Testing & Efficacy

The UVC Science, Inc. technology was first validated through an academic study at the University of Nevada, Reno (UNR), and further tested by independent third-party labs in real-world commercial environments. These rigorous evaluations confirm the performance and reliability of our advanced UVC-LED technology. Below is a summary of the key results, demonstrating the Tryclops' unmatched ability to sterilize air and surfaces effectively.

University Testing

- **Conducted by**: Department of Microbiology and Immunology, University of Nevada, Reno (2021).
- **Objective**: Assess efficacy against SARS-CoV-2.
- **Conditions**:
  - Tested at 3 feet (36 inches) and 5 feet (60 inches).
  - Exposure times: 8, 25, and 55 seconds.
- **Results**:
  - Achieved **complete inactivation of SARS-CoV-2** across all conditions.
  - Highlighted advantages over mercury lamps, including rapid disinfection, higher safety, and superior performance at germicidal wavelengths.

Third-Party Testing

- **Lab**: Innovative Bioanalysis, Costa Mesa, CA.

Chamber Test (September 2024)

- **Setup**:
  - Conducted in a 1,980-cu ft chamber (11' x 22' x 8') simulating a commercial office environment.
  - Aerosolized pathogens introduced upstream in a 10-inch duct, with the Tryclops positioned 8 feet downstream.
- **Results**:
  - **SARS-CoV-2**: 99.991% reduction in 60 minutes.
  - **MRSA**: 99.998% reduction in 60 minutes.
  - Over 81% reduction achieved within the first 15 minutes.

Single-Pass Test (December 2024)

- **Setup**: Simulated real-world airflow conditions with identical duct size and airflow rates.
- **Results**:
  - **MRSA**: 99.93% reduction in ~1 second.
  - **Influenza A**: 98.74% reduction in ~1 second.
  - **Streptococcus**: 99.64% reduction in ~1 second.
  - **C. difficile**: 43.31% reduction, effectively addressing resilient pathogens.

Conclusion

The Tryclops' proven ability to deliver rapid and reliable disinfection makes it a revolutionary solution for sterilization across healthcare, commercial, and industrial settings.

Explore the following graphs and data to discover the full results, operational insights, and projections for addressing Mold and Fungi.

