ZOONO®
POULTRY & LIVESTOCK
INNOVATIVE PROTECTION

WHAT IS ZOONO?

WHY ZOONO?

ZOONO IN ACTION

AFRICAN SWINE FLU (ASFv)

APPLICATION OF Z-71: SWINE

WHAT IS ZOONO?

HOW DOES ZOONO WORK?

THE ZOONO MOLECULE

TRIED AND TESTED

ZOONO
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WHAT IS ZOONO?

Zoono is...

HOW DOES ZOONO WORK?

THE ZOONO MOLECULE

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WHAT IS ZOONO?

Zoono is...

- environmentally friendly

HOW DOES ZOONO WORK?

THE ZOONO MOLECULE

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ZOONO
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WHAT IS ZOONO?

Zoono is...

- environmentally friendly
- 98% purified water based

HOW DOES ZOONO WORK?

THE ZOONO MOLECULE

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WHAT IS ZOONO?

Zoono is...

- environmentally friendly
- 98% purified water based
- no alcohol and non-toxic

HOW DOES ZOONO WORK?

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WHAT IS ZOONO?

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- environmentally friendly
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- mechanical method of action

HOW DOES ZOONO WORK?

THE ZOONO MOLECULE

TRIED AND TESTED

ZOONO POULTRY & LIVESTOCK

WHAT IS ZOONO?

Zoono is...

- environmentally friendly
- 98% purified water based
- no alcohol and non-toxic
- mechanical method of action
- single surface application providing full efficacy for sustained periods of time

HOW DOES ZOONO WORK?

THE ZOONO MOLECULE

TRIED AND TESTED

ZOONO
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HOW DOES ZOONO WORK?

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HOW DOES ZOONO WORK?

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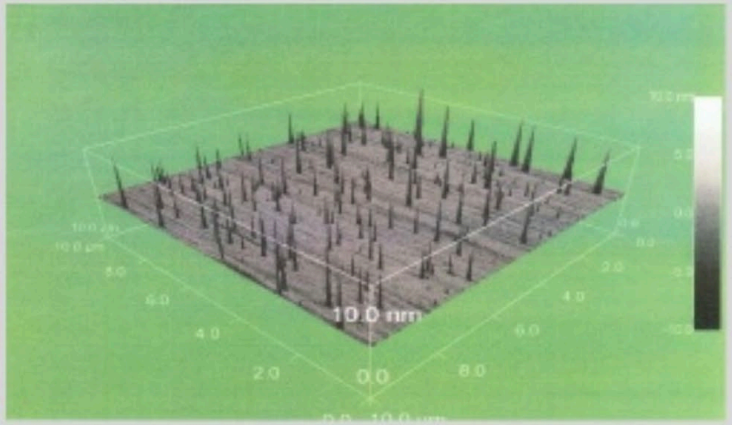
POINT OF DIFFERENCE	Zoono kills pathogens through a mechanical process rather than a poisoning or dehydration like sanitisers.
WHAT IT DOES	Zoono leaves a monomolecular coating that can only be removed from a surface by sustained friction.
METHOD OF ACTION	The Zoono molecule resembles an antimicrobial spike that pierces the microbial cell wall, 'popping' it like a balloon.



HOW DOES ZOONO WORK?

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POULTRY & LIVESTOCK

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METHOD OF ACTION	The Zoono molecule resembles an antimicrobial spike that pierces the microbial cell wall, 'popping' it like a balloon.
HOW IT PREVENTS SPREAD	Pathogens are mechanically totally destroyed thereby reducing the possibility of any mutation, therefore, NO superbugs can be formed.
APPLICATION	Zoono can be applied as a mist, foam, surface wipe or integrated into fabric washing.

HOW DOES ZOONO WORK?

