AKWA SOLUTIONS PTY LTD

SILVER ION TECHNOLOGY

Best Water *Best Health* *Best Life*

Products Information Book

Contents

Company Profile

AKWA SOLUTIONS is an Australian owned and based company whose major philosophy is to dedicate and provide environmentally responsible technologies and solutions which will benefit and enhance people's lives and the world we inhabit.

In January 2013, AKWA SOLUTIONS acquired CC Technologies along with Australian Natural Colloids by combining the necessary recourses, this has allowed us to expand the business and continue the development of the group's propriety products.

Since 1993, CCT and ANC have been actively researching and developing their core technologies of electrolytic mineral ion process. AKWA SOLUTIONS has utilized these unique technologies to increase efficiency of mineral colloids production and also increase the capability of large water purification with precise silver ion technology known as Silver Antibacterial Technology.

These unique technologies which can be incorporated in any water treatment system or water filtration system have been proven to be effective in the treatment against bacterial, mould and fungi and to reach its intended objective by using water as its delivery system.

The water that possesses antimicrobial or antibacterial ability can be used or combined with many applications such as domestic, industrial, commercial, horticulture, agriculture, medical, dentistry, and domestic animals.

It complies within the World Health Organization Drinking Water Standard, Australian Bottle Water Association Standard and the food standard. And it can be used in organic production.

General

The use of silver for sterilizing drinking water with silver is a very old method and has been adopted frequently in many parts of the world throughout time.

AKWA SOLUTIONS has revisited and improved this process, by using the bactericidal properties of silver and introducing microscopic silver ions into the water at precisely calculated amounts, being held in suspension by a tiny positive electric charge applied to each atom. Whilst the viruses and bacteria's possess a negative charge this causes a mutual attraction between the organisms and the silver ions, at this point the silver ions interferes with the DNA production, preventing reproduction and accelerating the death phase of the organism.

Although it is lethal to bacteria and fungus, silver ions are completely safe to humans, animals and plant life. The amount of silver ions in the disinfected water is well below the maximum amount stated by the directives issued by the World Health Organization (WHO) and complies with the Australian drinking standards.

Silver ions do not change the taste, smell or colour of the water. AKWA *Silver Ion Antibacterial Water System* was formerly known as Anti Bacterial Washdown Unit (ABWU).

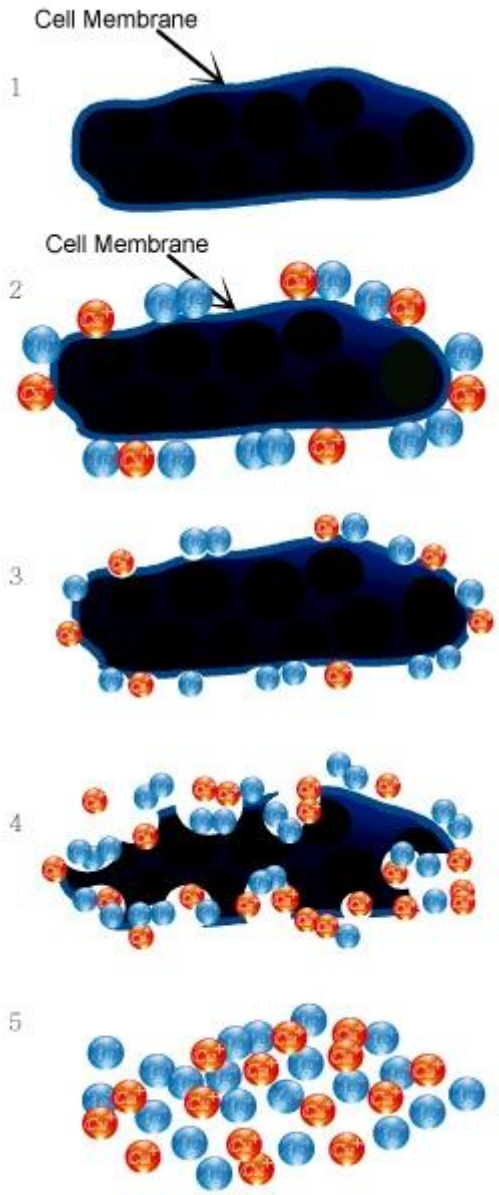
How does the Silver Ion Antibacterial Water System work?
(Standard Unit Water Treatment System)

Connect the *Silver Ion Antibacterial Water System* at the inlet water pipe. The water will flow through the infiltration process of the filtration system removing chlorine, colours, unpleasant odour & taste suspended solids, particles and turbidity.

A flow sensor is installed to detect the continually filtered water prior flowing through Silver Electrode Device which is the core of the *Silver Ion Antibacterial water system*. The flow sensor will be transmitting the flow information to the CPU which ensures the water flow through Silver Electrode Device. In turn, the CPU of Silver Electrode Device will release a precisely calculated amount of silver ion from the electrode into the water to restrain bacteria such as Ecoli, Pseudomonas aeruginosa, etc… if it is present in the water.

With the addition of Silver ion, the anti microbial water is ready to be distributed throughout the building with the effect that eliminates a range of bacteria, mould and fungi. The treated water from Silver Ion Antibacterial Water System complies with Australian Drinking Water Standards. It is completely safe to drink and use in any application.

