eWater Systems
Overview and Validation

Prepared by Jaclyn Huntley & Melinda Chapman

13th September 2016

Infocus Food Safety
L5/11 Queens Road, Melbourne, VIC 3004
T: 1300 818 408 **F:** 1300 916 651
W: www.infocusmg.com.au **E:** info@infocusmg.com.au
Infocus Food Safety is a division of Infocus Management Group Pty Ltd

eWater Systems: Overview and Validation

Introduction

This document was developed by Infocus Food Safety for the purpose of providing an overview on the use of eWater and its validated effectiveness for cleaning and sanitising purposes in food premises. The following summary was developed through an analysis of peer-reviewed articles and independent laboratory results. Documented acceptance letters or studies from peak industry or government authorities were also sighted and included as a summary (Refer Appendix B and C).

Infocus Food Safety has been a leading provider of food safety consulting and training services since 2003 and continues to work with food business clients from a range of sectors across Australia including aged care, hospitals, retail and hospitality, childcare, local government and community organisations. Infocus Food Safety is committed to supporting new technologies that assist in the provision of safe and suitable food for consumers and positively supports the use of eWater as a viable and validated alternative to trditional handwashing, cleaning and sanitising products when used in line with the manufacturer's instructions for use.

Electrolysed Water (eWater)

While electrolysed water (eWater) is a relatively new product in Australia, it has been accepted as an effective cleaning and sanitising option internationally for years, including official acceptance by the US FDA, USA EPA, Japanese Ministry of Health, NHS UK and many regulators worldwide. It is also accepted for use by leading regulators in Australia such as the NSW Food Authority and the Department of Health and Human Services in Victoria.

There are many current scientific studies and literature reviews published on the effectiveness of eWater for many purposes in a food premises, from cleaning and sanitising food contact surfaces and handwashing to sanitising fresh produce. Independent laboratory testing by a variety of microbiologists, including Food Laboratories Australia, have verified eWater's effectiveness on surface cleaning and sanitising, and on handwashing, in a clinical setting.

What is eWater?

Electrolysed water is not just salt water. eWater is produced by applying an electrical charge to a mixture of ordinary tap water and salt. Known as electrolysis, this process splits the tap water mixture into two highly effective and safe solutions: an alkaline solution for cleaning and an acidic solution for sanitising.* eWater is also sometimes referred to as ROX water (trademark) or Oxidizing Water (OW).

**For more in depth descriptions on how eWater works and a description of the oxidation reduction potential (ORP), refer to Appendix A ('Why does eWater work?') or see www.ewatersystems.com*

1. Cleaning and Sanitising Properties

An extensive array of research studies have proven that eWater is equally as effective as traditional cleaning and sanitising methods in a range of environments, while requiring less free chlorine and less contact time to achieve the same results. In some studies, eWater's sanitising solution has out-performed standard foodgrade sanitisers (such as sodium hypochlorite or quaternary ammonium compounds). This is due to the combined effects of free chlorine, plus the Oxidation Reduction Potential (ORP) and pH value of eWater allowing infiltration of the bacteria's cell membrane *(*Refer Appendix A: 'Why does it work?' for descriptions of ORP and pH).*

The oxidation reduction potential from eWater's acidic sanitising solution has also been proven to be effective against tough surface biofilms including *E. Coli, S. aureus* (including MRSA) and *L. monocytogenes.* Some studies have also shown that eWater can be effective in reducing the surface levels of human Norovirus.

eWater's alkaline cleaning solution is also a highly effective detergent and degreaser. Its alkaline nature breaks down stubborn oils and proteins and can be used to wash hands as well as clean most food processing surfaces.

Before Sanitising	After Chlorination	After Electrolysed Water
E.Coli Bacteria, viewed through an electron microscope.	*Outer cell membrane damage, but bacteria mostly intact.*	*Cell membranes infiltrated, bacteria mostly destroyed.*
		

Source: *Process Chemistry, Vol. 39, pages 1421 to 1426, "Electron Microscopic Investigation of the Bacterial Action of Electrochemical Disinfection in Comparison with Chlorination, Ozonation and Fenton Reaction" by H.F.Diao, X.Y. Li, J.D.Gu, H.C. Shi, Z.M. Xie. Elsevier (2003).*

2. Safe and Non-Toxic

Studies have shown that both eWater's cleaning and sanitising solutions are safe and non-toxic for humans and for the environment. Unlike some other chemicals there is no need for personal protective equipment such as goggles, and businesses are not required to post HazChem signage.

