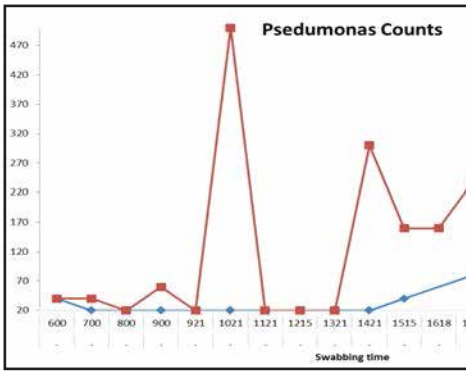
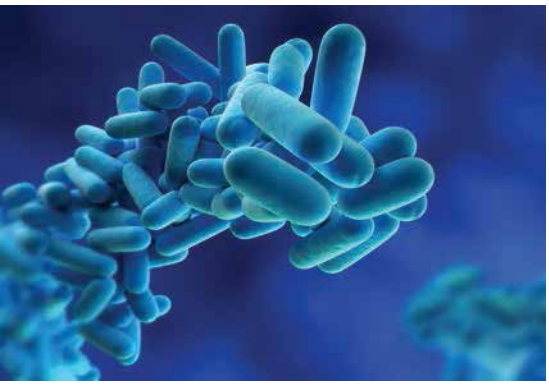
UV Technology Global

Specialists in Decontamination Technologies

Food Industry UV-C Efficacy Trial Data





Extended product shelf life

Improved product quality

Reduced customer complaints

The UK's Leading Provider of UV-C Decontamination Solutions

Effect of UV-C Decontamination on Fruit

UV-C Trial Data	UV-C at 30° C CFU/g	Ecoli CFU/g	Lmonocytogenes CFU/g	Enterobacteriaceae CFU/g	Yeasts CFU/g	Moulds CFU/g	S.aureu CFU/g	Salmonellas CFU/g
Raspberry control	17000	<10	<10	40	2400	98000	<10	-
Raspberry UV-C Treated	100	<10	<10	<10	18	76	<10	-
Log Kill	2.2	-	-	1.0	2.1	3.1	-	-
Raspberry Challenged	-	140000	490000	23000	-	-	590000	64000
Raspberry Challenged UV-C Treated	-	30	24	25	-	-	36	17
Log Kill	-	3.7	4.3	3.0	-	-	4.2	3.6
Strawberry control	1400	<10	<10	<20	2600	600	<10	-
Strawberry UV-C Treated	12	<10	<10	<20	33	28	<10	-
Log Kill	2.1	-	-	-	1.9	1.3	-	-
Strawberry Challenged	-	136000	420000	28000	-	-	52000	51000
Strawberry Challenged UV-C Treated	-	9	66	18	-	-	40	12
Log Kill	-	4.2	3.8	3.2	-	-	3.1	3.6
Grape Control	2500	<10	<10	<20	7800	3900	<10	-
Grape UV-C Treated	<10	<10	<10	<20	24	10	<10	-
Log Kill	3.0	-	-	-	2.5	2.6	-	-
Grape UV-C Challenged	-	128000	490000	31000	-	-	56000	53000
Grape UV-C Challenged UV-C Treated	-	23	50	11	-	-	22	19
Log Kill	-	3.7	4.0	3.4	-	-	3.4	3.4
Blackberry Control	900	<10	<10	<20	4400	2100	<10	-
Blackberry UV-C Treated	<10	<10	<10	<20	12	15	<10	-
Log Kill	2.0	-	-	-	2.6	2.1	-	-
Blackberry Challenged	-	116000	430000	31000	-	-	60000	61000
Blackberry Challenged	-	23	50	11	-	-	30	<10
Log Kill	-	3.7	3.9	3.4	-	-	3.3	4.0