Silver (copper and silver) ionization – Biocide process



1. All micro-organisms such as bacteria, virus and alga have an exterior envelope called the cell wall or cell membrane. This wall in most cases is negatively charged. The ionisation process has introduced silver (or silver and copper) into the water which is positively charged. The +ve ions are naturally attracted to the negatively charged cell membrane.

2. When the ions make contact with the cell membrane they are electrically bonded

3. The ions then permeate the membrane and begin to disrupt the cells essential functions.

4. Ionic silver can kill a broad spectrum of bacteria and viruses, copper is effective against Algae, but when combined they have a synergistic relationship increasing their effectiveness to disrupt the cells membranes and metabolism to a point where the cell dies.

5. At this point the process releases the ions and allows them to continue to move randomly throughout the water. As they are still +ve charged the continue to be attracted to other negatively charged organisms hence continuing to act as a biocide

6. An important but often overlooked aspect of silver (copper / silver) ionisation is that ions do not volatilise, burn out or break down in the process as chemical disinfectants do.

i.e. there is no diminishing of the residual biocidal effect

Benefits of silver ion treated water :

- Water can be treated directly in the pipeline with antimicrobial
- Restrain bacteria, mould and fungi proven to cause diseases
- Continuous reduce of unpleasant odours
- Reduction in the risk of bacterial food contamination
- Restrain bacteria in any surfaces kept in contact with antimicrobial water
- Ability to restrain microbes at a steady and controlled rate
- Harmless to all materials as the treated water is safe to use everywhere
- No risk in relation to occupational health and safety of workers
- Assurance of bacterial free to any surface washed by antimicrobial water
- Long lasting residual disinfection
- No change to taste, smell or colour of water
- No change to physical or chemical properties of water

Incorporating Silver Ion Antibacterial Unit with any of the existing the water filtration system, apart filters the microbes from the water, it enhances mineral, the treated water has been developed the ability to prevent the re-growth of new microbes on any surface or area that the water comes in contact with.

Features of Silver Ion Antibacterial Technology

- Non Chemical.
- Non flammable.
- Non Hazardous.
- Non Toxic.
- Environmental friendly

Some samples of applications

- Municipal Water Treatment Plants
- Domestic Drinking Water
- Household application such as washing vegetable, washing dishes, washing floor, washing clothes, shower, daily drinking water, cooking etc…..
- Industrial Cooling Towers
- Domestic and industrial evaporative coolers
- Commercial Buildings
- Aged Care Facilities
- Vet Clinics
- Hospitals
- Agriculture
- Horticulture
- Any area requiring the eliminate of the growth or to kill bacteria
- Hotels
- Kitchens
- Food Processing Plants
- Bottled Water Processing Plants
- Food Preparation Areas
- Fish and Seafood Retailers
- Metal cutting machines using water based cutting oils

How does the silver ion interfere in bacterial growth?

Silver has at least three ways to inactivate micro organisms:

- Attracting to the negative charge of the -S.H. (Sulfidal) group and remove the hydrogen atoms surrounding the surface of bacteria or viruses to inhibit respiration, thus inactivating with the miro organisms.
- Binding with D.N.A. in micro organisms to prevent unwinding and replication and control bacteria growth.
- Reacting with the surface of bacteria and impairing cell membranes, thus silver ion attach respiration site to cause death by suffocation.

The basic background of Silver

The principal of using metals for water purification and prevent disease goes back hundreds of years, history if full of examples

Silver's effectiveness dates right back to the Middle Ages where the ancient Greeks lined their eating and drinking vessels, as did many other cultures throughout the world.

Silverware becomes popular 1900 years ago when physicians advised their patients to only eat with silverware if they wanted to stay healthy.

During 14^{th} century, about 25% of people in Europ died from the Bubonic plague. Wealthy parents gave their children silver spoons to suck on to battle the plague. This leads to the saying "born with a silver spoon in your mouth".

In 1884, Dr Crede, a German obstetrician, s=discovered that a mild silver solution put in babies eyes at birth, would prevent eye infections. This practice rapidly became mandated and is still practiced today in hospitals throughout the world.

According to Russell (1994), Aristotle advised Alexander the great to boil water and store in silver vessels to prevent waterborne diseases. Pioneers of the American West would put a silver dollar in a jug of milk to keep it fresh without refrigeration, barrels of water also contained silver coins. The Vikings would line their ships with strings of silver and copper for the same purpose (Laubush 1971).

Although most civilizations did not fully comprehend the antibacterial properties of silver, it was widely understood that adding silver to water increased clarity, reduced odours and improved taste. Until recently, silver water purification techniques had fallen out of favour for more fasting methods such as chlorination.

Silver electrochemistry methods were re-examined in the 1960s when NASA developed an electrolytic silver ionizer to purify the drinking water on the Apollo spacecraft. NASA now uses silver for the CO_2 chemsorption process on board the Challenger space shuttles and the international space station (NASA 2004).

Today silver is used to prevent infections in burnt patients, preventing blindness in newborns, bacteria-free cosmetics, disinfecting water storage containers including swimming pools, controlling Legionella bacteria in hospitals and to improve the performance of drinking water filters. Recent research has also shown that silver may be used as an alternative to conventional municipal and wastewater treatment processes and even the possibility the cure for the common cold.

Experiment & Test Report

Inactive Staphylococcus Aureus

Microbiological Report – Investigation into the Efficacy of CCT Solution

A sample of CCT Solution from CC Technologies Pty Ltd was received on 25 October 2011 (ALS sample number 2798772).

