Introducing Thymox

Webinar Notes

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Hello everyone. Thank you very much for joining the webinar in relation to the Thymox Disinfectant.

We did some research recently in relation to the selection of disinfectants, mainly government health bodies and universities. Very interestingly, four key things that came through from virtually every single body that we researched, was the concern as to;
1) realistic kill rates of disinfectants,
2) dwell times,
3) surface compatibility and
4) health hazard profile.

These four factors were paramount in the disinfectant selection requirements of these health department bodies. Thymox botanical disinfectant, in a very unique way, answers the call on these criteria.

My name is Everard Paynter, the managing director of Actichem. And I'm going to talk you through, this latest discussion in relation to the Thymox disinfectant.

What is Thymox?

Thymox

Thymox simplifies the cleaning process by providing comprehensive capabilities in a single step: cleaning, sanitising, disinfecting, and deodorising. It stands out particularly due to it's remarkable safe-in-use profile.

A powerful solution for all disinfection and cleaning needs, made with thymol, a botanically derived active ingredient that shines in a herbal scent.

Thymox exhibits the performance and convenience of traditional disinfectants without making any tradeoffs on safety.

THYMOX®
MULTISURFACE

Thymox is a botanical disinfectant, based on the natural thymol biocide.
Included in it's list of benefits is;

- hospital grade disinfectant TGA listing,
- super safe health profile,
- amazing surface compatibility
- and eco-label.

Actichem manufacture Thymox under license to the principle Canadian company, Thymox. We've got unique advantage in Australia with local manufacture, local support, local technical support and advice on this product. Giving the Australian market a great opportunity in this botanical disinfectant space for the first time.

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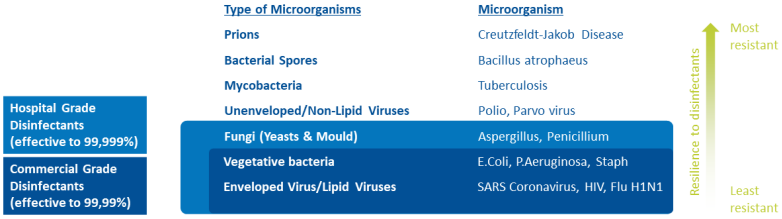
Log Rate	Percent reduction	Microorganisms remaining*
1-log	90%	1,000,000
2-log	99%	100,000
3-log	99.9%	10,000
4-log	99.99%	1,000
5-log	99.999%	100
6-log	99.9999%	10
7-log	99.99999%	1

* Microorganisms remaining from a starting quantity of 10,000,000

Microorganisms

Microorganisms, pathogens or simply "germs" are the microscopic cells or colony of cells which cause disease. They are not the disease itself but the microbe which causes the disease in a living being.

Microorganisms are divided into the following groups;



An overview of microorganisms.

Another aspect, we found that ran parallel in our research was the misunderstanding of microorganisms being perhaps one of the key reasons for wrong disinfectants being selected. This extends from healthcare through to residential, from restoration through to public spaces disinfection.

We had an interesting inquiry recently from a facility that had a norovirus outbreak. In doing their own research they discovered that Glen 20, Dettol and alcohol were not effective on norovirus, which of course is true. They suggested that norovirus must just be a unique virus. Instead, as we know norovirus belongs to the unenveloped group of viruses which are more resistant to deactivation. It was this that made me include this slide on microorganisms. I've also included, at the top left-hand side, the log reduction table, which assist with understanding how log reduction ties in with percentage kill.

The chart lists the groups of microorganisms, in order of their propensity to being deactivated or killed. The easiest to disinfect or inactivate, being enveloped viruses and the most difficult being bacterial spores and prions. Now remember the three main ways that pathogens or germs are deactivated. The first being chemical disinfection, which is what we are discussing today. Then there is UV, and the last one being heat. Heat and UV play more of a role in a hospital healthcare setting. Don't forget though, that in many instances, in outdoors settings, UV has long since disinfected surfaces before you're able to get there with your chemical disinfectant.