ZOONO®
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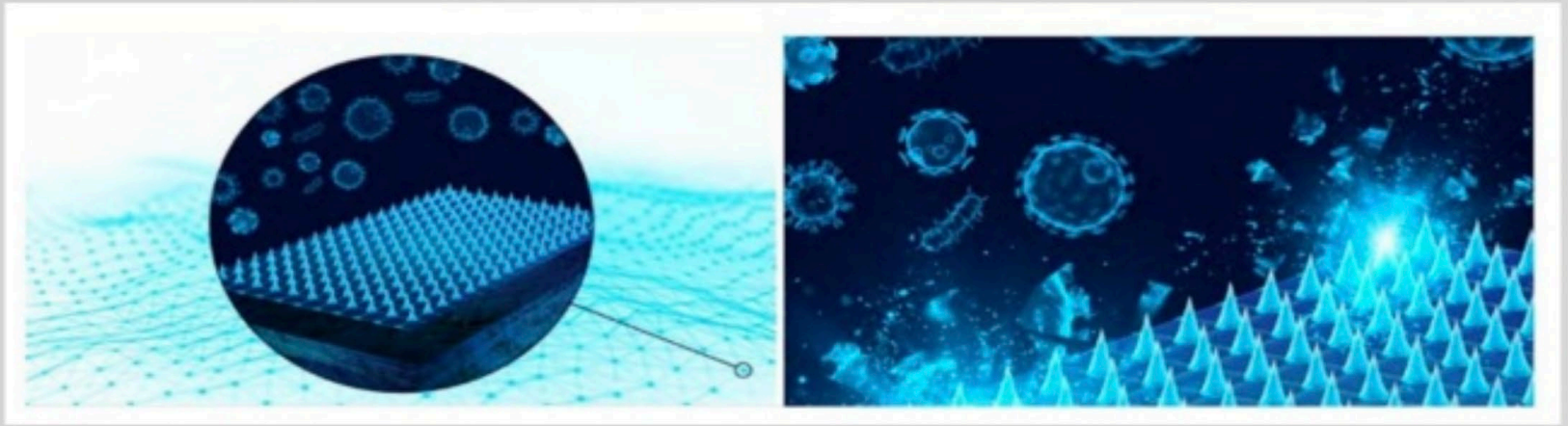
Zoono's unique technology kills by a 'mechanical' process (rather than via chemical or dehydration).

A layer of positively charged molecular pins bond to the surface and attracts/ kills negatively charged pathogens by rupturing the microbe cell wall.

The protective 'pins' on the surface remain intact (and effective) for up to 30 days, as proven with global laboratory results.

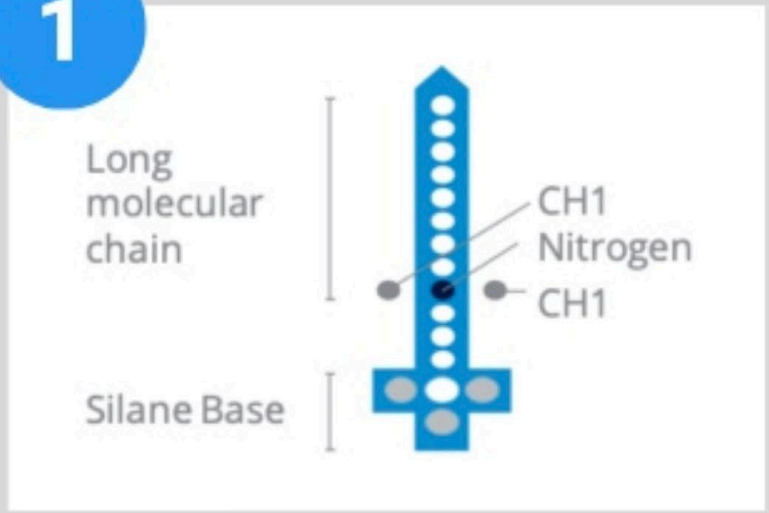


THE ZOONO MOLECULE

ZOONO® POULTRY & LIVESTOCK

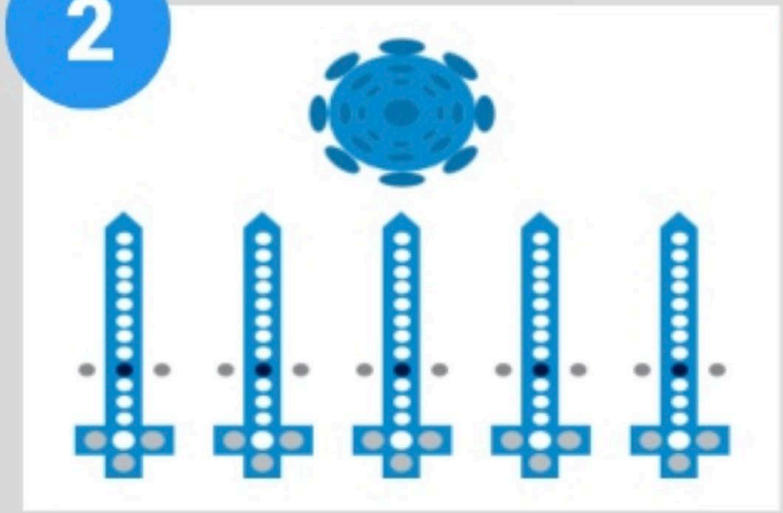
The Zoono molecule resembles an antimicrobial spike that pierces the micro-organism, 'popping' it like a balloon, therefore killing germs mechanically.