The CCT Solution was challenged with a known level of *Staphylococcus aureus* (NCTC 10788, ATCC 6538). The seeded solution was divided into 3 sub-samples. Each sub-sample was measured initially and at 1, 2, 4 and 24 hours to determine the inactivation capability of *S.aureus* over time.

The experiment commenced on 26th of October, 2011.

The Test Control maintained its level of approximately 600,000 – 700,000 cfu per mL of viable *S.aureus* in sterilised deionised water over the duration of the first 4 hours of the experiment. At 24 hours the level of *S.aureus* had approximately a 1 log reduction.

S.aureus levels in sub-samples A, B and C had between 2.58 and 2.77 log reduction after 1 hour contact time and between 2.60 and 2.66 log reduction after 2 hours contact time.

After 4 and 24 hours contact time there were no viable *S.aureus* colonies observed (limit of reporting is <10 cfu per mL).

After 4 hours there was a significant inactivation of *S.aureus* (ie greater than 3 $\log_{10}$ reduction) with no re-growth at 24 hours.

The CCT Solution supplied by CC Technologies Pty Ltd inactivated *S.aureus* to at least a 3 $\log_{10}$ reduction, (which is the required reduction to achieve a 99.99% kill rate), after 4 hours contact time at room temperature.

C Cooke

Christine Cooke

1st of December, 2011

Consultant Microbiologist

ALS Water Resources Group (Environmental Division)

22 Dalmore Dve, Scoresby VIC 3179

Experiment Test- Report 1

Bacteriological Analysis

Bacteriological Analysis report by INDO FISHERIES, Rajiv Gandhi Nagar, Harekala-574 181, Mangalore, India.

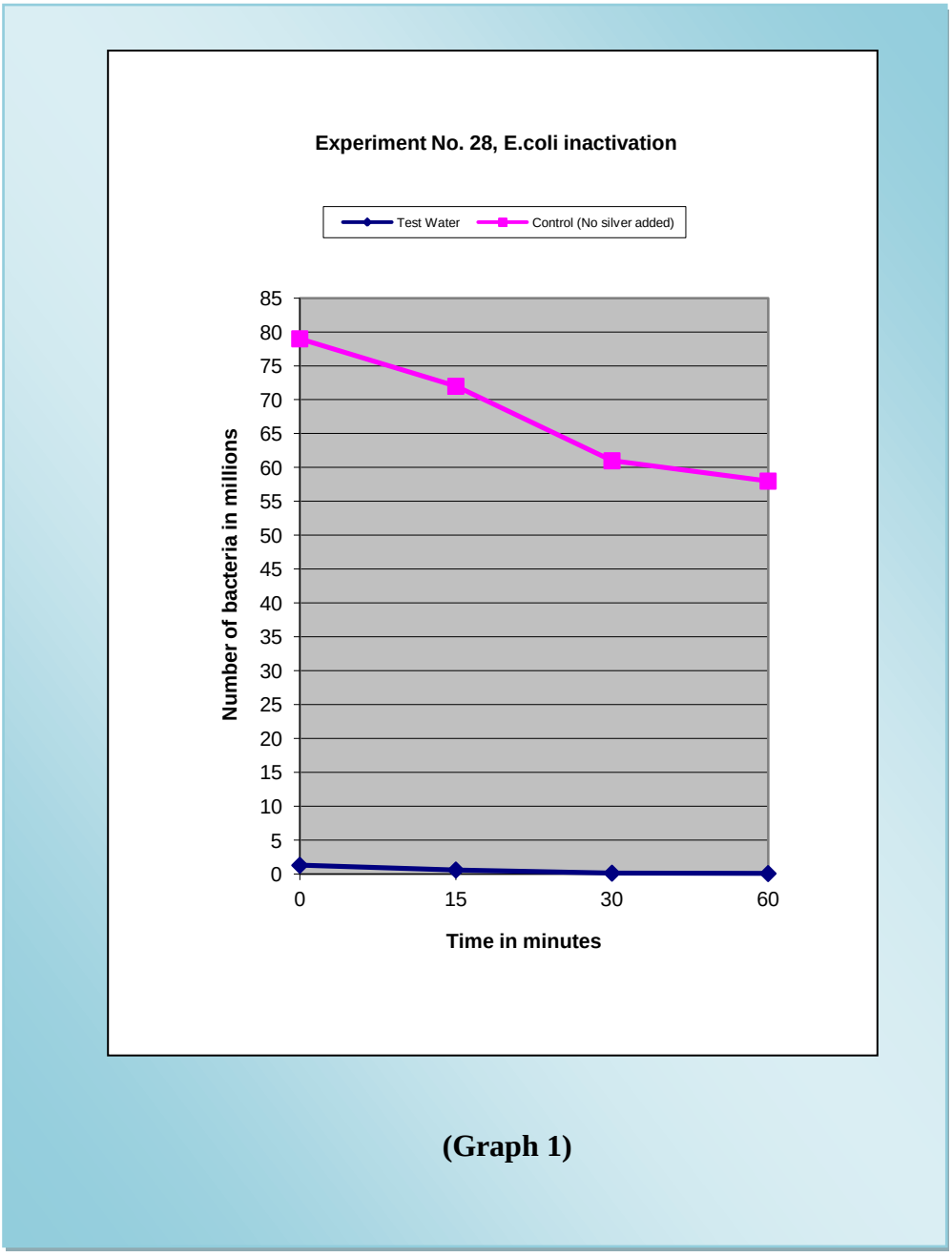
Remark : Sample No.1 – 7 drawn on 25-07-2006