I'd like to now point out the levels of disinfectants that we are familiar with. Firstly, Commercial Grade Disinfectants are tested and have to comply, according to the TGA regulations to a four-log reduction, which is a 99.99% kill. This is also only conducted on the clean microbiological suspension challenge test. This disinfectant level only caters for the lowest two categories of microorganisms.
Commercial Grade Disinfectants are designed for use, in residential and public spaces. They're sometimes called a Household Disinfectant. In these areas you are dealing with predictable germs, predictable pathogens, and healthy people.

The next level of disinfectant is Hospital Grade Disinfectants. These disinfectants are normally capable of inactivating up to the third microorganism level, namely fungi, which includes yeast and mould. The key factor is that the disinfectant has to kill to a 99.999% level which is a five-log reduction. So, it is a significant step up. You could say 10 times step up on the disinfectant ability. It is also tested using the hard surface disinfection challenge test, which certainly makes any product that meets the hospital grade disinfectant requirements, a significant step up on a commercial grade disinfectant. These disinfectants are used predominantly in sensitive areas and/or where there are vulnerable people. This includes bio-decontamination, healthcare, aged care and childcare. The more resistant microorganisms such as unenveloped viruses, myco-bacteria and bacterial spores are typically only encountered in critical areas such as hospitals, operating theatres, treatment rooms, etc.

However, one interesting thing to note, is that the unenveloped virus group does include norovirus. This is why norovirus is such a challenge in settings such as childcare centres and aged care, where many hospital grade disinfectants in fact, don't eliminate it. Another one is parvovirus, which is an animal virus and can infect pets.

	Normal Actives %	Safety Profile	Surface Corrosion	Eco-Label Profile	Kill Profile	Application Profile
QUAT	0.02 – 0.5%	✗ • Skin, eye and respiratory irritation	✓ • Non-corrosive to metals, most plastics. May damage some vinyls	✓ Limited number are biodegradable. Benzyl quats are not	• enveloped viruses • bacteria, • fungi,	HealthCare Domestic, Laundry Public Space & Food area Water Treatment Restoration Cleaning
Alcohol	60%–90%	✓ • Flammable • WHS non-hazardous	✓ • Non-corrosive to metals, most plastics. May damage some vinyls	✓ Biodegradable	• viruses, • bacteria, • fungi, • limited mycobacteria	HealthCare Domestic Limited Public Space
Chlorine	0.1 – 0.5%	✗ • Corrosive to skin & respiratory systems • Toxic fumes	✗ Corrosive to metals including stainless steel	✗ Not regarded as environmentally friendly	• viruses, • bacteria, • fungi, mould • limited mycobacteria	HealthCare & Food Area Domestic, Laundry Limited Public Space Water Treatment Restoration Cleaning
Hydrogen Peroxide	0.6 – 8%	✗ • Corrosive to skin & respiratory systems	✓ Mildly corrosive to metals	✓ Biodegradable	• viruses, • bacteria, • fungi, mould • limited mycobacteria	HealthCare Limited Public Space Restoration Cleaning Laundry
Phenolics	0.5 –2.0%	✗ • Skin, eye and respiratory irritation • Toxic	✗ Corrosive to metals	✓ Biodegradable but does not qualify for ecolabel	• enveloped viruses • bacteria, • fungi, • limited mycobacteria	HealthCare
Peracetic Acid	Limestone is a soft and porous stone with a very fine grainy	✗ • Corrosive to skin & respiratory systems	✗ Corrosive to metals	✓ Biodegradable	• viruses, • bacteria, • fungi, • mycobacteria • spores	HealthCare Laundry Restoration Cleaning
Glutaraldehyde	0.2 –2.0%	✗ • Skin, eye and respiratory irritation	✓ Mildly corrosive to metals	✓ Biodegradable but does not qualify for ecolabel	• viruses, • bacteria, • fungi, mould • mycobacteria (TB)	HealthCare

In consideration of the chart of disinfectants above, which includes solutions typically used in disaster restoration, general healthcare and public spaces. We are very used to the quat, alcohol, chlorine and hydrogen peroxide disinfectants. I've included the other three disinfectants namely, phenolics, peracetic acid and glutaraldehyde, because they are often found in healthcare settings.