Although eWater's sanitising solution is 'acidic' the actual acidity levels are similar to that of apples, berries or grapes. Contact with skin is not a concern; conversely, the use of eWater's cleaning and sanitising solutions for handwashing is encouraged as an effective hand hygiene strategy for food handlers, particularly as users have found that it does not cause or inflame dermatitis in the way handwash soaps do.

Both eWater's cleaning (alkaline) and sanitising (acidic) solutions are classified as 'Not Hazardous' with 'No hazardous ingredients present' by Chemwatch. Further information can be found in eWater's Safety Data Sheets.

3. Sustainable

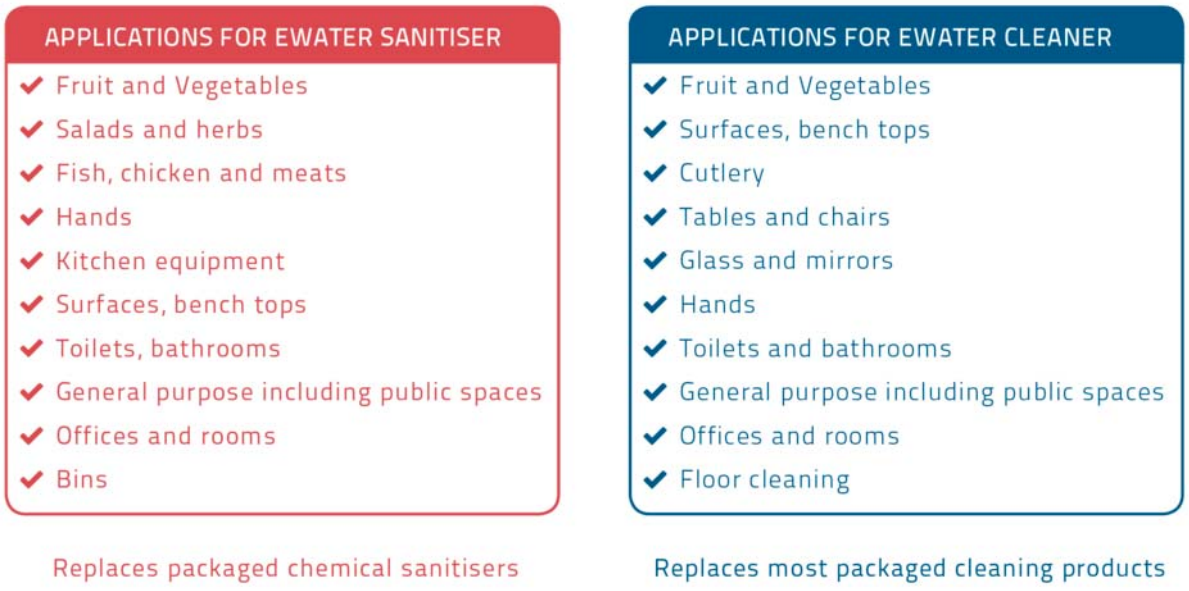
eWater provides an environmentally sound alternative to traditional chemicals. Using onsite generators to produce eWater virtually eliminates the need for an organisation to purchase an array of manufactured chemical products, effectively reducing carbon emissions, transport, wasteful packaging and dangerous trade waste. This offers a significant advantage for organisations seeking to reduce their ecological footprint.

4. Use of eWater

4.1 What can eWater be used for?

eWater can be safely used for the following purposes:

- Sanitising fresh produce
- Washing meat or poultry carcasses
- Cleaning and sanitising food contact surfaces; chopping boards, benches, utensils etc
- Cleaning tables, chairs and dining spaces
- Cleaning glass, windows and mirrors
- Handwashing



Source: http://www.ewatersystems.com/applications/

4.2 What surfaces can eWater be used on?

eWater can be safely used on commercial stainless steel food processing surfaces with little to no risk of metal corrosion, and is suitable for marble and stone surfaces. Due to the oxidation reduction potential, it is not recommended for carbon steel, copper and aluminium surfaces. As with the use of all cleaning chemicals, it is important to follow the manufacturer's instructions for dilution and rinsing. By rinsing eWater after sanitising a surface, the risk of corrosion can be completely avoided.