Sample No.	Type	Untreated Water (Total Bacterial count)	Treated water (Total bacterial count)	Coliform Bacterie (In untreated water)	Coliform Bacterie (In treated water)
1	Squid whole	After 24 hrs 3,90,000 TPC/gm at 37 Degree C.	After 24 hrs 36,000 TPC/gm at 37 Degree C.	10	Nil
2	Mackeral Whole	After 24 hrs 190,000 TPC/gm at 37 Degree C	After 24 hrs 7,500		
3	Swa 13/cm SQW	After 24 hrs Crowded TPC/cm2 at 37 Degree C.	After 24 hrs 252		
4	Mackeral	After 24 hrs 576 TPC/cm2 at 37 degree C	After 24 hrs 40		
5	Drainage	Before wash 664 TPC/cm2 at 37 degree C	After wash 2 hr later 36		
6	Cooker Conveyor	Before wash 80 TPC/cm2 at 37 degree C	After wash 2 hrs later Nil		
7	Water	24/ml at 37 degree C	Nil		
8	Ice	34/ml at 37 degree C	18		

Sample No. 8 drawn on 26-07-2006
Sample No.1 & 2 raw material sample
Sample N0.3 & 6 swab Sample

Experiment Test- Report 2
Experiment 28

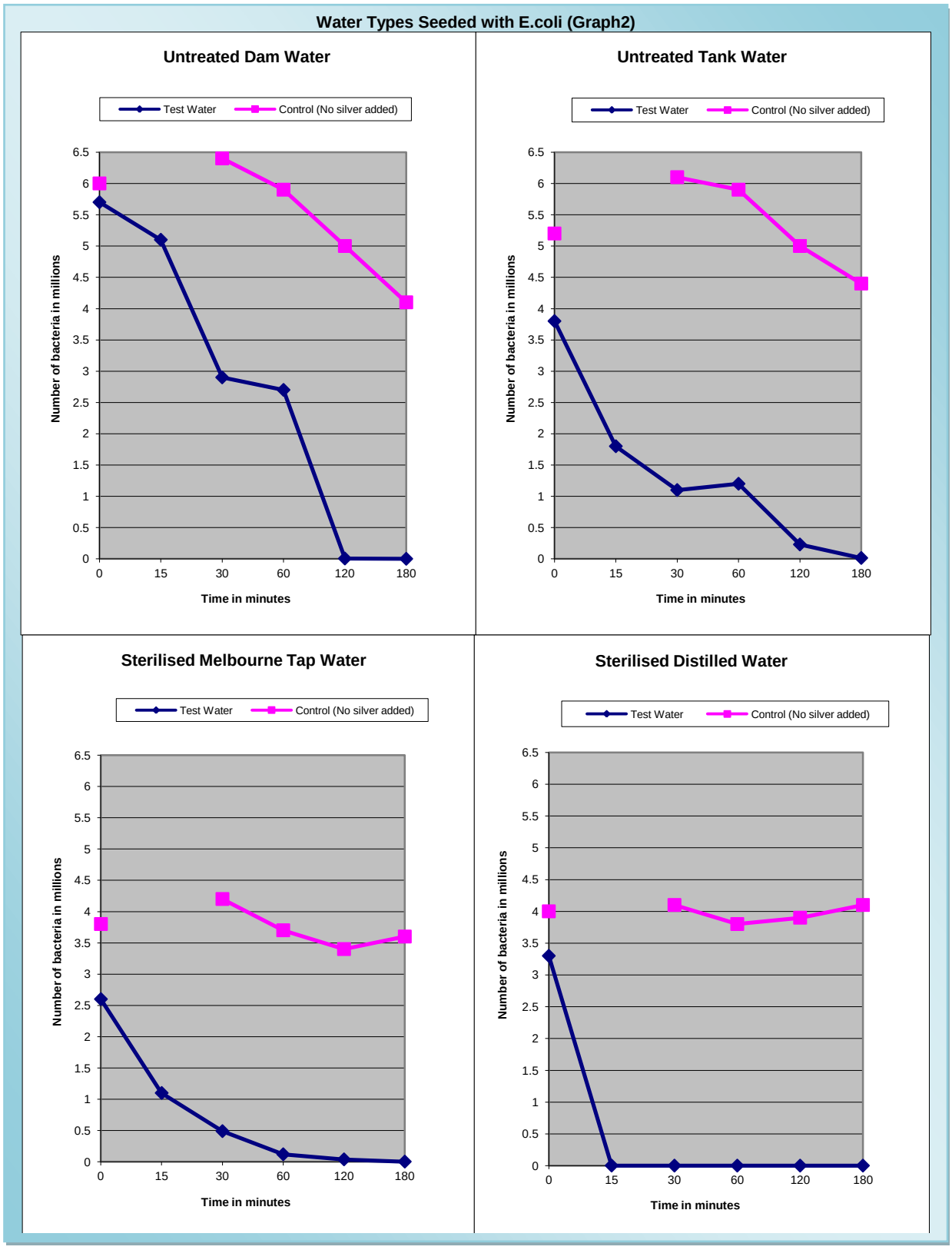
Australian Water Technologies (AWT) fully accredited laboratory in Australia, has carried out extensive testing (Experiment 28 & Experiment 33-36) as to the effectiveness of silver antibacterial water as a biocide on behalf of CC Technologies Pty. Ltd.
Experiment 28 has been carried out to indicate the effectiveness of treatment of silver antibacterial water on bacteria, *E.coli*, over various contact times. (Graph 1)