We have many healthcare people on this webinar today, so certainly wanted to include those as Thymox has got a unique space to fill in healthcare settings, aged care settings and childcare. I won't go through this table in detail, but what I did want to do is to provide it as a resource for you.

It's of note the warning of corrosion on so many of the disinfectants that we use. Surface corrosion is actually a very negative aspect of these various chemical disinfectant as is the health hazard profile. There's very few that have got favourable health hazards. The negative eco label also is also a growing concern with users.

I've included a column with details regarding the disinfectant's microorganism kill potential. Compare this with the table on the previous chart. This is a great resource. Certainly, make sure that you keep it on hand.

Thymox, as I mentioned, answers the call for those key selection criteria on disinfectants. This slide provides a brief overview of it's key benefits and characteristics.

One thing that Thymox does, is gives people confidence. It gives users themselves confidence, but also especially when you have got staff that require a powerful disinfectant for initial knock-down situations in bio-decontamination work. Users are often not a hundred percent sure of the various surfaces that it's going to be used on nor the type or level of microorganisms. Thymox therefore becomes a product of choice, given it's powerful biocidal ability and extensive surface compatibility.

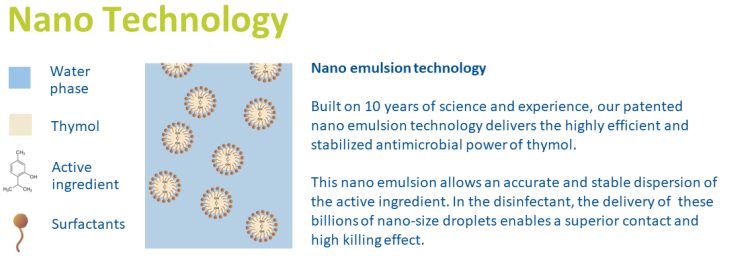
It's safety around animals and people with no hazard statements, contribute to it's strong popularity. It's eco label excellence being a botanical derived product caps off this extraordinary biocide.

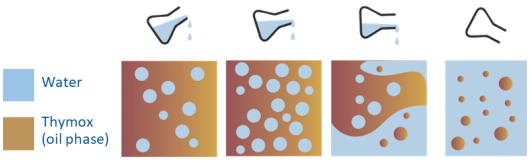
Furthermore, it is Australian made, supporting Australian manufacture and innovation.

On the regulatory side, Thymox is a TGA listing Hospital Grade Disinfectant with a long list of certified kill claims, which makes it a clear product of choice in a wide variety of scenarios.

It certainly is a product which has all the correct boxes ticked.

Unique Thymox Chemistry





Let's have a brief look at the technology behind this. I don't want to try and convert everybody into chemists, but I did want to just point out a couple of things in relation to the Thyme Oil. This is an oil which is micro emulsified into this emulsion.

The interesting thing about Thymox is that the micro emulsion concept has been made even more micro, making it a true nano emulsion. Now, the key thing, is that it significantly increases the surface area and the surface wet-out of this disinfectant solution onto the microorganisms surface. This dramatically increase the surface contact of the Thyme Oil disinfectant power on the microorganism surface and is one of the secrets why this product works so much better than other botanical disinfectants and even its competitors in the quat, hydrogen peroxide, chlorine, etc space.

AUSTL 400439
Hospital Grade Disinfectant

An overview of microorganisms.

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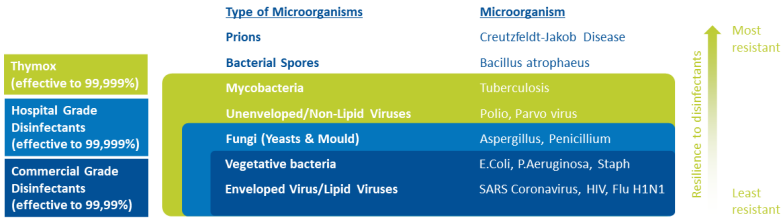
Thymox – optimum kill claims

Thymox exhibits outperforming disinfectant strength.
Proven to kill well above what a normal hospital grade disinfectant does.



