ORIGINAL SAFE T AIR
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Original Safe T air

THE BENEFITS OF TEA TREE BASED PRODUCTS – A CASE STUDY

The products

Original Safe T air is a product that is substantially more advanced than any other product on the market at present. It is a natural Australian Tee tree based, environmentally friendly product. Government tests show that the active ingredient, Tea Tree Oil, is totally hypoallergenic, and non-toxic. Tea Tree oil is well known as a biocide that kills fungi, moulds and bacteria. It may be helpful in minimizing the effects of Legionella within a building environment.

Original Safe T air comes in two formats.

The longer established product that has been in use in Australia since 2001 is a cream that is placed in an AHU in its original pack. Smaller packs may be placed on top of wall hung split systems.

In situ *Original Safe T air AHU* packs are adjusted★ to dissipate the product into a Heating, Ventilation, Air Conditioning (HVAC) system, over 30 – 60 days. This creates a beneficial residual effect that can last for a further 30 – 60 days Ω. This residual effect is due to the active ingredients in the Original Safe T air penetrating the furnishings within the building envelope in sufficient, but miniscule amounts. We advise replacing the packs quarterly with each filter change.

★ The *Original Safe T air* packs have adjustable vents to allow controlled evaporation.

Ω This residual effect is shortened or lengthened by temperature and humidity, and is based on our experience in Melbourne, Australia.

The second, newer, format is a liquid, sold as a spray can, in hand pump sprays, bulk packs for dispensing into hand sprayers, or as super concentrate that can be diluted with drinking water, then used in a hand pump etc. The liquids are also suitable for use in chemical fogging machines, but should be further diluted.

Original Safe T air liquid can be used as a post clean filter and coil sanitizer, or in many odour control situations such as hotel rooms, nursing homes, flood or fire remediation etc. The liquid will be discussed in greater detail in another case study.

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Advantages of Original Safe T air

Original Safe T air is natural Australian Tea Tree oil suspended in a thick cream style formulation that is designed to dissipate the active ingredient evenly. It is packed in a sealed, drip free, clear plastic container that is easily attached to the ducting or AHU. The packs are available in various sizes.

Legislation on Contaminants in AHUs

Presently there are no standards in Australia that define allowable levels of yeast and mould contaminants in Heating, Ventilation, Air Conditioning (HVAC) systems of buildings. However, the accepted industry standard is as follows:-

Yeast levels - Alarm level 5,000 Colony Forming Units (CFU's)
Mould levels - Alarm level 1,000 CFU's - (not expected at any significant level)
Dust Levels - Alarm level 5,000 CFU's

The Case

A major, high profile Australian public building had been in use for around 5 years, it plays host to several million visitors each year and was faced with the prospect of possible closure and demolition by the health authorities in early 1999, after it was discovered that the food handling areas, and the building's air conditioning system had dangerously high yeast, and mould levels. Indoor Air Quality Technologies Pty Ltd were called in to investigate, and recommend a course of remedial action.

Preliminary tests were taken from 20 AHU's within the building, at the client's request, to show the entire situation.

These tests showed Yeast levels - up to 1,000,000 CFU's, and
Mould levels – up to 10,000 CFU's

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Sample #	Yeast CFU's @ 25deg C / swab	Mould CFU's @ 25 deg C / swab
1 / AHU 1	~1,000,000	1,800
2 / AHU 10	2,500	1,300
3	91,000	300
4	430,000	<100
5	520,000	1,000
6	520,000	<100
7	640,000	200
8	37,000	<100
9	~900,000	200
10	~800,000	800
11	590,000	600
12	~1,000,000	12,000
13	~600,000	1,800
14 / AHU 2E	13,000	200
15	~100,000	200
16 / AHU 5E	~1,000,000	5,000
17	~800,000	900
18 / AHU 3E	~500,000	700
19	~800,000	2,100
20	~600,000	29,000
Alarm Level	**5,000**	**1,000**

AWT Victoria

< = Less than.

At this point the tea tree based product was inserted into the HVAC system for the first time.

Five months later a selective set of swabs were taken at the client's request, **after inserting** the second dose of the tea tree based product. The results were as follows.

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Sample #	Yeast CFU's per swab @ 25 deg C	Mould CFU's per swab @ 25 deg C	Standard Plate CFU's count per swab @ 25 deg C
1 / AHU 1	-	-	10
2 / AHU 10	<100	<100	10
3	-	-	10
4	<100	<100	-
5	-	-	80
6	<100	<100	-
Random Samples taken from within building envelope			
A	-	-	30
B	900	100	-
C	-	-	<10
D	<100	<100	-
Alarm Level	**5,000**	**1,000**	

AWT Victoria

A further **five months later** tests were taken **before** inserting the third dose of the tea tree based product, and then just over a week after the dosing. You will find the results shown here quite impressive.

Note The usage of the building was at its highest during this period. Also the building had been heavily patronized during the humid, winter flu season.

Two random samples were taken **before** dosing the system.

Sample #	Yeast CFU's per swab @ 25 deg C	Mould CFU's per swab @ 25 deg C	Standard Plate CFU's count per swab @ 25 deg C
1 / AHU 1	2,000	600	100
2 / AHU 10	3,000	600	100
Alarm Level	**5,000**	**1,000**	

AWT Victoria

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Two further samples were taken just over a week later, **after** the tea tree based product dose.

Sample #	Yeast CFU's per swab @ 25 deg C	Mould CFU's per swab @ 25 deg C	Standard Plate CFU's count per swab @ 25 deg C
1 / AHU 1	<100	<100	60
2 / AHU 10	<100	100	100
Alarm Level	**5,000**	**1,000**	

AWT Victoria

Further samples were taken at random approximately five months later **after** placing the fourth dose of the genetically similar tea tree based product into the system.

These results show the continuing effectiveness of the genetically similar tea tree based product.

Sample Site	Total Viable Aerobic Count CFU's @ 30 deg C / swab @72hrs	Yeast & Mould CFU's @ 25 deg C / swab @ 5 days
1 / AHU 1	<100	<100
AHU 9	<100	<100
AHU 16	<100	<100
14 / AHU 2E	<100	<100
AHU 3E	100	700
16 / AHU 5 E	<100	<100
Alarm Level	**5,000**	**1,000**

Tests: Micro-Tech laboratories

To verify the authenticity of the results, the final set of samples were processed at a different laboratory.

All samples taken, and the data produced from the samples are in accordance with the relevant Australian Standards.

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Conclusion

The ongoing average of approx. $ 600 per year spent on the tea tree based product for each AUH has rescued the multi-million dollar earning potential of this major facility.