Effect of UV-C Decontamination on Strawberries & Blueberries

UV-C Trial Data	TVC CFU/g	Enterobacteriaceae CFU/g	Yeasts CFU/g	Moulds CFU/g	Lacobacilli CFU/g	Lmonocytogenes CFU/g
Blueberry Control	3.2E+03	<10	2.4E+02	2.4E+03	9.6E+02	-
Blueberry UV-C Treated	<10	<10	2.0E+01	1.0E+01	<10	-
Log Kill	**3.5**	-	**1.1**	**2.4**	**3.0**	-
Blueberry Control EOL	9.1E+08	1.7E+05	5.3E+05	7.2E+10	9.2E+11	-
Blueberry UV-C Treated EOL	7.2E+04	9.0E+01	4.6E+02	7.2E+06	7.1E+07	-
Log Kill	**4.1**	**3.3**	**3.1**	**4.0**	**4.1**	-
Blueberry Challenged Control	-	-	-	-	-	4.10E+06
Blueberry Challenged UV-C Treated	-	-	-	-	-	<10
Log Kill	-	-	-	-	-	**6.6**
Strawberry Control	2.6E+03	<10	9.3E+03	1.3+02	1.9E+03	-
Strawberry UV-C Treated	4.0E+01	<10	3.0E+01	<10	<10	-
Log Kill	**1.8**	-	**2.5**	**2.1**	**3.3**	-
Strawberry Challenged Control	-	-	-	-	-	3.1E+06
Strawberry Challenged UV-C Treated	-	-	-	-	-	<10
Log Kill	-	-	-	-	-	**6.5**

Effect of UV-C Decontamination on Vegetables & Flowers

UV-C Trial Data	UV-C at 30° C CFU/g	Ecoli CFU/g	Lmonocytogenes CFU/g	Enterobacteriaceae CFU/g	Salmonellas CFU/g	Coliforms CFU/g
Nasturtiums	7.32E+05	-	-	6.35E+04	-	-
Nasturtiums	8.17E+02	-	-	1.99E+01	-	-
Log Kill	3.0	-	-	3.5	-	-
Sunflower Shoots Challenged	3.38E+07	-	-	6.30E+05	-	-
Sunflower Shoots UV-C Treated	5.44E+06	-	-	8.58E+04	-	-
Log Kill	0.7	-	-	0.8	-	-
Carrot Baton Challenged	1.35E+06	-	-	1.72E+03	-	-
Carrot Baton UV-C Treated	1.81E+05	-	-	1.48E+02	-	-
Log Kill	0.8	-	-	1.0	-	-
Loose Carrots B2	-	-	-	28000	-	56000
Loose Carrots B2 UV-C Treated	-	<10	-	18	-	100
Log Kill	-	<10	-	3.2	-	2.8

Effect of UV-C Decontamination on Raw Poultry Meat

	TVC's cfu/g	Campylobacter cfu/g	Salmonella cfu/g	Coliforms cfu/g	Pseudomonas spp cfu/g
Breast Meat Control	4.6E+03	ND	ND	1.6E+03	5.2E+06
Breast Meat UV-C Treated	1.4E+02	ND	ND	1.0E+01	5.4E+04
Log Kill	**1.5**			**2.2**	**2.0**
Untreated Breast Meat 'Top' Control	8.2E+07	7.0E+01	ND	1.4E+02	3.1E+04
Breast Meat - 'Top' UV-C Treated	8.9E+03	1.0E+01	ND	1.0E+01	2.1E+02
Log Kill	**4.0**	**0.8**		**1.1**	**2.2**
Untreated Breast Meat 'Bottom' Control	6.1E+06	8.0E+01	ND	8.4E+03	4.9E+04
Breast Meat 'Bottom' UV-C Treated	4.0E+02	1.0E+01	ND	2.0E+01	7.0E+01
Log Kill	**4.2**	**0.8**		**2.6**	**2.8**

(Mean values over 10 samples)	Enterobacteriaceae cfu/g	Campylobacter cfu/g	Salmonella cfu/g	Yeasts cfu/g	Pseudomonas spp cfu/g
P+2 Skinless Breast Control	1.3E+03	4.6E+02	ND	9.3E+03	3.9E+04
P+2 Skinless Breast UV-C Treated	5.5E+01	1.4E+01	ND	5.1E+02	2.8E+01
Log Kill	**1.4**	**1.5**		**1.2**	**3.1**