TRYCLOPS EFFICACY TESTING RESULT - CHAMBER TEST

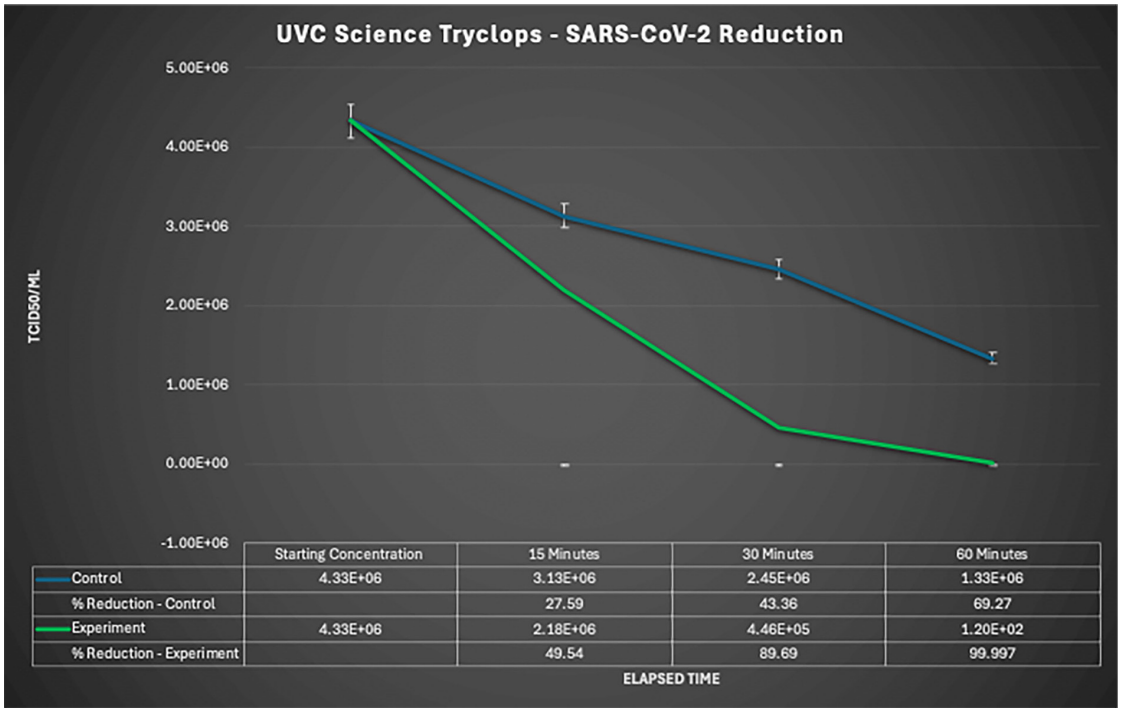
Innovative BioAnalysis Laboratories

CAP Lic No - 8860298

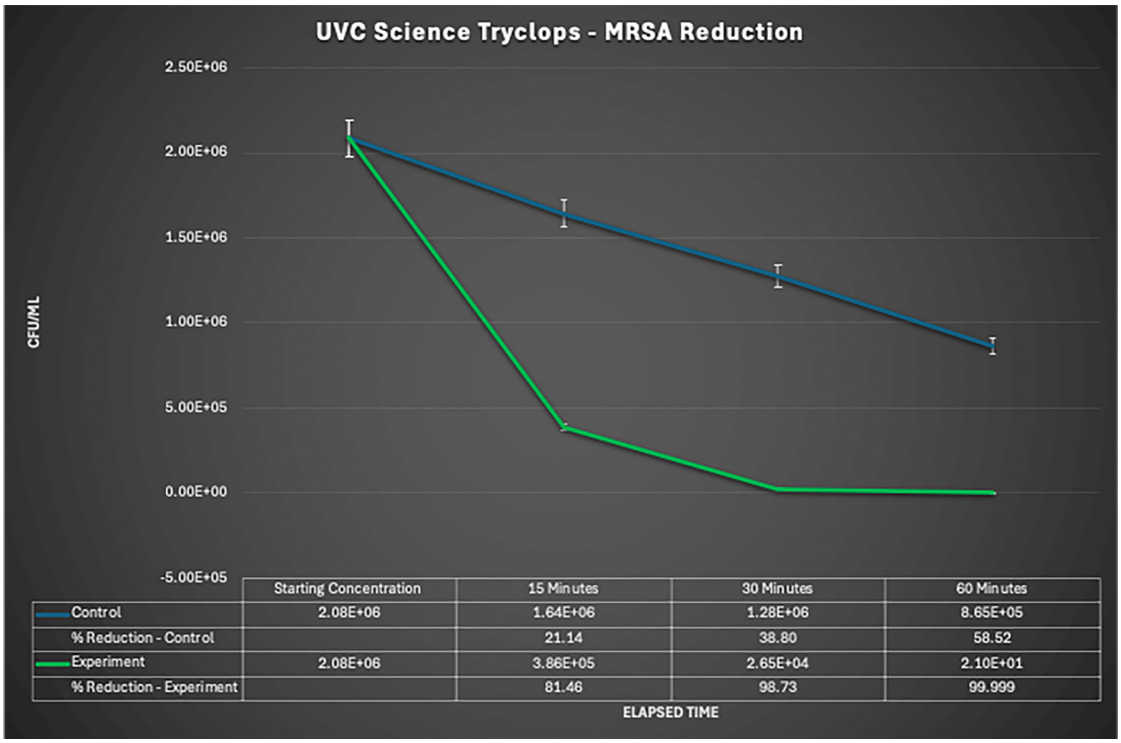
CLIA Licensed - 05D0955926

State ID – CLF 00324630

Tryclops reached a 99.99% (4+ log) gross and net reduction for SARS-CoV-2 and MRSA. September 2024