INTERNATIONAL REGISTRATIONS
- TGA - Hospital Grade Disinfectant AUSTL 400439
- Health Canada
- EPA Environmental Protection Agency

Let's have a focused look at the Thymox microorganism kill claims. The first thing I'd like to reinforce is the fact that this product has got TGA listing. This is a door opener, as it is a baseline requirement for use in many facilities and on many jobs. The combination of TGA listing, low hazard profile and it's incredible surface compatibility will enable you to secure work and contracts in many facilities which you may have previously been shut out of.

So, having a second look at the type of microorganisms table, you'll notice that the Thymox disinfectant is effective on a significantly wider range of microorganisms and is a step up on the typical hospital grade disinfectant capability. The Thymox efficacy covers unenveloped viruses and even mycobacteria representing a significantly greater kill rate.

In parallel, it is notable that the required dwell times are remarkably short compared to many other disinfectants which is testament to it's capability and it's ease of use.

Log Rate	Percent reduction	Microorganisms remaining*
1-log	90%	1,000,000
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3-log	99.9%	10,000
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* Microorganisms remaining from a starting quantity of 10,000,000

TGA & Kill Claims

Thymox – optimum kill claims

TEST MICROORGANISMS	EXPOSURE TIME	RESULTS CARRIER POPULATION CONTROL RESULTS
Pseudomonas aeruginosa ATCC 15442	2 min	6 Log Reduction
Salmonella enterica ATCC 10708		4 Log Reduction
Staphylococcus aureus ATCC 6538		6 Log Reduction
Escherichia coli ATCC 11229	2 min	4 Log Reduction
Escherichia coli O157:H7 ATCC 35150	2 min	5 Log Reduction
Methicillin-Resistant Staphylococcus aureus MRSA ATCC 33592	2 min	6 Log Reduction
Vancomycin-Resistant Enterococcus faecalis VRE ATCC 51575	2 min	5 Log Reduction
Listeria monocytogenes ATCC 18117	2 min	5 Log Reduction
Klebsiella pneumonia - NDM-1 positive CDC 1000527	2 min	5 Log Reduction
Streptococcus suis ATCC 43765	2 min	5 Log Reduction

TEST MICROORGANISMS	EXPOSURE TIME	RESULTS CARRIER POPULATION CONTROL RESULTS
Swine Influenza A H1N1 ATCC VR-333	1 min	5 Log Reduction
Human Immunodeficiency Virus type 1		3 Log Reduction
Human Coronavirus ATCC VR-740		3 Log Reduction
Severe Acute Syndrome-Related Coronavirus 2 (SARS-CoV-2)		3 Log Reduction
Feline Calicivirus as a surrogate for Norovirus	4 min	3 Log Reduction
Trichophyton mentagrophytes ATCC 9533	3 min	4 Log Reduction
Candida albicans ATCC 10231	3 min	6 Log Reduction
Human Rotavirus	3 min	3 Log Reduction

AUSTL 400439
Hospital Grade Disinfectant

Further to the wide range of greater microorganisms kill capability and shorter kill claims, please note the table above. The short kill times one, two minutes, five minutes are a real advantage in many settings.

Thymox is truly an extremely powerful disinfectant biocide.

People & Animal Safety

Safe around people and animals

Extensive use application in public areas and areas of vulnerable people e.g., Childcares, aged care, sensitive individuals etc.

THYMOX® MULTISURFACE

The power of a harsh disinfectant in a safe one.

No signal words, first aid or special handling directions • No evacuation of building occupants required.

The unlikely phenomena about Thymox and it's incredible kill claims, is its safety around animals and people. To have a product that kills germs, kills pathogens so effectively, but is so safe around animals and people is truly amazing. If you just take a step to one side and have a look at its use in the animal health scene, the biosecurity scene, this is one of the only disinfectants on the international market where they can fog disinfect horse stalls without removing the horse out of the stall. So, this is its level of safety.

This safe, low hazard profile is of particular benefit in aged care and childcare where vulnerable people are present. Another particular application is it's use in homes or facilities where people have sensitivity to chemicals or suffer respiratory ailments.
This also lends itself for safe and easy householder use.

The other thing that I'd like to draw attention to is the Thymox's ease of application. It is one of the few strong products which can be safely spray and fogged.