1



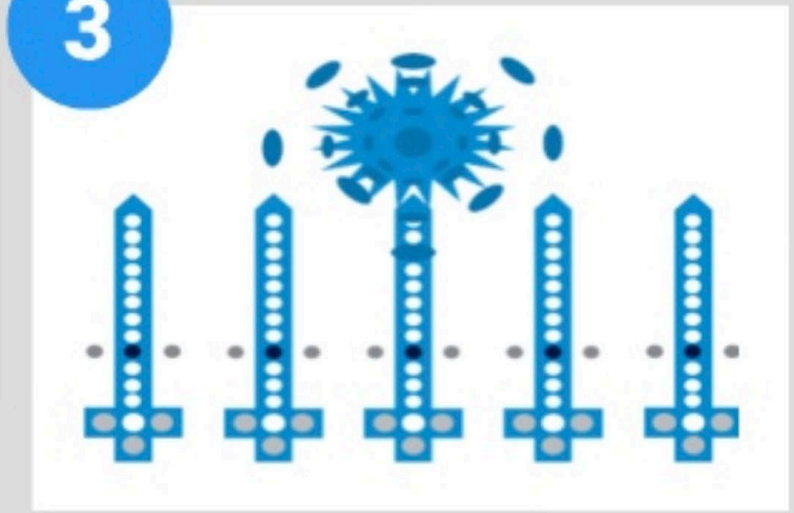
The Zoono molecule with long, pointed chains of atoms

2



Microbe landing on a microscopic bed of spikes.

3



Destruction of the microbe.

TRIED AND TESTED

ZOONO®
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Zoono has been tested against over 100 common pathogens, such as:

Zoono has been tested in accredited laboratories worldwide – including Germany, New Zealand, USA, Australia, Japan, South Africa, EU (England), Turkey, UAE & Peru.

THE RESULTS

ZOONO® POULTRY & LIVESTOCK

TARGET ORGANISM	REDUCTION AFTER 1 HOUR	REDUCTION AFTER 14 DAYS	REDUCTION AFTER 28 DAYS
Staphylococcus aureus	99.98%	100.00%	100.00%
Pseudomonas aeruginosa	99.94%	99.96%	99.96%
Escherichia coli	99.99%	100.00%	100.00%
Proteus vulgaris	99.92%	99.93%	99.93%
Methicillin-Resistant Staphylococcus Aureus (MRSA)	99.96%	99.97%	99.97%
Vancomycin Resistant Enterococcus (VRE)	99.97%	99.97%	99.96%
Citrobacter Freundii	99.99%	99.98%	99.98%

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Citrobacter Freundii	99.99%	99.98%	99.98%

NEARLY 100% REDUCTION IN MICROBES AFTER 28 DAYS

INDUSTRIAL DISINFECTANT

ZOONO® POULTRY & LIVESTOCK

DISINFECTANTS

- Disinfectants only kill by dehydration or poisoning
- Disinfectants are effective only in their wet state
- Once bacteria forms on the applied surface when dry the surface is re infected

Z-71 EFFECT

- Kills pathogens when applied in wet form the same way as standard disinfectants
- Carries on killing when dry with a “Mechanical method of action”
- Killing mechanically with microscopic pins destructing the pathogens meaning no mutation is possible.

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INNOVATIVE PROTECTION

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APPLICATION OF Z-71: SWINE

WHY ZOONO?

BIO-SECURITY
BASICS

BIO-SECURITY
ON SWINE FARM

ANIMAL HEALTH

RECOMMENDED PRODUCTS

ZOONO®
POULTRY & LIVESTOCK

WHY ZOONO?