	Starting Concentration	15 Minutes	30 Minutes	60 Minutes
Control	4.33E+06	3.13E+06	2.45E+06	1.33E+06
% Reduction - Control		27.59	43.36	69.27
Experiment	4.33E+06	2.18E+06	4.46E+05	1.20E+02
% Reduction - Experiment		49.54	89.69	99.997



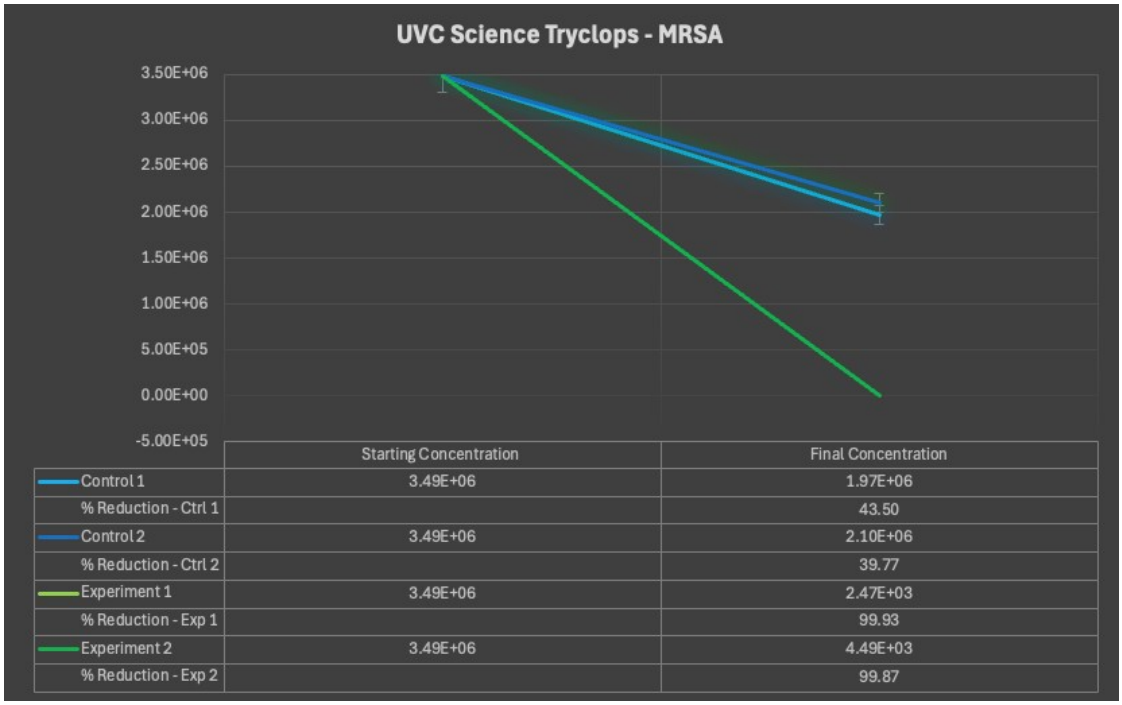
	Starting Concentration	15 Minutes	30 Minutes	60 Minutes
Control	2.08E+06	1.64E+06	1.28E+06	8.65E+05
% Reduction - Control		21.14	38.80	58.52
Experiment	2.08E+06	3.86E+05	2.65E+04	2.10E+01
% Reduction - Experiment		81.46	98.73	99.999