Effect of UV-C on Inoculated Packaging Material & Food Contact Surfaces

Log reduction cfu/cm2

Packaging Medium	Bacterium	8s Exposure	16s Exposure
Black Polypropolene	C. Jejuni	3.16	3.16
	E. Coli	3.75	3.75
	S. Enteritidis	3.93	3.93
Blue Polypropolene	C. Jejuni	3.44	3.44
	E. Coli	2.21	2.36
	S. Enteritidis	2.26	2.68
Aluminium	C. Jejuni	3.40	3.40
	E. Coli	4.12	4.12
	S. Enteritidis	4.18	4.18
Polyolefin	C. Jejuni	3.78	3.78
	E. Coli	4.28	4.28
	S. Enteritidis	4.07	4.07
Polyvinyl Chloride	C. Jejuni	3.77	3.77
	E. Coli	4.50	4.50
	S. Enteritidis	4.16	4.16
White Polypropolene	C. Jejuni	3.97	3.97
	E. Coli	3.94	3.94
	S. Enteritidis	3.69	3.69
Polyethylene - Polyropelene	C. Jejuni	3.92	3.92
	E. Coli	2.58	2.65
	S. Enteritidis	3.08	3.35
Stainless Steel	C. Jejuni	2.92	2.92
	E. Coli	3.98	3.98
	S. Enteritidis	4.20	4.20
Polyethylene Cutting Board	C. Jejuni	3.36	3.36
	E. Coli	3.39	3.39
	S. Enteritidis	3.55	3.55