BIO-SECURITY on swine farms including nurseries, farrowing sheds, transportation, human contact and common areas

Effective against most bacteria and viruses related to livestock.

THE OPPORTUNITY EXISTS FOR ZOONO TECHNOLOGY

BIO-SECURITY BASICS

BIO-SECURITY ON SWINE FARM

ANIMAL HEALTH

RECOMMENDED PRODUCTS

ZOONO®
POULTRY & LIVESTOCK

BIO-SECURITY

BASIC COMPONENTS

- **Isolation**
  Animal confinement within a controlled environment
- **Traffic Control**
  Human traffic is a common cause of livestock disease outbreaks.
  Zoonotic viruses, Salmonella, Swine Flu, Ebola
- **Sanitisation**
  The disinfection of materials, people and equipment entering the farms.
  Water supply quality.

THESE SEGMENTS ARE CONSIDERED HIGH BIO-SECURITY RISKS

ZOONO
POULTRY & LIVESTOCK

BIO-SECURITY

ON SWINE FARMS

HUMAN TRANSFER

- Skin
- Clothing
- Vehicles
- Airborne in common areas

Z-71 WILL LOWER THE OVERALL MICROBIAL LOAD REDUCING THE RISK OF INFECTIONS

ZOONO®
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BIO-SECURITY

ON SWINE FARMS

STOCK TRANSPORTATION

- Transportation crates
- Stock handlers

Z-71 WILL LOWER THE OVERALL MICROBIAL LOAD REDUCING THE RISK OF INFECTIONS

ZOONO®
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BIO-SECURITY

ON SWINE FARMS

LIVING ENVIRONMENT

- Pens
- Crates
- Drinker bowls
- Feeder bowls
- All areas where pigs make contact

Z-71 WILL LOWER THE OVERALL MICROBIAL LOAD REDUCING THE RISK OF INFECTIONS

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BIO-SECURITY

ON SWINE FARMS

DIETARY

- Contaminated water supply
- Contaminated swill

Z-71 WILL LOWER THE OVERALL MICROBIAL LOAD REDUCING THE RISK OF INFECTIONS

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ANIMAL HEALTH

ON SWINE FARMS

- Reduce the overall microbial load in the total bio-security chain improves the animals health and well-being
- better animal weight performance for less food consumed
- proven to reduce mortality with regular Z-71 application
- improved staff welfare

ZOONO®
POULTRY & LIVESTOCK

RECOMMENDED PRODUCTS

AGRICULTURAL APPLICATION

THE Z-71 TECHNOLOGY

Applied via a fogging machine, spray or wipe process on all surfaces to provide low pathogen levels for up to 42 days.

ZOONOTEX

Used on all textiles to protect clothes and linens.

GERMFREE 24

Used on skin to protect people and pets for up to 24 hours

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CASE STUDIES
AUSTRALIAN VETERINARY COMPANY

Working with an Australian Veterinary public company comprised of Australia's leading rural veterinary practices.

Have 150 highly experienced veterinarians with expertise across pig, poultry, dairy, equine and companion area sectors.

SWINE NURSERY

FARROWING SHEDS

ZOONO® POULTRY & LIVESTOCK

CASE STUDIES
AUSTRALIAN VETERINARY COMPANY

Swine farms serviced by Australian Veterinary company.
Trials conducted by ZPL.

Target areas include:

- farrowing crates
- nurseries
- drinker and feeder bowls

SWINE NURSERY

FARROWING SHEDS

ZOONO®
POULTRY & LIVESTOCK

CASE STUDIES
AUSTRALIAN VETERINARY COMPANY

Observations

- lower pathogen levels for sustained periods
- better general animal health, in particular Scour

SWINE NURSERY

FARROWING SHEDS

ZOONO®
POULTRY & LIVESTOCK

CASE STUDIES
AUSTRALIAN VETERINARY COMPANY

Objective

- understanding common ailments and identifying areas for biosecurity improvement
- educating the farmers of the benefits of Zoono products

SWINE NURSERY

FARROWING SHEDS

ZOONO®
POULTRY & LIVESTOCK

SWINE NURSERY

The room was prepared with normal sanitisation and awaiting stock arrival

ATP were carried out and still sporadic high pathogen loads were registered

Misting was carried out and further ATP results show significant reductions on ATP

A retest with ATP proved a sustained reduction in pathogen loads after 9 days.