TRYCLOPS EFFICACY TESTING RESULT - SINGLE PASS TEST

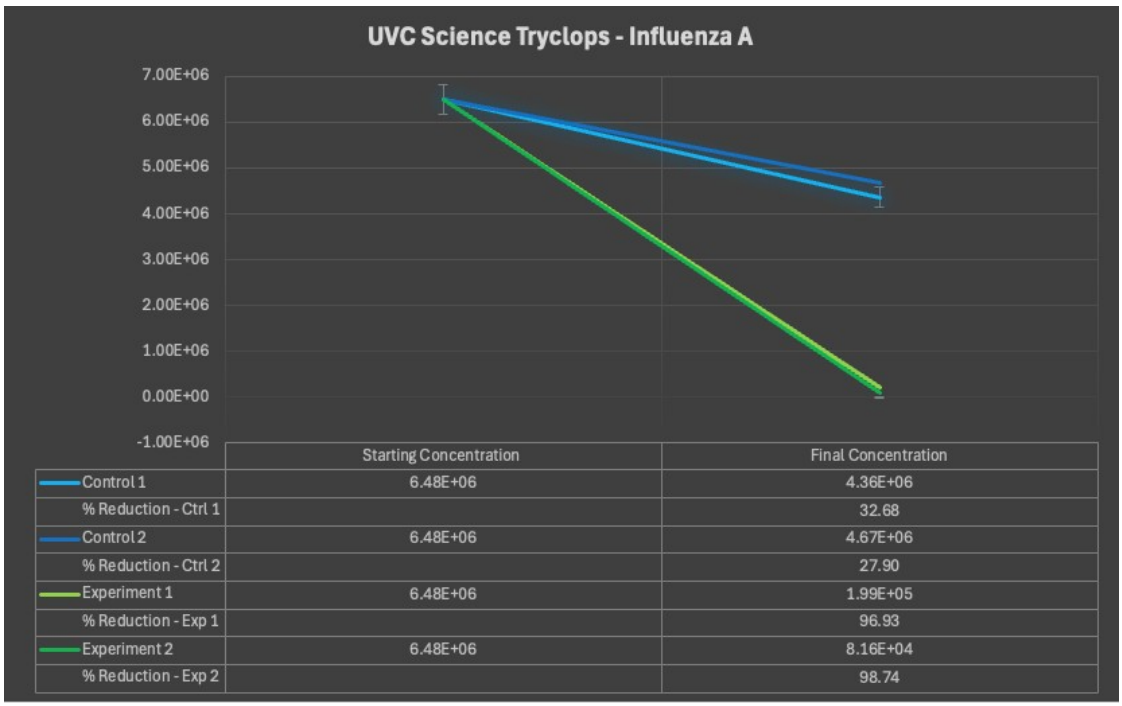
Innovative BioAnalysis Laboratories

CAP Lic No - 8860298
CLIA Licensed - 05D0955926
State ID – CLF 00324630

Tryclops achieved 99.93% gross and 99.87% net reduction for MRSA, 98.74% gross and 96.93% net reduction for Influenza A, all in about 1 second during single-pass tests conducted under real-world airflow conditions. December 2024



	Starting Concentration	Final Concentration
Control 1	3.49E+06	1.97E+06
% Reduction - Ctrl 1		43.50
Control 2	3.49E+06	2.10E+06
% Reduction - Ctrl 2		39.77
Experiment 1	3.49E+06	2.47E+03
% Reduction - Exp 1		99.93
Experiment 2	3.49E+06	4.49E+03
% Reduction - Exp 2		99.87



