

MYCOLOGICAL QUALITY CONTROL CONSULTANCY

Report on the evaluation of the SANI DISC sanitizing unit combined with Titanium Dioxide (TiO₂) paint in the microbial sanitizing of air

Equipment

The equipment under test was a SANI Disc sanitizing unit comprising of a disc with 2 Ultra Violet (UVGI) lamps and 2 fans moving 70 cu.m. of air each, as supplied by Ozone Purification Technology, and attached to the center of the ceiling in the room. Titanium dioxide (TiO₂) paint was sprayed on the disc unit on the second step of the experiment.

Test site

The Food, Environmental and Health Research Group, University of Johannesburg were used to evaluate the ability of the SANI Disc to sanitize air.

An 81 cubic meter fungal culture room with no open windows and giving approximately 5 air changes per hour (36 Burning Watts of UV in 81 cu.m. equates to +/- 5 Air Changes per hour.

Method

Potato dextrose agar plates from Selecta-MEDIA were used for air sampling.

Air samples were collected early in the morning at 8:00 AM and late afternoon 5:00 PM by exposing PDA plates for 15 minutes and incubate at 25 °C for 7 days and then examined for microbial growth which was counted and identified as far as possible. This was done in order to control the sanitizing ability of the Sani Disc before and after laboratory activities. Various experimental set up were investigated as follows:

Treatment 1: Air sampling prior to any air treatment to obtain a base line control (SANI 55 and SANI Disc OFF). Then the SANI Disc was switched on for 24 hours a day up to the end of the experiment.

Treatment 2: Air sampling (as for set up 1) but with SANI Disc ON. This was done for 7 days.

Treatment 3: Air sampling (as for set up 2) with prior treatment of the interior face of the SANI disc cover with Titanium dioxide (TiO₂) paint. This was done for 7 days

Treatment 4: Air sampling (as for set up 3) with SANI 55 sanitizing unit on. The sampling was done for 7 days.

Results

	Treatment	Microbial growth rate in %
1	SANI Disc Off, no TIO2 treatment , SANI 55 Off	<i>Aspergillus spp.</i> 100 <i>Penicillium spp</i> 100
2	SANI Disc On	<i>Aspergillus spp.</i> 25 <i>Penicillium spp</i> 23
3	SANI Disc On, treatment with TIO2	<i>Aspergillus spp.</i> 16 <i>Penicillium spp</i> 11
4	SANI Disc On, Treatment with TIO2, SANI 55 On	<i>Aspergillus spp.</i> 4 <i>Penicillium spp</i> 2

Table1. Results based on different treatments.

Microbial growth from the control study (treatment 1) showed the following species (*Aspergillus, penicillium and yeast*) on various count levels of exposure. The general count were decreased after treatment 2 (table1.2) by a factor of 75% and 77% for aspergillus and penicillium species respectively compared to the control. Better

microbial control was observed by treatment 3 (table 1.3) the count being reduced further by factor 84 and 89 for *aspergillus* and *penicillium* species. The treatment 4 gave the best control of all (table1.4) with a reduction to 98% and 99% of the counts found in the control. However, no reduction was observed after all treatment on yeast growth.

Conclusion

Based on the results, it evident that the use of Sani Disc with TIO₂ treatment of the interior face of the disc cover combined with the Sani55 gives the best microbial sanitization, up to 98 to 99 % of aspergillus and penicillium species can be eliminated by this treatment.

Should you have any further questions please feel free to contact the Food, Environmental and Health Research Group

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October 27, 2006

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October 27, 2006