			Test nos.			Test nos.			Test nos.	
			20-30	31-		34-44	45-		116-126	127-
Considered Food Safe (A)		0 - 30	1	0		7	2		2	1
Considered clean (B)		31 - 100	2	1		1	1		3	2
Caution! (C)		101 - 200	2	2		0	0		1	0
Contaminated (D)		201 - 500	0	0		1	0		1	0
High Risk of Contamination		501 - 1000	1	0		0	0		1	0
Extreme Risk of Contamination		1000+	3	0		0	0		1	0
			9	3		9	3		9	3
Room1 Bay Right 1 (sick bay)										
Cycle description:		Pre-weaner arrival			After fogging			9 days		
		4th June			5th June			14th June		
POSITION		Test #	Result	Code	Test #	Result	Code	Test #	Result	Code
Trough gate end first cell	Bay 1 RHS	20	1400	F	34	44	B	116	41	B
Big Milk Trough top edge	Bay 1 RHS	23	127	C	35	16	A	119	16	A
Back wall	Bay 1 RHS	24	59	B	37	0	A	120	36	B
Drink bowl	Bay 1 RHS	25	646	E	38	30	A	121	4	A
Trough gate end first cell	Bay 5 RHS	26	8906	F	39	230	D	122	856	E
Fence line Left front by drink bowl	Bay 5 RHS	27	33	B	40	29	A	123	101	C
Back wall	Bay 5 RHS	28	141	C	41	4	A	124	243	D
Drinker bowl	Bay 5 RHS	29	10	A	43	14	A	125	80	B
Trough gate end first cell	Bay 5 RHS	30	1419	F	44	19	A	126	2218	F
fence line right front by drink bowl	Bay 9 LHS	31	131	C	45	26	A	127	39	B
Back wall	Bay 9 LHS	32	79	B	46	13	A	128	93	B
Drinker bowl	Bay 9 LHS	33	161	C	47	46	B	129	25	A

SWINE NURSERY

The room was prepared with normal sanitisation and awaiting stock arrival

ATP readings were taken pre-misting application and extremely high levels were recorded.

Z-71 SWINE was applied and retested once dry. – (approx. 45 min after) – 8 days

Reduction in pathogen load recorded an average of 96%

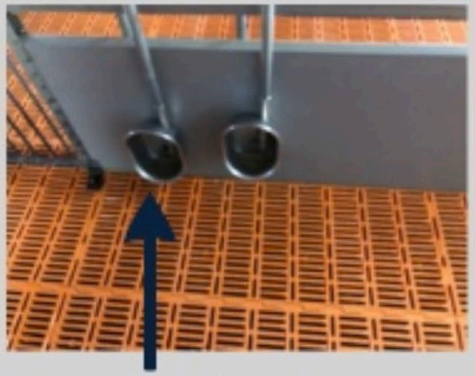
Nursery									
Cycle description:	**Washed no Sanitiser**								
	12/06/2019			12/06/2019			20/06/2019		
POSITION	**Test #**	**Result**	**Code**	**Test #**	**Result**	**Code**	**Test #**	**Result**	**Code**
Bay 1 Back wall drinker		3321	F		6	A		86	B
Bay 2 Feeder trough		2267	F		28	A		92	B
Bay 4 5th bar in on rh rail		954	E		55	B		45	B
Bay 9 Feeder trough		922	E		8	A		105	C
Bay 11 back wall lhs of drinker		131	C		118	C		71	B
Bay 12 drinker bowl		8942	F		21	A		87	B
bay 12 wall inside gate lhs		7595	F		1153	F		326	D

RESULTS	
Average Untreated	**3447.43**
Medium (midpoint) treated	**116.00**
Total reduction after treatment	**-96.64%**