International studies have shown the use of electrolysed water in a clinical setting for more than 3 years did not result in any corrosion. In Australia, eWater has been used in a hospital kitchen for more than 9 years with no corrosion.

eWater is not recommended to be used in equipment that may void manufacturer's warranty (e.g. dishwashers, floor washers etc.). Refer to your equipment manufacturer's cleaning instructions and warranty terms and conditions for further details.

Electrolysed water is less corrosive than standard hypochlorite based sanitisers, and has a similar acidity level to apples and berries.

4.3 What cleaning products does eWater replace?

eWater can safely replace the following common cleaning and sanitising chemicals used in most food premises:

- Handwashing chemicals (both soap and hand sanitiser)
- Cleaning products for most food processing surfaces (e.g. general degreaser, foodgrade sanitiser)
- Sanitising products for fresh produce (e.g. salad sanitisers used in hospitals or in food processing environments)
- Sanitising products used on food processing surfaces (e.g. benches, knives, cutting boards etc.)
- Sanitising products used on meat and poultry carcasses

For difficult to clean surfaces (such as floor tiles with grout near deep-fryers) a heavy-duty commercial cleaning agent may still be required. eWater's cleaning solution may be boosted with detergent to clean greasy surfaces. Mix eWater cleaning solution with hot water, add a small amount of detergent before use.

4.4 Maintenance, Shelf life and Labelling

It is important that eWater systems are maintained and the solutions are used in line with the manufacturer's instructions. eWater Systems provides information on the daily operation procedures for eWater in the Cleaning Procedures Manual they provide. eWater Systems also provides a useful *Daily Test Sheet and Daily Record Instruction* wall chart.

When used in line with manufacturer's instructions, the following shelf life applies:

eWater Cleaning Solution	Indefinitely. Does not need to be discarded.
eWater Sanitising Solution	One week.

Source: http://www.ewatersystems.com

It is common practice to use a simple day-dot label on spray bottles to ensure the solution is replaced once a week, or as required.

Appendices

Appendix A: Why does eWater work?

The antimicrobial effect of electrolysed water is based on the combined action of the available chlorine (present as Hypochlorous acid) (20-50ppm), the pH (from pH 2.7-5) and an oxidation reduction potential (ORP) of around 1100mv.

What does ORP mean?

The oxidation reduction potential indicates how well an oxidizing chemical (such as Hypochlorous acid) can pull electrons away from the cell membrane of bacteria. When this happens, the cell membrane is damaged allowing eWater to enter and kill the cell. A high ORP can also stop the metabolic processes of the cell, effectively inactivating it so it can no longer produce energy to survive. eWater has an ORP of 1100mV, which when combined with the free chlorine and low pH is very effective in killing bacteria.

The high ORP level also means that a lower concentration of free chlorine is required for eWater to sanitise a surface. For example, eWater has between 20ppm-50ppm free chlorine, compared to the usual 100ppm in a standard foodgrade sanitiser, yet achieves the same, if not better, sanitising outcomes. Bacteria prefer ORP levels from around -700mV (anaerobic) to +800mV (aerobic). eWater's ORP of 1100mV creates an environment that both types of bacteria cannot survive in.

