

Water Testing Equipment Efficacy Data

UV-C Decontamination Unit - Efficacy Validation Report

Rationale

UV-C light breaks down nucleic acid inside micro-organism's DNA, impairing vital cellular function. Therefore, UV-C light can be used to disinfect equipment without the need for time consuming boil baths or autoclaving techniques (typically 90 minutes).

Aim

To determine the effectiveness of UV-C Decontamination unit for funnels used in execution of water sample testing methods.

Method

- Magnetic funnels were used for validation as they are more durable than the disposable funnels currently in use.
- The Funnels were rinsed inside with a mixture of water sources including treated, part treated and raw water source.
- Where appropriate, samples were spiked with raw water or target organisms.
- Once rinsed, the funnels were exposed to UV-C light at a range of different exposure times to find the most effective exposure time.
- After UV-C exposure, the funnels were placed on a manifold and had 100ml of sterile de-ionised water passed through it onto a nitro-cellulose membrane.
- Tests using 100ml of sterile de-ionised water placed the nitro-cellulose membrane onto MLGA agar and then incubated.
- Any colonies observed on plates were counted and recorded in the UV-C Decontamination Unit Validation results table.

Date of Test	Water Source (including origin of spike if applicable)	Number of colonies found on MLGA after incubation							
		UV Time 0 Seconds (Count)	UV Time 10 Seconds (Count)	UV Time 15 Seconds (Count)	UV Time 25 Seconds (Count)	UV Time 30 Seconds (Count)	UV Time 45 Seconds (Count)	UV Time 60 Seconds (Count)	UV Time 120 Seconds (Count)
28.05.14	Eg_riv	2	0	0	0	0	0	0	0
28.05.14	Eg_riv	6	0	0	0	0	0	0	0
29.05.14	WW_FN (E.C.RP)*	>100	0	0	0	0	0	0	0
4.06.14	Eg_riv	53	0	0	0	0	0	0	0
4.06.14	Eg_riv	11	0	0	0	0	0	0	0
4.06.14	Eg_riv	6	0	0	0	0	0	0	0
4.06.14	Eg_riv	4	0	0	0	0	0	0	0
4.06.14	Eg_riv	21	0	0	0	0	0	0	0
10.06.14	AF063 (E.C.RP)*	>100	0	0	0	0	0	0	0

* Laboratory stock organisms

Conclusions

- ✓ 100 % Decontamination of target object achieved.
- ✓ UV-C reduces decontamination time from approximately 90 minutes to approximately 30 seconds.