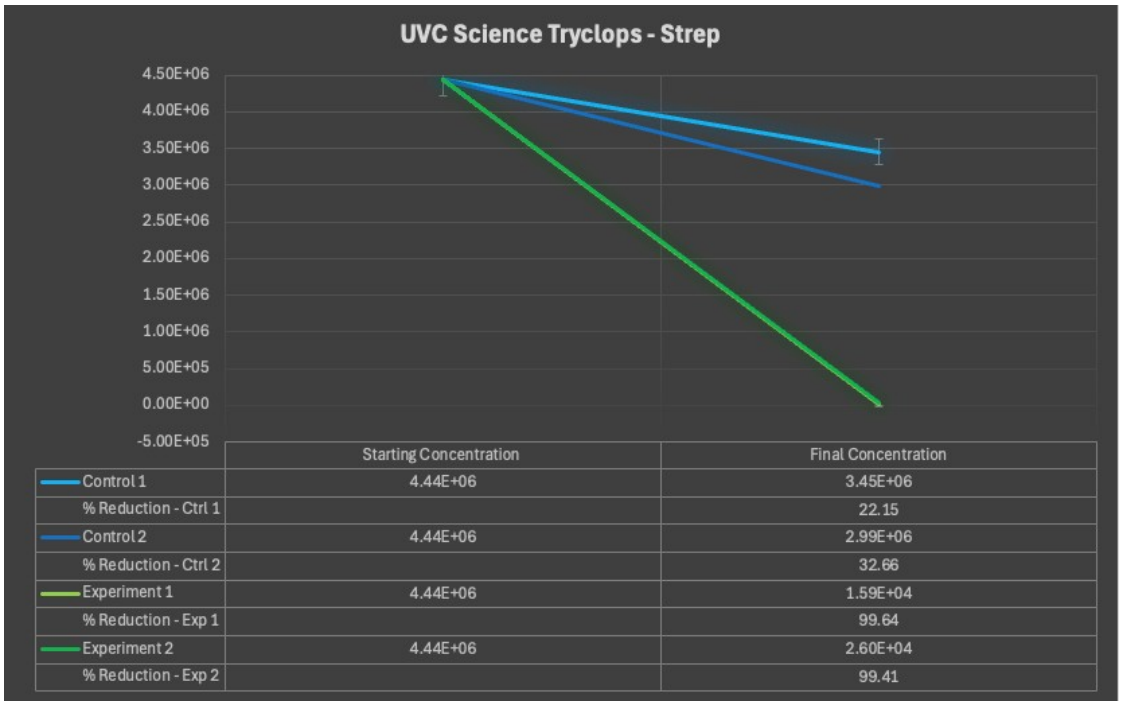
	Starting Concentration	Final Concentration
Control 1	6.48E+06	4.36E+06
% Reduction - Ctrl 1		32.68
Control 2	6.48E+06	4.67E+06
% Reduction - Ctrl 2		27.90
Experiment 1	6.48E+06	1.99E+05
% Reduction - Exp 1		96.93
Experiment 2	6.48E+06	8.16E+04
% Reduction - Exp 2		98.74