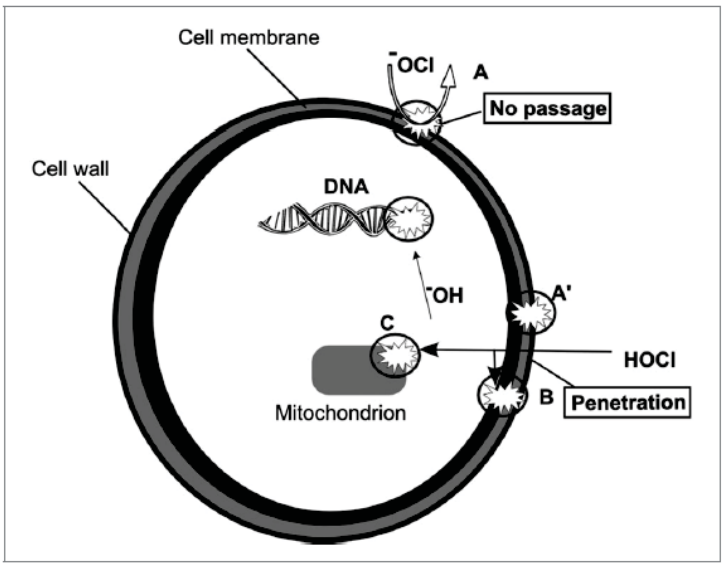


Figure 5–Model representing the germicidal activity of EW. Ionized ⁻OCl cannot cross the microbial membrane and has shown poor germicidal activity. ⁻OCl only attack on the outer membrane of the cell (circle A). HOCl is the active species in the germicidal action. HOCl has neutral charge and can diffuse through the cell membrane. HOCl can attack on the outer membrane (circle A') and also inside the cell (circle B and C).

pH

Electrolysed water's low pH may also assist in sensitising the outer membrane of bacterial cells to the entry of Hydrochlorous acid, speeding up the process of inactivating bacterial cells.

Source: *Electrolyzed Water as a Novel Sanitizer in the Food Industry: Current Trends and Future Perspectives*, Rahmn, Khan & Oh, Comprehensive Reviews in Food Science and Food Safety, Institute of Food Technologists, 2016

Appendix B: Validation Summary for eWater

Microbiological Validation	
Neil Bartlett, Food Laboratories Australia (2012)	'Our laboratory conducts monthly work surface swab testing at both sites using the AS 2997 test method. The test results consistently pass the standard set down in AS 2997 and therefore validate the effectiveness of the e-water system as a final sanitation procedure'. 'As an Approved Analyst registered by the Victorian Health Department for the microbiological testing of waters and foods with more the 40 years' experience in the food industry, the eWater system is an effective final hand wash alternative to current chemical options.'
Food Laboratories Australia, Environmental Testing Results *(Hands, Processing Surfaces and Equipment including slicers, sinks, cutting boards).* (2010)	'These results clearly show a significant reduction in microbial loading when using the eWater cleaning and sanitation system. For each test swab, an area of 100sq cm was swabbed. A final count of less than 100 organisms per 100 sq cm (i.e less than 1 per sq cm) is considered to represent a cleaned surface. All sites gave counts after cleaning and sanitation within this limit except for the cutting board which was not far above this limit. This is considered a reflection on the state of the cutting board rather than the inadequate cleaning and sanitation. These results therefore validate the effectiveness of the eWater system as a reliable alternative to traditional cleaning and sanitation systems'.
Austin Health CPU (2007)	Results of a 5-Week trial conducted by Agriquality testing environmental swabs for TSPC after cleaning: *'The trial results point to eWater as being as effective as traditional chemicals in reducing bacterial numbers to safe levels'.*

Australian Acceptance	
Authority/Source	**Statement Regarding Electrolysed Water**
Australian Certified Organic (2016)	'Electrolysed water (hypochlorous acid) would be suitable for use in organic processing for the sanitation of food contact surfaces and equipment, if followed by a rinse with potable water, as per Annex IV of the Australian Certified Organic Standard and Appendix E of the National Standard for Organic and Biodynamic Produce'.
AQIS (2009)	'AQIS agrees that the process of electrolysing a dilute aqueous salt solution results in the production of chemicals commonly used in the food industry for sanitising equipment and surfaces i.e. Sodium hydroxide, sodium hypochlorite and hypochlorous acid. These compounds are recognised as having general acceptance for use in export meat establishments'
Department of Humans Services (VIC), Health Minister's Office (2008)	'…officers of the Food Safety and Regulatory Activities (FS&RA) are already aware of the potential uses of the eWater system within the food processing sector' 'All new technologies that reduce the use of chemicals whilst maintaining safety are to be encouraged.'