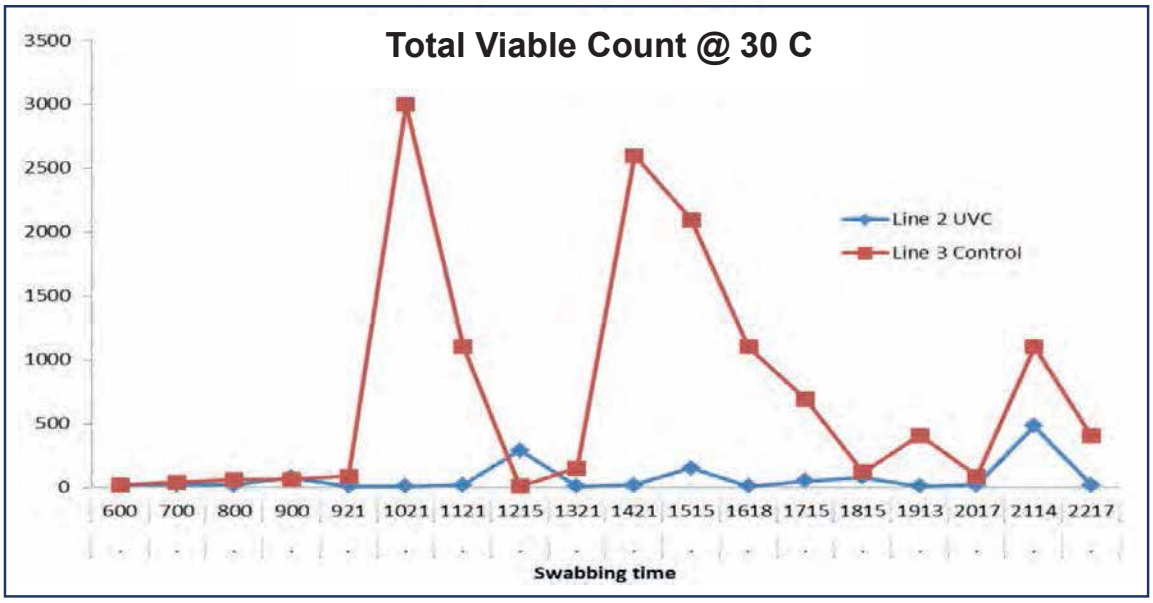
Notes

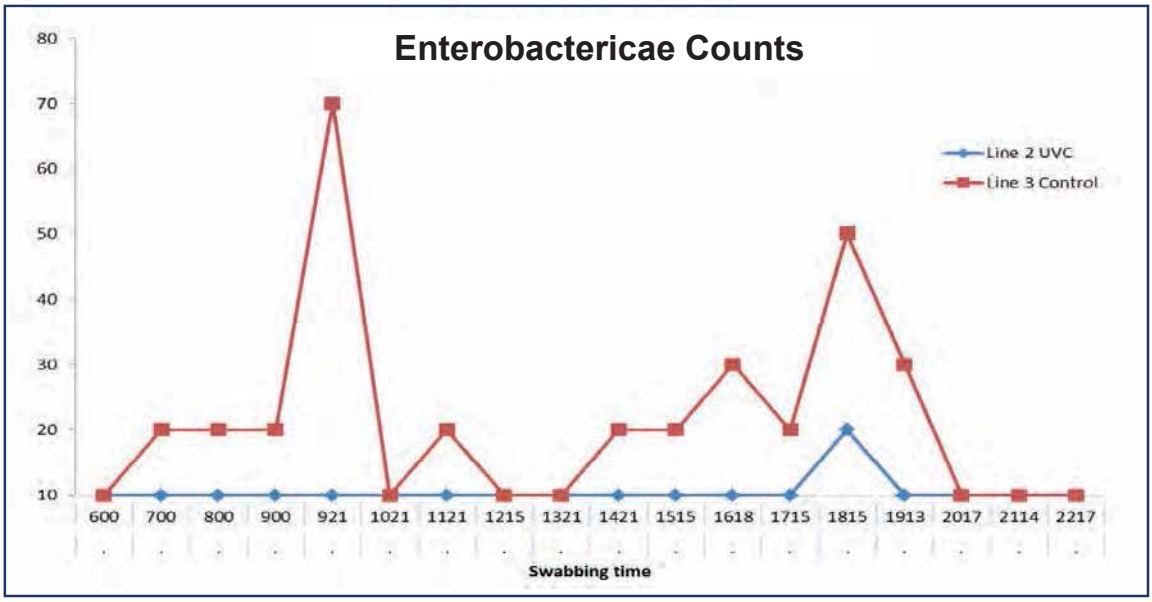
C. Jejuni - Reduction (log10 cfu/cm2) of C. Jejuni inoculated onto packaging & surface materials. UV-C exposure for 8 - 16 seconds @ 6.5 cm from the light source. - Average starting population = 3.5 log10 cfu/cm2

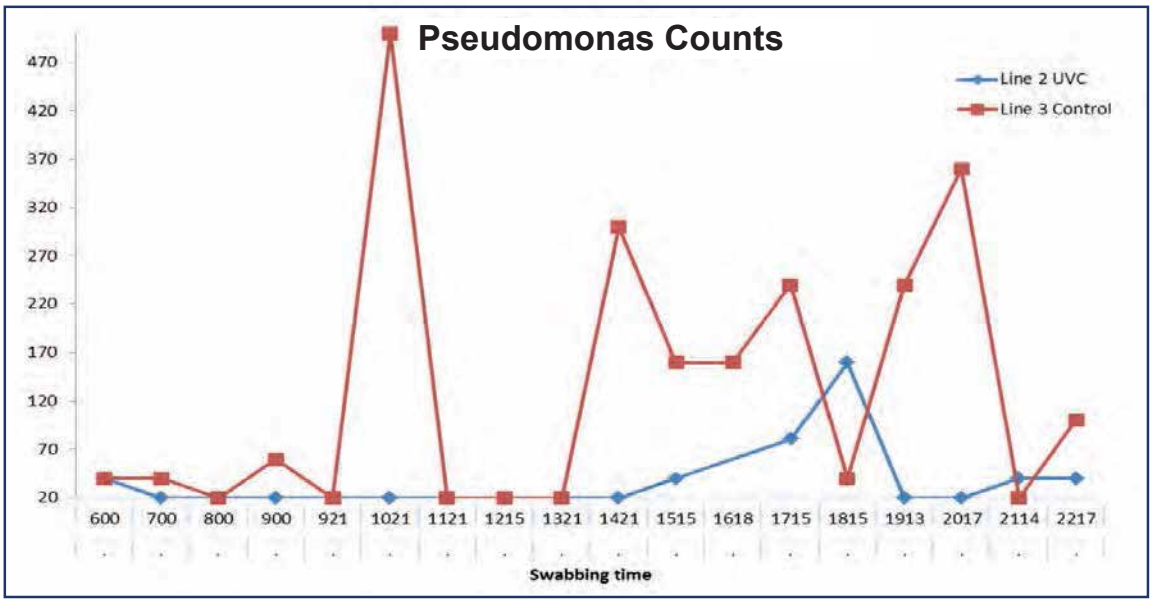
E. Coli - Reduction (log10 cfu/cm2) of E.Coli inoculated onto packaging & surface materials. UV-C exposure for 8 - 16 seconds @ 6.5 cm from the light source. - Average starting population = 4.5 log10 cfu/cm2