TRYCLOPS EFFICACY TESTING RESULT - SINGLE PASS TEST

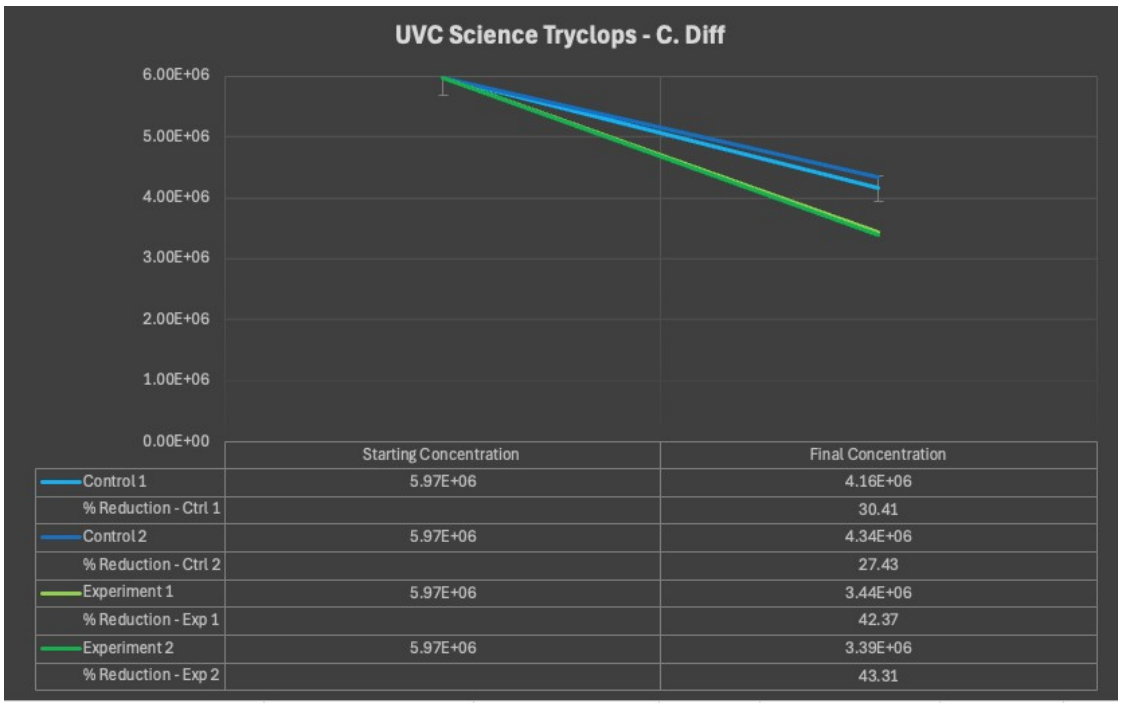
Innovative BioAnalysis Laboratories

CAP Lic No - 8860298
CLIA Licensed - 05D0955926
State ID – CLF 00324630

Tryclops achieved 99.64% gross and 99.41% net reduction for Streptococcus, and 43.31% gross and 42.37% net reduction for C. difficile, all in about 1 second during single-pass tests conducted under real-world airflow conditions. December 2024



	Starting Concentration	Final Concentration
Control 1	4.44E+06	3.45E+06
% Reduction - Ctrl 1		22.15
Control 2	4.44E+06	2.99E+06
% Reduction - Ctrl 2		32.66
Experiment 1	4.44E+06	1.59E+04
% Reduction - Exp 1		99.64
Experiment 2	4.44E+06	2.60E+04
% Reduction - Exp 2		99.41



	Starting Concentration	Final Concentration
Control 1	5.97E+06	4.16E+06
% Reduction - Ctrl 1		30.41
Control 2	5.97E+06	4.34E+06
% Reduction - Ctrl 2		27.43
Experiment 1	5.97E+06	3.44E+06
% Reduction - Exp 1		42.37
Experiment 2	5.97E+06	3.39E+06
% Reduction - Exp 2		43.31

UV-C Sterilization Time Calculations: Sustained Operation Insights for SARS-CoV-2, MRSA, Mold, and Fungi

Sustained Operation Times

In sustained operation, the system neutralizes newly introduced pathogens in a steady-state environment with significantly lower pathogen concentrations.

SARS-CoV-2:

- Continuous operation would require **~2-5 minutes per air change** to neutralize newly introduced pathogens.
- With **8.1 ACH (air changes per hour)**, maintaining a **99.99% reduction** requires **~15-20 minutes** in total.

MRSA:

- MRSA reduction is efficient in sustained operation, requiring **~2-5 minutes per air change**, similar to SARS-CoV-2.
- Total time for **99.99% reduction** in a pathogen-depleted environment is **~15-20 minutes**.

Mold & Fungi:
Although the Tryclops UVC system has not yet been directly tested on mold and fungi, data from both the chamber and single-pass tests for SARS-CoV-2 and MRSA suggest it would be highly effective against these pathogens, despite their higher UV-C resistance.

- **Startup Phase:** Mold and fungi are projected to require **~3 hours** to achieve **99.99% reduction (complete sterilization)** in a 1,980 ft³ chamber with a 10-inch duct at 490 fpm.
- **Sustained Operation:** After initial sterilization, mold spore killing time is estimated to reduce to **~45-60 minutes per air change**, assuming continuous operation and proper air mixing.

Summary of Results

Pathogen	Initial Sterilization Time	Sustained Sterilization Time
SARS-CoV-2	~60 minutes	~2-5 minutes per air change (~15-20 minutes total)
MRSA	~60 minutes	~2-5 minutes per air change (~15-20 minutes total)
Mold & Fungi	~180 minutes (3 hours)	~45-60 minutes per air change (~3 hours total)

Key Takeaways

- **SARS-CoV-2 and MRSA** are highly responsive to UV-C exposure, achieving near-complete neutralization in minimal time during both initial and sustained operation phases.
- **Mold and fungi**, due to their higher UV-C resistance, require slightly longer exposure during both startup and sustained operation, though the Tryclops is projected to effectively reduce these pathogens.
- **Sustained operation** ensures consistent pathogen reduction by efficiently neutralizing newly introduced contaminants with dramatically shorter sterilization times compared to the startup phase.