Australian Acceptance	
NSW Food Authority (2010)	'The Authority has reviewed the independent studies supplied exampling the effectiveness of electrolysed acid water as a sanitiser or disinfectant. The Authority is satisfied that ROX water is suitable for this purpose, provided it is used correctly in each food facility and according to the manufacturer's instructions'
NSW Food Authority – NSW Vulnerable Persons Food Safety Scheme Consultative Committee 25th June, 2014	**'Use of electrolyte water for cleaning & sanitation** A paper prepared by the Authority's Science and Technical Unit was tabled in response to a question the Authority had received from a facility regarding the use of electrolysed water as an alternative to traditional chemical cleaning and sanitising products. It was noted that the Authority's position on this was that electrolysed water can be used, provided procedures are appropriately maintained and monitored to confirm the concentration of chlorine in the sanitising solution, especially in environments where Listeria monocytogenes is of concern'.
Department of Population Health, Health and Human Services Tasmania (2009)	'We looked at eWater recently and identified no particular issues from a disinfection point of view with its use in Hospital settings provided the equipment and use/application is managed appropriately'
Food Science Australia (A joint venture of CSIRO & Victorian Government) - Meat Industry Services: Electrolysed Water – Food Safety Technology Summary (2006)	Regulations: Considered safe in US, Japan and Australia, but awaiting full approval (p.1) OW has been shown to give good reductions in *Listeria monocytogenes* (4.3-5.2 log) and *Staphylococcus aureus* (1.7-1.9 log) on rubber gloves and stainless steel, and in *Campylobacter jejuni* on poultry carcasses (4.9 log) (Ayebah et al. 2005a, 2006; Kim et al. 2005; Liu and Su 2006; Park et al. 2002). Similarly, a Spanish study found that the neutral EO water could reduce populations of *Escherichia coli, Pseudomonas aeruginosa, Listeria monocytogenes* and *Staph. aureus* on stainless steel and glass by 7 log cycles (Deza et al 2005). Research by Ayebah et al. (2005b) showed that EO water was relatively non-corrosive when applied to common materials used in the food industry (carbon steel, stainless steel, aluminium and PVC), and the acidic EO water has been shown to be a good sanitiser for use when cleaning abattoirs (Bach et al 2006). These authors found that using EO water gave surface microbial counts 1 log lower than when an iodophor sanitiser was used. There have also been reports that using acidic EO water in water troughs can reduce the level of endemic illness and shedding of *E. coli O157* in cattle (p.2)
Horticulture Australia: ***Evaluation of vegetable washing chemicals (Project Number VG09086)*** **(2013)**	'Oxidizing water has been used for inactivation of a wide variety of pathogenic and spoilage microorganisms, such as *E. coli* (including the O157:H7 strain), *Salmonella enteritidis , L. monocytogenes,* and *Campylobacter jejuni* (Park et al., 1999; Venkitanarayanan et al., 1999; Kim et al., 2000; Park et al., 2002; Fabrizio and Cutter, 2003). Several studies have shown that OW is effective at reducing pathogens and/or spoilage microorganisms associated with fresh fruits and vegetables (Izumi, 1999; Kim et al., 2000; Park et al., 2001). OW has been shown to be effective in reducing human pathogens including E. *coli O157:H7*, *L. monocytogenes,* and *S. Enteritidis.* In a study conducted by Venkitanarayanan et al (1999), the effect of OW on the inactivation of *E. coli O157:H7* and *L. monocytogenes* on the surface of plastic cutting boards was shown. They

Australian Acceptance	
	reported a reduction in the bacterial count > 5.0 log CFU/100 cm2 and non detectable levels for *E. coli O157:H7* and *L. monocytogenes* populations on cutting boards, respectively (p.10)'

International Acceptance	
Health Protection Scotland, National Services Scotland (2015)	Literature Review and Practice Recommendations – Electrolysed Water found electrolysed water to either be as effective, or more effective than standard cleaning practices in healthcare settings.
FDA Approvals (2015)	• FDA approved under 21 CFR 173.315 for direct contact with processed foods. • FDA approved for several indirect food contact applications under 21 CFR 172.892, 21 CFR175.105 • FDA decision #692 allows for vegetable & fruit produce washing using Electrolyzed Water. • FDA approved for several indirect food contact applications under 21 CFR 176.170 & 21 CFR 177.2800. • Is an FDA approved sanitizer that meets 21 CFR 178.1010 • FDA approved under 21 CFR 7120.1 for spray and water treatment for processing of beef, poultry & pork.
EPA (USA) Approval 2015	• Exempt by the EPA under 40 CFR 180.1054 for washing raw foods that are to be consumed without processing. • 40 CFR 180.940. HOCL when used as ingredient in an antimicrobial pesticide formulation may be applied to: Food-contact surfaces in public eating places, dairy-processing equipment, and food-processing equipment and utensils.
United States Department of Agriculture – Food Safety and Inspection Service (Updated 2016)	The Food Safety and Inspection Service (FSIS) have permitted the use in the following manner: • Red meat carcasses down to a quarter of a carcass: 20-50 ppm (sprayed on) • Whole or eviscerated poultry carcasses (not parts): 20-50 ppm (sprayed on) • In-plant chlorination of water and water for formulation: 1-5 ppm • Poultry chiller water: Up to 50 ppm (measured in incoming potable water) • Poultry chiller red water (i.e. re-circulated & reused): Up to 5 ppm • Reprocessing contaminated poultry carcasses: 20 ppm • Giblets and salvage parts as influent to a container for chilling not to exceed 20 minutes: 20-35 ppm • Antimicrobial spray for beef primals: 20 ppm