S. Enteritidis - Reduction (log10 cfu/cm2) of S. Enteritidis inoculated onto packaging & surface materials. UV-C exposure for 8 - 16 seconds @ 6.5 cm from the light source. - Average starting population = 4 log10 cfu/cm2

Effect of UV-C on Conveyor Belts in a Poultry Processing Plant







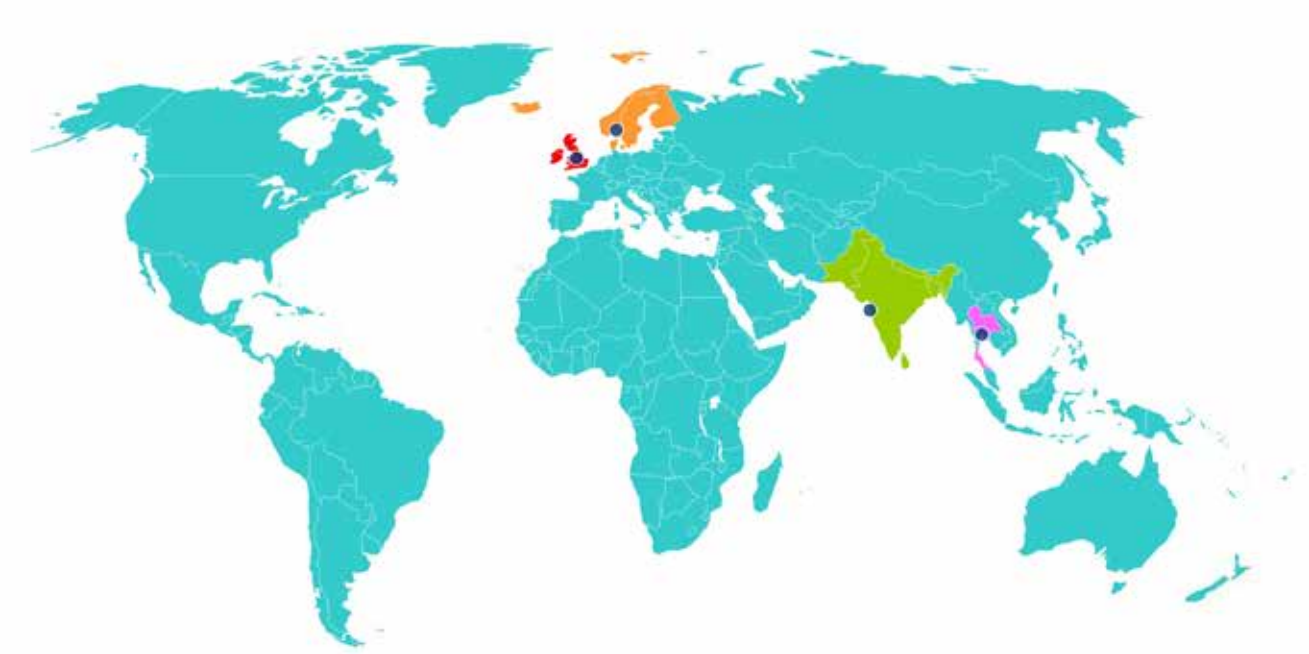
CFU/m³ Counts - Pre and Post UV-C Disinfection

Data Set 1

Location	Number of total count per cubic metre of air CFU/m³	Number of moulds & yeasts per cubic metre of air CFU/m³
Outdoor air (26 °C, sunny; light wind)	2,180	2,050
Packaging line next to an open spiral cooler (without UV)	1,100	1,030
RHS front air outlet in the Spiral cooler (UV treated)	10	0
LHS rear air outlet in the Spiral cooler room (UV treated)	0	0
Packaging area (UV treated	30	0

Data Set 2

Location	Fungi (CFU M³)	Overall microbes (CFU M³)
External air at main entrance - floor	103	112
External air at main entrance - 4m	96	114
External air at rear of building - floor	91	100
External air at rear of building - 4m	96	9182
Disinfected supply air – directly after UV-C chamber	0	2
Dough Dept. 1	30	32
Dough Dept. 2	38	38
Packaging 1	13	12
Packaging 2	2	6



UV Technology Global

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UV Technology Limited, 116 Duke Street, Liverpool, L1 5JW.

t: +44 (0) 161 408 0060

w: www.uvtglobal.com

e: info@uvtglobal.com