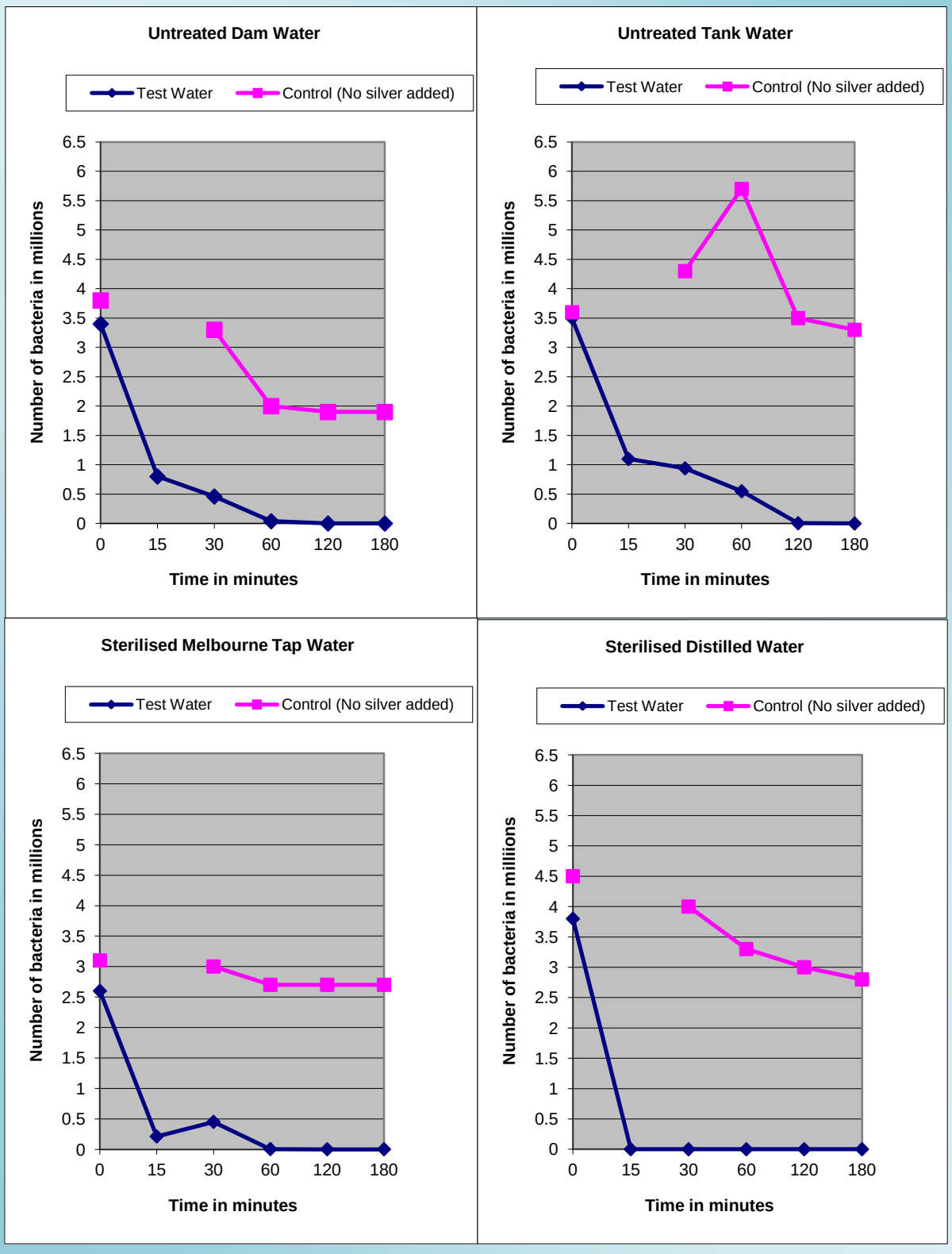
(Graph 1)

Experiment Test- Report 3
Experiment 33-36

Experiment 33 – 36 validates the effectiveness of treatments of silver antibacterial water against populations of both bacteria, *E.coli* and *Ps.aeruginosa*, in differing water types. (Graph 2 & 3)
The graphs illustrate the microbe population killed from the treatment produced by the Silver Antibacterial Water Unit. A significant reduction in the number of bacteria was attained after 60 minutes for the test water compares to control water (no silver added). If the experiments had been further examined at 2 or 3 hours duration, the killed rate would be significant.



Water Types Seeded with Pseudomonas Aeruginosa (Graph3)



Experiment Test-Report 4
Experiment 45

A unique experiment involves the manufacture of sausages utilising water from Silver Antibacterial Water System. (Table 1)

The preparation work and manufacture of the sausages used in this experiment was performed in a retail butcher's premises in between normal day-to-day activities. This was done to try and present an unbiased report and also to minimise disruption to business activities.

