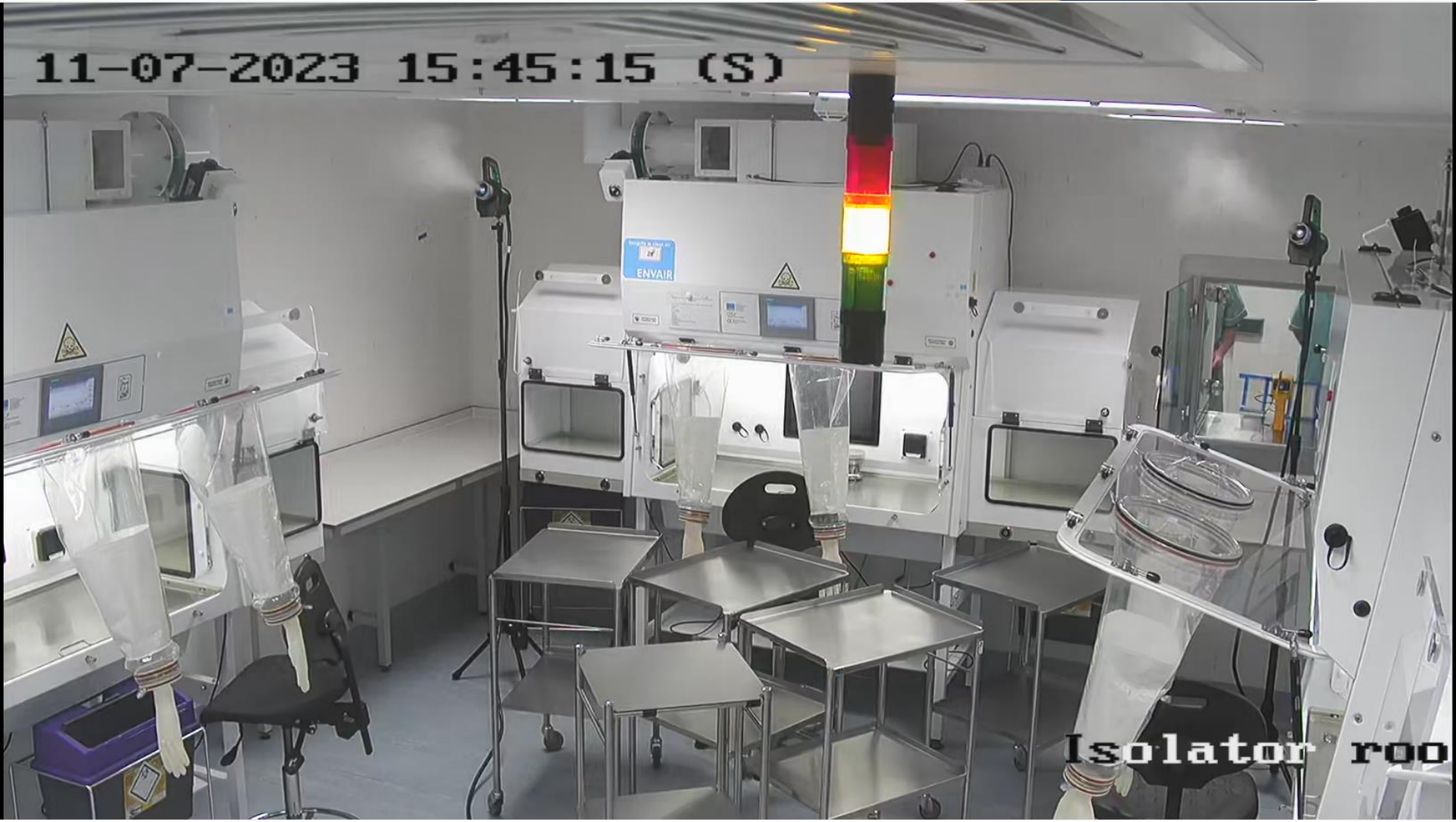

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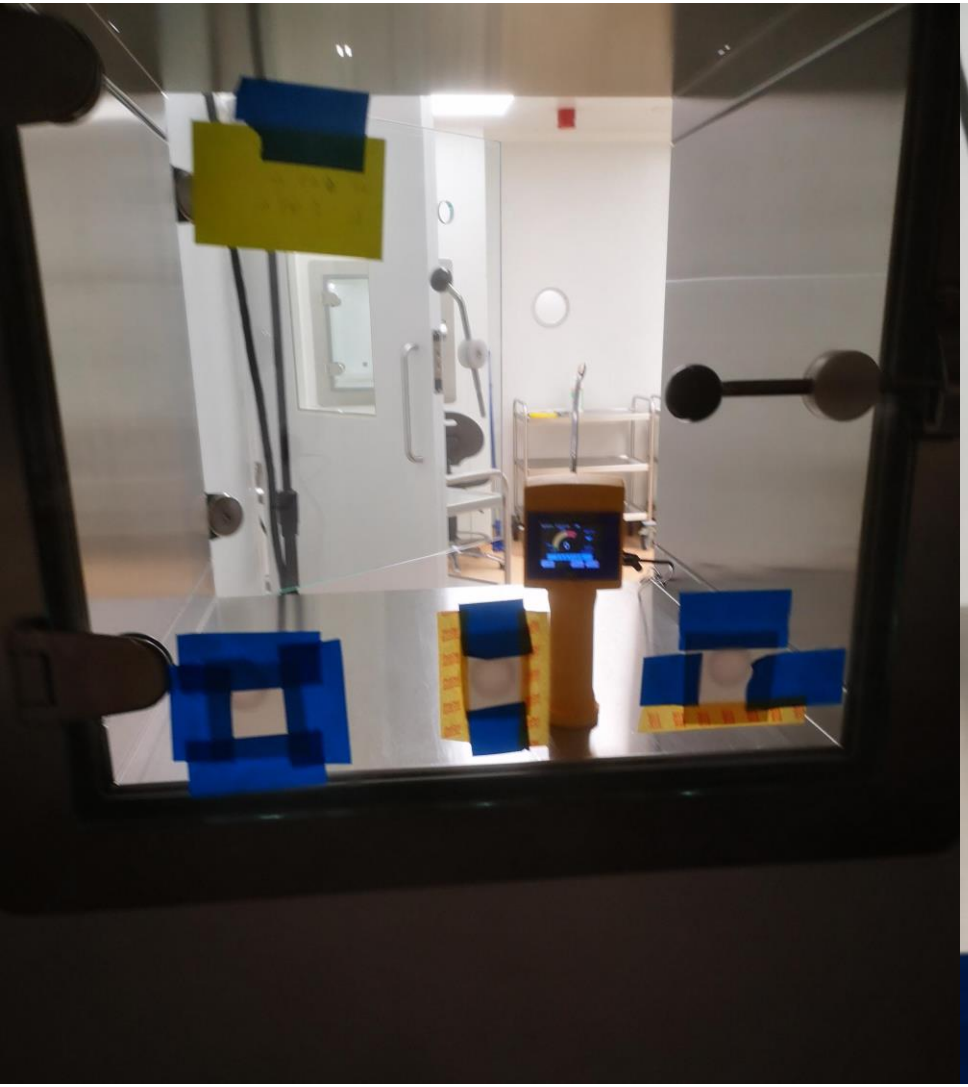


PortaSens III
03/15/23
9:57:36 am
66°F
0
PPM
H2O2
CAUTION
Off
Menu
Log

What have we learnt?

- Practical considerations:
  - Power supply
  - Fire alarms, HVAC
  - BiT solution volume will determine treatment area
  - Building factors – size, layout, vent location
  - H202 detector positioning
  - H_20_2 seepage
  - PPE – FFP3 masks
  - Laboratory capacity – BI incubation
  - EI analysis

What have we learnt?

- Cycle considerations:
  - Aeration
  - Starting with 15% greater volume of BiT solution
  - Air supply factors
  - Temperature and humidity factors
  - Building factors – modular vs bricks and mortar
  - Time factors – ordering, planning, room preparation
  - Location of indicators and orientation

What next?

- Complete validation cycles
- Determine exact place in cleaning programme – monthly?
- Investigate residual effect
- Business case for second SteraMist
- Validate other sites and train staff
- Source EU supply of BiT solution
- Annual revalidation