The Thymox can be sprayed, it can be fogged, it can be used via electrostatic sprayer, almost indiscriminately. And this makes such a difference in areas where there are multiple different surfaces and also surfaces that we may not be aware that are going to come in contact with the solution. A case in point is it's extensive use in public transport, where it's used to disinfect buses and trains. In bio decontamination situations where a lot of surfaces may be covered over by debris, organic matter, it is perfectly safe to use Thymox as an initial knockdown where there's a wide range of different pathogens types and a wide range of different surfaces.

It is also safe for use in food areas. However, food contact surfaces must be wiped dry before food use.

Substrate Compatibility

The substrate compatibility is amazing, right through. We have already noted that many disinfectants are corrosive on metals and various plastics and vinyls. The compatibility with vinyl is quite notable given the extensive use of vinyl on chairs and beds in healthcare, physiotherapy, orthopaedic and chiropractic settings. Thymox is compatible and safe to use on virtually every water-cleanable surface.

	Normal Actives %	Safety Profile	Surface Corrosion	Eco-Label Profile	Kill Profile	Application Method
QUAT	0.02 – 0.5%	✗ • Skin, eye and respiratory irritation	✓ • Non-corrosive to metals, most plastics. May damage some vinyls	✓ Limited number are biodegradable. Benzyl quats are not	• viruses (only enveloped) • bacteria, • fungi.	Spray Fog Wipe Soak
Alcohol	60%–90%	✓ • Flammable • WHS non-hazardous	✓ • Non-corrosive to metals, most plastics. May damage some vinyls	✓ Biodegradable	• viruses, • bacteria, • fungi, • limited mycobacteria	Spray Wipe Soak ~~Fog~~
Chlorine	0.1 – 0.5%	✗ • Corrosive to skin & respiratory systems • Toxic fumes	✗ Corrosive to metals including stainless steel	✗ Not regarded as environmentally friendly	• viruses, • bacteria, • fungi, mould • limited mycobacteria	Spray (external only) Wipe Soak ~~Fog~~
Hydrogen Peroxide	0.6 – 8%	✗ • Corrosive to skin & respiratory systems	✓ Mildly corrosive to metals	✓ Biodegradable	• viruses, • bacteria, • fungi, mould • limited mycobacteria	Spray (limited) Wipe Soak ~~Fog~~
Phenolics	0.5 –2.0%	✗ • Skin, eye and respiratory irritation • Toxic	✗ Corrosive to metals	✓ Biodegradable but does not qualify for ecolabel	• viruses (only enveloped) • bacteria, • fungi, • limited mycobacteria	Wipe Soak ~~Fog~~ ~~Spray~~
Peracetic Acid	Limestone is a soft and porous stone with a very fine grainy	✗ • Corrosive to skin & respiratory systems	✗ Corrosive to metals	✓ Biodegradable	• viruses, • bacteria, • fungi, • mycobacteria • spores	Wipe Soak ~~Fog~~ ~~Spray~~
Glutaraldehyde	0.2 –2.0%	✗ • Skin, eye and respiratory irritation	✓ Mildly corrosive to metals	✓ Biodegradable but does not qualify for ecolabel	• viruses, • bacteria, • fungi, mould • mycobacteria (TB)	Wipe Soak ~~Fog~~ ~~Spray~~
Thymox	0.23%	✓ • Non-hazardous	✓ • Non-corrosive	✓ Biodegradable Ecolabel	• viruses, • bacteria, • fungi, mould • mycobacteria (TB)	Spray Fog Wipe Soak

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So lastly, I've included that table that we had before, but I've added Thymox on to it.
It is impressive to note how it stands out in every category compared to all the other disinfectants that are typically used in healthcare setting, public space disinfection and restoration cleaning. It is truly a product of choice with all the ticks in the right boxes.

One other thing I'd like to suggest, is to have a look at Thymox line and think of it in relation to your own marketing, to your customers, to gain contracts. This is a product that you can use to gain contracts yourself. Think of it in relation to the marketing aspect – it's powerful kill claim profile, TGA listing, it's eco label characteristics, it's safety around people & pets, it's safety on substrates. You'll find it a terrific advantage in your marketing and sales activity to your clients.

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