It is very important for the reader to understand that the Silver Antibacterial Water System was not used in this instance, in its designed role of assisting in the sanitising the plant and equipment associated with the production of the sausages.

Table 1: Results of Sausages Made Using Four Different Formulae and Stored at 4 – 5ºC

		Tap Water with Preservative	Ionised Water with Preservative	Tap Water No Preservative	Ionised Water No Preservative
Day 1	SPC cfu per g @ 25ºC	1,400,000	1,100,000	~5,000,000	2,900,000
	Visual Appearance	pink	pink	beige-pink	beige-pink
Day 3	SPC cfu per g @ 25ºC	860,000	490,000	58,000,000	29,000,000
	Visual Appearance	pink	pink	brown, wet	brown, wet
Day 6	SPC cfu per g @ 25ºC	10,000,000	12,000,000	110,000,000	76,000,000
	Visual Appearance	pink	pink	brown, wet, pink at contact areas of adjoining sausages, slight malodour	brown, wet, pink at contact areas of adjoining sausages, slight malodour
Day 9	SPC cfu per g @ 25ºC	110,000,000	62,000,000	160,000,000	120,000,000
	Visual Appearance	beige-pink, pink at contact areas of adjoining sausages	beige-pink, pink at contact areas of adjoining sausages	green-brown, wet, pink at contact areas of adjoining sausages, malodour	green-brown, wet, pink at contact areas of adjoining sausages, malodour

Experiment Test-Report 5
ATP Hygiene Result

Hygiene Result for Srirekha Ventures Sdn. Bhd., 39, Jalan Sultan Ismail, Kuala Lumpur 50250 Kuala Lumpur, West Malaysia using instrument/Bacterial Meter (1).

Test carry out by Mr. Brian Tee Guan Fui, AMIC, Assistant Manager, Health & Safety/Healthcare Service Support of Rentokil Initial (M) Sdn. Bhd., (12889-M). Suite 10.02, 10th Floor, Menara Yayasan Selangor, No. 184, Jalan Persiaran Barat, 46000 petaling Jaya, Selangor Darul Ehsan, Malaysia and witness by Mr. Anbu Durai the owner of Srirekha Ventures SDN. Bhd. on 2nd Nov. 2006

Time	Sampling point	Before	After treated by ABWU water
09.30	Drainage	184	84
10.30	Toilet Bowl	2,450	159

11.30 (one hour later) conduct the test.

(1) Instrument/Bacterial meter used : System SURE II from Hygieno : Made in U.K.

Experiment Test-Report 6

Test on Cooling Towers and Evaporator Condenser
Monthly total bacteria and quarterly Legionella testing on Cooling Towers and Evaporator Condenser of Makmur Enterprises Pty Ltd

Makmur Enterprises is a frozen food manufacturer. The company has installed and been using the Silver Antibacterial Water System for Cooling Towers and Evaporator Condensers.

Samples from cooling towers and evaporator condensers are collected every month to test for the monthly total bacteria, HCC (EML) and TPC (Amdel), and the quarterly *Legionella.* The summary of monthly total bacteria and quarterly *Legionella* testing results are attached.

From March 2004 to Jan 2005, the total bacterial count was *rarely* reached over the maximum level of 100,000 HCC/mL and *Legionella* totals always stayed below 10 cfm/mL. These have demonstrated the effectiveness of using Silver Antibacterial Water System killing bacteria and preventing the growth of microbes in the cooling tower. As stated by Carl Greenaway, Makmur Enterprises (pg.13&14), "monthly total bacteria (HCC) and quarterly *Legionella* testing results reflect the effectiveness of the new treatment. Since the commencement of the Silver Antibacterial Water System the cooling tower bacterial counts are the lower ever recorded and the appearance of the cooling tower water is clear and free of particulate matter."

Monthly Total Bacteria (*HCC/mL*) Testing Results of Makmur Enterprises' Cooling Towers (C/T) and Evaporator Condensers (E/C)
from March 2004 to September 2004

Samples	March	April	May	June	July	August	September
C/T 1	24000	2000	< 2000	2000	2000	38000	30000
C/T 2	22000	4000	2000	8000	2000	48000	34000
E/C 1	64000	< 2000	< 2000	12000	4000	*380000*	34000
E/C 2	N/A	2000	2000	< 2000	2000	*170000*	24000

Quarterly Legionella (cfu/mL) Testing Results of Makmur Enterprises' Cooling Towers (C/T) and Evaporator Condensers (E/C)
from April 2004 to September 2004

	April			June			August			September		
Samples	Legionella Species cfu/mL			Legionella Species cfu/mL			Legionella Species cfu/mL			Legionella Species cfu/mL		
	LpneSG1	LpneSG2+	L other	LpneSG1	LpneSG2+	L other	LpneSG1	LpneSG2+	L other	LpneSG1	LpneSG2+	L other
C/T 1	<10	<10	<10	<10	<10	<10	Pending			<10	<10	<10
C/T 2	<10	<10	<10	<10	<10	<10	Pending			<10	<10	<10
E/C 1	<10	<10	<10	<10	<10	<10	Pending			<10	<10	<10
E/C 2	<10	<10	<10	<10	<10	<10	Pending			<10	<10	<10

< = Less than ~ = Estimated spp = Species Y = Yeast

HCC = Heterotrophic Colony Count Lpne = Legionella

SG = Scrogroup N/D = Not detected - = Not tested N/A = Not Available

Above samples are tested by EML Consulting Services Pty Ltd.