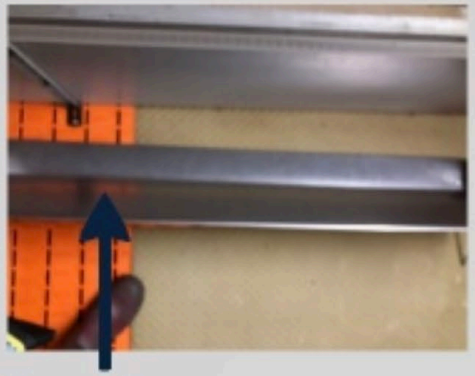
ZOONO POULTRY & LIVESTOCK

SWINE NURSERY

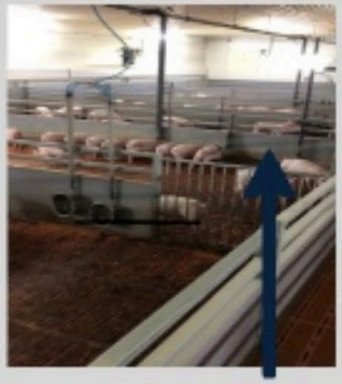
ZOONO® POULTRY & LIVESTOCK

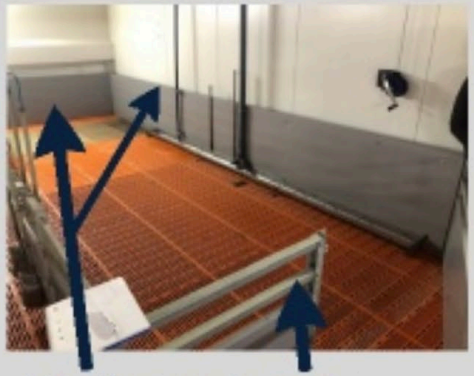


Drinking bowls



Trough





Walls and gate

Follow up ATP testing after 9 days

Cleaned off surface marks where needed with dry paper towel

Retested in same locations as prior testing

FARROWING SHEDS

ZOONO® POULTRY & LIVESTOCK

ATP ANALYSIS - Wallo Farm Shed 2 Rooms 1 & 2									
		Test nos.			Test nos.			Test n	
		#REF!	#REF!		#REF!	#REF!		#REF!	
Considered Food Safe (A)	0 - 30	0	0		2	0		0	
Considered clean (B)	31 - 100	0	0		0	0		0	
Caution! (C)	101 - 200	0	0		0	0		0	
Contaminated (D)	201 - 500	0	0		1	0		0	
High Risk of Contamination	501 - 1000	0	0		2	0		2	
Extreme Risk of Contamination	1000+		0		0	0		3	
		0	0		5	0		5	
Shed 2 ROOM 2 Standard sanitisation									
Cycle description:	Standard sanitisation								
					14/06/2019			28/06/2019	
POSITION	Test #	Result	Code	Test #	Result	Code	Test #	Result	
Pen 201 Back Wall				103	0	A		870	
Pen 206 First Rail RHS of Seperator				106	226	D		693	
Pen 206 Trough Lip				107	536	E		3970	
Pen 208 Sow side wall				108	2	A		1387	
Pen 240 Floor grate				109	592	E		2649	
Shed 2 ROOM 1 NO PRE SANITISATION	washdown no sani			After fogging					
POSITION	Test #	Result	Code	Test #	Result	Code	Test #	Result	
Pen 189 Trough lip	111	8706	F	116	159	C		221	
Pen 198 1St post RHS rail	112	5664	F	117	7	A		57	
Pen 180 Trough Lip	113	4835	F	118	17	A		43	
Pen 163 Floor grate	114	2274	F	119	309	D		264	
Pen 172 Wall RHS	115	2975	F	120	10	A		24	

Comparison was between rooms 1 & 2 in No 2 farrowing shed

Room 2 – power wash with standard sanitisation

Room 1 – power wash with no sanitisation

Room 1 – Retest after product applied THEN AFTER 15 DAYS

Results proved an overall reduction in pathogen load of 94% between both sheds.

Conclusion : This product applied in the correct manner reduces pathogen loads more effectively than standard sanitisation and for longer sustained periods of time as already proven.

Average Pathogen Load		
Standard sanitisation		1913.8
ZPP sanitisation		121.8
Total load reduction with ZPP		-94%

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AFRICAN SWINE FLU (ASFv)

ASFv PORTUGAL

ASFv MONITORING

ASFv SYMPTOMS

ASFv OBSERVATIONS

ASFv OUTBREAK

ASFv PROPOSAL

ASFv CONTROL

ASFv GLOBAL INTEREST

ASFv PREVENTION

ASFv

PORTUGAL

- ASFv is active in eastern Europe, and is now little more than 1500km from Portugal's borders.
- Portugal would "suffer enormous damages" if the disease reaches national territory.
- It would threaten the very survival of the pork meat sector – which has only recently forged lucrative deals with countries like China
- An ASF outbreak would impact on pork meat exports and also local market with significant economic effects.

