



“Can Commercial Air Disinfection Systems Improve Workplace Health?”

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Name	Price(USD)	Ease of installation	Cost of Use Per Month	Disinfection	Total Score
SCUVA T400	734.77 (2 pts)	Plug in, power on (2 pts)	8 hours a day \$1.47 (2 pts)	94% (1 pts)	7
Dakota Safety CASPR Pro Duct Mount	1500 (2 pts)	2	24 hours a day \$3.37 (0 pts)	94% (1 pts)	5
Dakota Safety CASPR Blu Tile	1700 (1 pt)	1	24 hours a day \$0.94 (3 pts)	84% (0 pts)	4
Grainger Ceiling Mounted Germicidal UV-C	1777.25 (1 pt)	1	24 hours a day \$6.78 (0 pts)	92% (1 pts)	3
UV Light Solutions Wall Mount Upper-Air UV Light	1069 (2 pts)	1	8 hours a day \$2.50 (1 pt)	95% (2 pts)	6

Introduction:

Mishap Prevention and Hazard Abatement (MPHA) wants to create a repository of disinfection technologies against contagions, including COVID-19. This project aims to give the Navy more tools to improve defense against future pathogens.

Project Objective:

Assess 5 different disinfection systems, two using hydrogen peroxide (H₂O₂) and three using ultraviolet C (UV-C) light. We ranked them based on:

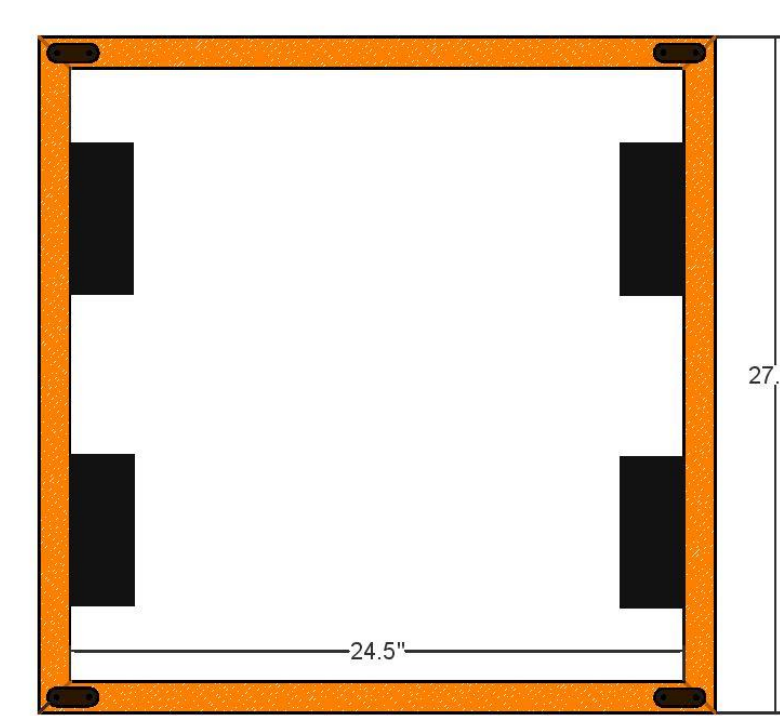
- Safety
- Cost
- Ease of installation and use

The testing site, a classroom in NBVC Port Hueneme Building 325, was chosen by the sponsors.

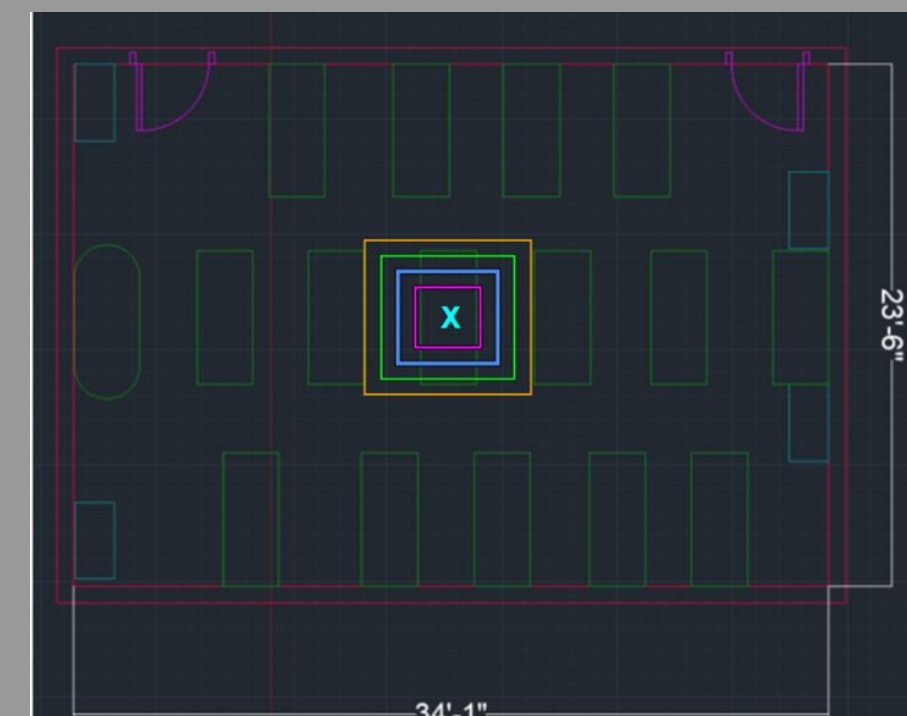


Results / Accomplishments / Next Steps:

- The SCUVA T400 was the best overall with our unique scoring system.
- In the future this project could be used to assist with implementation of these systems into populated buildings
- Our project gives insight to future interns on how to perform successful biological experiments



Left: CAD 2D drawing of frame for ceiling mount



Right: Zoning concept for SCUVA T400

Interns utilized a zoning method to measure effectiveness at different distances from the systems.



Figure 2. Test materials from left to right: UVC Dosimeter Cards, HPC Total Count test, Agar Contact Plate, H₂O₂ Detection Tube

1. What are you most proud of this summer [with respect to your experience/project]?

What we are most proud of with our experience over the course of summer is our ability to come together as a team to demonstrate our capability of making plans, adapting, and meeting critical deadlines set for our project.

2. Why was the internship valuable?

This internship was valuable for multiple reasons, first being that we were directly exposed to work experience relating to the engineering field. Second, the work experience that came from this opportunity will be great for our personal resumes. Lastly, the connections to people in the office for potential internship or career opportunities in the future.

3. Advice for future cohorts?

Our advice for future cohorts is to be patient with the entire process. Whether it is acquiring CAC, computer licenses, ordering parts, or awaiting a work order approval, all tasks on the base take time to get accomplished. As such, plan accordingly!



Left: Testing set up for UV Light Solutions system. Right: Incubated samples from SCUVA T400 testing.

Acknowledgements

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