Monthly Total Bacteria (TPC) Testing Results of Cooling Towers (C/T) and Evaporator Condensers (E/C) from Oct 2004 to Feb 2005

	Oct 04	**Nov 04**	**Dec 04**	**Jan 05**
Samples	Total Plate Count (TPC) CFU/mL	Total Plate Count (TPC) CFU/mL	Total Plate Count (TPC) CFU/mL	Total Plate Count (TPC) CFU/mL
C/T 1	55000	28000	~17000	~22000
C/T 2	80000	~ 14000	~ 4600	56000
E/C 1	78000	~ 20000	~ 7800	55000
E/C 2	390	2500	~ 16000	51000

Quarterly Legionella (cfu/mL) Testing Results of Makmur Enterprises' Cooling Towers (C/T) and Evaporator Condensers (E/C) from Oct 2004 to Dec 2004

	Oct 2004	Dec 2004
Samples	Legionella Species cfu/mL	Legionella Species cfu/mL
C/T 1	<10	<10
C/T 2	<10	<10
E/C 1	<10	<10
E/C 2	<10	<10

Sample Storage: - Refrigeration at 2 – 8 degrees C; unless specified otherwise in sample comments, analysis commenced within 24 hours of sampling; ND = Not Detected; NR = No Result;
spr = Spreaders Present. Incubation conditions: 37 degrees C/48 hours.
Above samples are tested by Amdel.

Demonstration Test -**Report 7**

Date: 10 June 2010
Company / Name: NORTHERN MEAT &POULTRY SUPPLIERS P/L & Magic Taste Foods
Tests were carried out on site: 64-66 Chifley Drive, Preston VIC 3072 Australia

No	Sampling Site	Test No#	Count of Microorganism				
			Result of before Washing	Time of Washing with Silver Antibacterial Wash down unit	Time of taking sample after washing	Test No#	Result of after washing with Silver Antibacterial wash down unit
1	Steamer	#40	9999+	4:49 PM	5:21 PM	#49	360
2	Tumbler	#42	8	N/A	N/A	N/A	N/A
3	Tumbler	#43	898	4:45 PM	5:22 PM	#50	136
4	Wastage Drum	#44	1291	4:47 PM	5:25 PM	#51	1200
					5:26 PM	#52	38

No	Sampling Site	Test No#	Result of before passing through Silver Antibacterial Wash down unit	Test No#	Result of after passing through Silver Antibacterial Wash down unit
5	Recycle Water (running)	#45	254	#47	109
6	Recycle Water (cup)	#46	184	#48	77

Notice:

1 Operating Instrument used: Hygiena, systemSURE II and Ultrasnap.
2 Tests were conducted by CC Technologies Pty Ltd staff with Mr. Evan Tsioukis and Mr. Suresh Gowda.
3 9999+ is the maximum reading obtainable from measuring device.
4 Test No#42 process was incorrectly followed therefore test terminated and reported with No#43.
5 Test No#49, the result obtained has to be questioned, due to the sampling site was washed down with detergent after washing with Silver Antibacterial Wash down unit.
6 Test No#51. A larger sample area was taken compared to initial sample in test No.#44 and was therefore repeated using correct sample size in the No.#52.

Testimonial

Chili was washed by Silver Ion Water & wrapped to keep in refrigerator for about one month.

After washing and keeping in sealed container then put into refrigerator.

This photo was taken on 8th April 2010

10 days later, the coriander was still good.

This photo was taken on 18th April 2010

Products

ABWU1-A2	ABWU2-A2
	

Silver Antibacterial Water System		
Flow Rate (L/min)	Model No.	Application—Domestic / Commercial / Industry
26	ABWU1-A2-26	Households 3~8 people / Shops / Food Processing / Small Factories where both filtration & silver ion technology & programmable back wash facilities are required. Where flow requirements do not exceed 30 L/min.
	ABWU2-A2-26	
30	ABWU1-A2-30	
	ABWU2-A2-30	

ABWU1-M2	ABWU2-M2
	

Silver Antibacterial Water System		
Flow Rate (L/min)	Model No.	Application—Domestic / Commercial / Industry
26	ABWU1-M2-26	Households 3~8 people / Shops / Food Processing / Small Factories where both filtration & silver ion technology & programmable back wash facilities and stainless steel cabinet are required. Where flow requirements do not exceed 30 L/min.
	ABWU2-M2-26	
30	ABWU1-M2-30	
	ABWU2-M2-30	

ABWU0-R2	ABWU3-RP
	

Silver Antibacterial Water System		
Flow Rate (L/min)	Model No.	Application—Domestic / Commercial / Industry
15-18	ABWU0-R2-15	Households 3~8 people / Shops / Food Processing / Small Factories where both filtration & silver ion technology is required & flow requirements do not exceed 30 L/min.
25-28	ABWU0-R2-25	
15-18	ABWU3-RP-15	

S2E	C2E
	

Silver Antibacterial technology	
Silver Antibacterial Unit	
Model No.	Application
S2E-018-2PC1	Shops / Food Processing / Small Factories where filtration already exists or not required & flow requirements do not exceed 30 L/min.
C2E-018-2PC1	