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ASFv

PORTUGAL

- In Bulgaria, the virus has just hit the 19th pig farm in the space of a month resulting in over 40,000 pigs being destroyed.
- If ASFv hit Portugal it would almost certainly be spread by the 150,000-odd wild boar expanding “uncontrollably” through rural areas.
- The first spread of ASFv to Portugal was in 1957 as a result of waste from airline flights being fed to pigs near Lisbon airport.
- Since 1957 repeat occurrences in Portugal again, Spain, Italy, France, Belgium and the Netherlands.

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ASFv

SYMPTOMS

Similar to a form of Ebola virus, the fever causes:

- a general ‘dullness’ within 4-5 days of infection
- breathing difficulties
- vomiting, coughing, nasal and ocular discharge
- abortion in pregnant sows, cyanosis of extremities and death within 7 days

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ASFv

OUTBREAK

Treatment of the disease is not possible

- The disease will initially have to be controlled using zoo-sanitary measures:
- Culling animals on infected farms, followed by cleaning and disinfection
- Tightening bio-security measures
- Transport ban on pigs and pork products
- Vaccination not possible
- No vaccine against African swine fever is available

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ASFv

CONTROL

- The only way to control this plague is to kill all pigs in contact with a diseased pig.
- The meat too, has to be destroyed, as the virus lives within it.
- **TREATMENT IS NOT POSSIBLE FOR ASFv**
- **PREVENTION IS THE ONLY CONTROL THROUGH STRICT BIO-SECURITY PROTOCOL**

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ASFv PREVENTION

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HUMAN TRANSFER			
SKIN	GERM FREE HAND PROTECTOR	24 HOURS	HAND PUMP
CLOTHING	LAUNDRY GUARD	30 WASHES	ADD TO WASH
VEHICLES	AUTOMOTIVE FOGGER	30 DAYS	AEROSOL
AIRBORNE IN COMMON AREAS	Z-71 SANITISER	30 DAYS	MISTING
STOCK TRANSPORTATION			
TRANSPORT CRATES	Z-71 SWINE GUARD	7 DAYS	MISTING
LIVING ENVIRONMENT			
PENS	Z-71 SWINE GUARD	7 DAYS	MISTING
CRATES	Z-71 SWINE GUARD	7 DAYS	MISTING
DRINKER BOWLS	Z-71 SWINE GUARD	7 DAYS	MISTING
FEEDER BOWLS	Z-71 SWINE GUARD	7 DAYS	MISTING
ANIMALS	Z-71 SWINE GUARD	7 DAYS	MISTING
WATER CONTAMINATION			
WASHDOWN WATER	ZOONO TREATED FILTERS	30-60 DAYS	TREATED INLINE FILTERS
DRINKING WATER	ZOONO TREATED FILTERS	30-60 DAYS	TREATED INLINE FILTERS

Invest in a PROACTIVE PROTECTION PROGRAMME with Zoono technology.

ASFv

GLOBAL INTERESTS

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ASFv

GLOBAL INTEREST

CHINA

China Academy of Science - Agricultural Services
Trial underway – proving Zoono will contain the spread of ASFv and is the only effective option

Infected farm
Zoono applied to non-infected animals – sheds – water supply – human transfer - transportation (current feedback, massive positive impact on animal morality)

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ASFv

GLOBAL INTEREST

GERMANY

Lab studies underway for ASFv

RUSSIA

Lab results prove positive against ASFv

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ASFv

GLOBAL INTEREST

USA

Tests being prepared at IOWA State University

Tests have been performed independently by an independent veterinary company with positive results. (Results not for public circulation)

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ASFv
PROPOSAL

We offer our technology to trial under agreed protocols within the swine industry
Our suggestion is to observe one farm under a Zoono - swine grade treatment programme.

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ASFv

OBSERVATIONS

Animal Health

- overall well-being
- mortality rates
- general weight performance
- effect against most common illnesses (dermatitis – Coccidiosis – Respiratory diseases – dysentery – mastitis – Porcine Parvovirus)

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ASFv
MONITORING

Pathogen Monitoring by ATP testing of CFUs

Measure microbial loads over a period of one month

- Before Zoono implemented
- Weekly after implementation

ATP testing on identified zones before

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