Appendix C: Letters from a selection of the authorities referred to in Appendix B

NSW Food Authority

safer food, clearer choices

18 February 2010

Phil Gregory

ewater systems

240A Kooyong Rd

Toorak VIC 3142

Dear Mr Gregory,

The NSW Food Authority (the Authority) has reviewed the information you supplied on "ROX water", a system that utilises tap water, salt and an electrical current to create two separate streams: 'Alkaline water' at a pH of around 11.3, which can be used for cleaning and as a de-greaser and 'acid water' at a pH of around 2.7 and a redox potential of approximately 1150mV, which can be used as a sanitiser. The amount of total available chorine in the acid water solution depends on the setting used with the machine, but is typically in the order of 20-50ppm.

The Authority has reviewed the independent studies supplied by yourself examining the effectiveness of electrolysed acid water as a sanitiser or disinfectant.

The Authority is satisfied that ROX water is suitable for this purpose, provided it is used correctly in each food facility and according to the manufacturer's instructions. Please note this does not indicate that the Authority approves or endorses the product in any way.

Food businesses must comply with specific requirements in food legislation. A food business wishing to use the ROX water system in NSW should contact the Authority to determine if a formal application to the Authority seeking to approve its use is required. The Authority has a protocol available on its website to assist business in demonstrating alternative compliance. Businesses seeking to use the technology outside of NSW need to contact the relevant authority in that State or Territory.

Yours sincerely

David

David Miles

Tel: (02) 9741 4767

Email: david.miles@foodauthority.nsw.gov.au

Department of Human Services

Incorporating: Health, Community Services, Mental Health, Senior Victorians and Housing

50 Lor
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www.c
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27 AUG 2008

OUR REF: E1
YOUR REF:

Mr Phil Gregory
Director
e-Water Systems Pty Ltd
203 Rouse Street
PORT MELBOURNE 3207

Dear Mr Gregory

Thank you for your letter of 1 July 2008 to the Health Minister regarding the u potential applications of ROX water. As your letter relates to food safety Minister A asked me to respond on his behalf.

I am advised that officers of the Food Safety and Regulatory Activities (FS&RA) a aware of the potential uses of the ROX water system within the food processing have already had contact with you and others members of your company in the pas visited the Austin hospital installation.

All new technologies that reduce the use of chemicals whilst maintaining safety encouraged. I wish you well with the introduction of the ewater ROX system.

If you require further information please contact Paul Goldsmith, Food Safety Offic 5943.

Yours sincerely

P. Ireland

Pauline Ireland
Assistant Director
Food Safety and Regulatory Activities

State Gov
Vic

Australian Government

Australian Quarantine and Inspection Service

24th November 2009

Phil Gregory
Ewater Systems
240A Kooyong Road
Toorak
Victoria 3142

Dear Phil,

Re: Use of electrolysed water on export registered establishments

This letter is in response to your enquiry regarding the use of electrolysed water as a general sanitiser for use in export meat establishments. Paul Vanderlinde has asked me to respond on his behalf.

AQIS does not provide approval for or endorse specific pieces of equipment or technology; however AQIS agrees that the process of electrolysing a dilute aqueous salt solution results in the production of chemicals commonly used in the food industry for sanitising equipment and surfaces i.e. sodium hydroxide, sodium hypochlorite and hypochlorous acid. These compounds are recognised as having general acceptance for use in export meat establishments.

The production and application of these chemicals must be detailed in the companies Approved Arrangement and must be consistent with the requirements of the Australian Standard for the Hygienic Production and Transportation of Meat and Meat Products for Human Consumption (see clause 4 with particular reference to clause 4.8 -Hazardous materials and chemicals). Details in the company's approved arrangement should include verification activities with regards to the concentration of chemicals at the point of application.