EMU-D08

Silver Antibacterial Technology	
EMU(Enhanced Mineral Unit)	
Model No.	Application—Domestic
EMU-D08-C	1~2 people, ideal for flats, villas, & small households where filtration already exists.
EMU-C08-C	

EMU-D15

Silver Antibacterial technology	
EMU(Enhanced Mineral Unit)	
Model No.	Application—Domestic
EMU-D15-C	3~8 people, ideal for houses where filtration already exists and larger water usage is required.
EMU-C15-C	

EMU-9NN0

Silver Antibacterial technology	
Silver Antibacterial Cartridge	
Model No.	Application—Domestic
S0N-000-9NN0	Kitchen use only where filtration systems already exists, uses battery power –can be filled with 240V power pack
C0N-000-9NN0	

EMU-A2CP

Silver Antibacterial Water System	
Bench Top Filter	
Model No.	Application—Domestic
EMU-A2CP	Kitchen use only, suits Apartments / Renting families / where portability is required.

ABU

Silver Antibacterial Technology	
ABU (Antibacterial Unit)	
Model No.	Application
ABU-MF-C	Metal Working Fluid
ABU-CT-C	Cooling Tower
ABU-EC-C	Evaporative Cooler
ABU-AU-C	Amenities Unit

Australian Authority

- Developed and manufactured in Australia.
- Australian patent.
- Member of AWA (Australian Water Association)
- Trade Mark registered with IP Australia

The Trade Mark is registered for the following goods and services:

Anti microbial apparatus used in and for water supply and water treatment; anti microbial apparatus used in and for heating, cooking, drying and sanitary purposes; anti microbial apparatus used in and for refrigeration and ventilation being goods in class 11.

Anti bacterial / anti microbial silver colloid preparation / treatment for disinfections and preservation of liquids, food stuffs; for use in agriculture and horticulture and drinking water and science being class 1.

Anti bacterial / anti microbial silver colloid preparation / treatment for laundry use, cleaning, sanitizing, personal care products including soaps, shampoos, hair lotions, skin lotions, dentifrices; cleaning, sanitizing and protection treatments for application to surfaces for removal of odors and inhibition of bacteria, mould, fungi, mildew being goods in class 3.

Anti bacterial / anti microbial silver colloid used in pharmaceutical, veterinary and sanitary preparations; preparation used for materials for dressings and lotions in the treatment of wounds and burns; disinfectant for destroying bacteria, mould, mildew, fungi and similar microbes; preparation for inclusion in equipment used for pharmaceutical, veterinary and sanitary purposes being goods in class 5.

Anti bacterial / anti microbial silver colloid (a chemical preparation) used in pharmaceutical, veterinary and sanitary preparations; preparation used for materials for dressings and lotions in the treatment of wounds and burns; disinfectant for destroying bacteria, mould, mildew, fungi and similar microbes; preparation for the inclusion in equipment used for pharmaceutical, veterinary and sanitary purposes being goods in class 5.

Australian Government
IP Australia

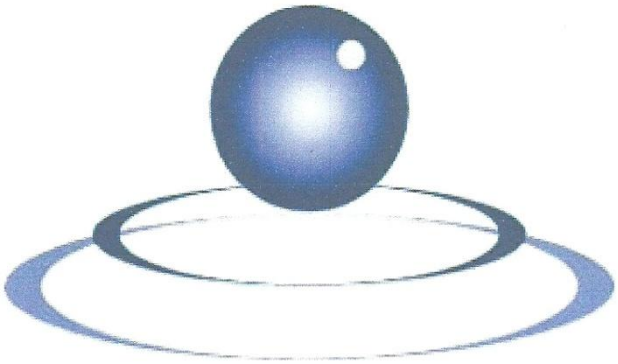
CERTIFICATE OF REGISTRATION OF

TRADE MARK

No. 1280020

I, **Fatima Beattie, Registrar of Trade Marks** hereby certify -

that the trade mark represented on this certificate has been registered as a Trade Mark, No. 1280020 in the Register of Trade Marks for a period of ten years commencing from **07 January 2009** and that **CC Technologies Pty Ltd ACN/ARBN 058 551 090** of **30-32 Boileau Street KEYSBOROUGH VIC 3173 AUSTRALIA** has been entered in the Register of Trade Marks as the owner of the trade mark.



SILVER ION
Anti-Microbial

The goods and/or services for which the trade mark is registered, plus any endorsement, additional owners or other information relating to the registration, are listed on the attached pages.

Given under my hand and the seal of the Trade Marks Office on 24 August 2009

COMMONWEALTH OF AUSTRALIA
AUSTRALIA
TRADE MARKS OFFICE

Fatima Beattie
REGISTRAR OF TRADE MARKS

TRADE MARKS ACT 1995

Australian Government
IP Australia

CERTIFICATE OF REGISTRATION OF TRADE MARK ATTACHMENT

No. 1280020

The trade mark is registered for the following goods and/or services:

Anti bacterial/anti microbial silver colloid preparation/treatment for disinfection and preservation of liquids, food stuffs; for use in agriculture and horticulture and drinking water and science being goods in **class 1**

Anti microbial apparatus used in and for water supply and water treatment; anti microbial apparatus used for heating, cooking, drying and sanitary purposes; anti microbial apparatus used in and for refrigeration and ventilation being goods in **class 11**

TRADE MARKS ACT 1995