Yours Sincerely,

Carol Sheridan
National Manager Export Meat
Food Exports
AQIS

cc: Paul Vanderlinde
Ron Southgate

FOOD-LABORATORIES
AUSTRALIA • PTY • LTD •
A.C.N. 004 992 929
2/1G Marine Parade, Abbotsford ,Victoria 3067
Telephone: (03) 9417 0555 After Hours: (03) 9878 4397, (03) 9370 9620 Fax: (03) 9417 0511

E- WATER REPORT

I am pleased to be able to confirm that our laboratory regularly conducts microbiological testing of work surfaces at sites that use the e-water system as their final sanitation step for their cleaning program.

The e-water system is in place in the central production kitchens operated by the Victorian Health Department at both Heidelberg and Kingston. Our laboratory conducts monthly work surface swab testing at both sites using the AS 2997 test method

The test results consistently pass the standard set down in AS 2997 and therefore validate the effectiveness of the e-water system as a final sanitation procedure. In the light of these well established results I have every confidence that the e-water system is a valid alternative as a final hand wash. Indeed, the e-water system is already in place as a final hand wash at both of the above sites operated by the Victorian Health Department.

As an Approved Analyst registered by the Victorian Health Department for the microbiological testing of waters and foods with more the 40 years experience in the food industry, the e-water system is an effective final hand wash alternative to current chemical options.

Neil Bartlett
:Laboratory Manager Microbiology
Food Laboratories (Aust) Pty Ltd. 24th September 2012

FOOD LABORATORIES (AUST.) PTY. LTD.

2/1G Marine Parade ABBOTSFORD 3067

ACN 004 992 929 • Telephone: (03) 9417 0555 • Fax: (03) 9417 0511

TEST REPORT

Spotless Service Australia
Locked Bag 6,
EAST MELBOURNE, 3002

Report No : 681139
Date : 22/12/2010

RE SAMPLE COLLECTED BY US ON 20/12/2010 - TESTED ON 20/12/10

Samples : Environmental Swabs
Ex E Water System at the Alliance Catering Kitchen,MCG

Swab Site	Laboratory No:	Standard Plate Count per swab FL 11.20
Travis' Hand - before	1012 3266	710
- after	1012 3267	20
Robbies'Hand - before	1012 3268	4,000
- after	1012 3269	70
Divy's Hand - before	1012 3270	2,500
- after	1012 3271	30
Cutting Board - before	1012 3272	780
- after	1012 3273	150
Large Bain Marie Pot - before	1012 3274	660
- after	1012 3275	less than 10
Large Drainer - before	1012 3276	380
- after	1012 3277	less than 10
Worktable - before	1012 3278	340
- after	1012 3279	less than 10
Washup Sink - before	1012 3280	940
- after	1012 3281	80
Slicer - before	1012 3282	300
- after	1012 3283	less than 10

Result(s) are expressed on the sample(s) as received.

EMAIL COPY

Neil Bartlett, B.App.Sc.,M.A.S.M.

FOOD LABORATORIES (AUST.) PTY. LTD.

2/1G Marine Parade ABBOTSFORD 3067

ACN 004 992 929 • Telephone: (03) 9417 0555 • Fax: (03) 9417 0511

COMMENTS FOR TEST REPORT 681139

Spotless Service Australia
Locked Bag 6,
EAST MELBOURNE, 3002

Report No : **681139C**
Date : 22/12/2010

RE SAMPLE COLLECTED BY US ON 20/12/2010 - TESTED ON 20/12/10

These results clearly show a significant reduction in microbial loading when using the E water cleaning and sanitation system.

For each test swab, an area of 100sq cm was swabbed. A final count of less than 100 organisms per 100 sq cm (i.e less than 1 per sq cm) is considered to represent a cleaned surface. All sites gave counts after cleaning and sanitation within this limit except for the cutting board which was not far above this limit. This is considered a reflection on the state of the cutting board rather than the inadequate cleaning and sanitation.

These results therefore validate the effectiveness of the E water system as a reliable alternative to traditional cleaning and sanitation systems.

EMAIL COPY

Neil Bartlett, B.App.Sc.,M.A.S.M.
Laboratory Manager - Microbiology