

SELF-DECONTAMINATING INTERIOR PAINTS TO PREVENT MOLD GROWTH

PROJECT OVERVIEW

The engineered reactive additives reduce microbial propagation on treated surfaces compared to commercial product alone (quantified by colony and spore counts for bacteria and molds). One formulation relies on the in-situ production of chloramide compounds. In the case of paints, treated surfaces can be periodically “recharged” by applying a simple wipe with a dilute solution of household bleach.

Trials initiated by transition partner (Theriox, LLC) have shown effective treatment periods (up to 3 years) with no mold growth observed on treated surfaces in multiple venues that had a history of persistent mold colonization and propagation.



Water-based acrylic paint being treated with anti-mold additive at bench scale (left) and tested in a newly renovated office Tyndall AFB (right)

BENEFITS

Improved air quality can alleviate symptoms of Sick Building Syndrome (SBS), improve quality of life, and increase morale. There is currently no quick fix, and no available commercial off the shelf (COTS) solution. An additional benefit includes potential cost avoidance from class action lawsuits. Additionally, the future recruitment could be adversely affected.

PATH FORWARD

Paints are currently being demonstrated in a facility on Tyndall AFB as well as a STEM school, Hospital, and two elderly care facilities. MacDill AFB (Tampa, FL) is slated as the primary demonstration site, where Theriox is planning to apply roughly 100 gal to the Military Personnel Flight building in multiple colors.

Sample	Yeasts and moulds growth rating * days after inoculation				
	1 st Inoculation	2 nd Inoculation	3 rd Inoculation	4 th † Inoculation	
	7 days	7 days	7 days	7 days	14 days
1. No biocide control	4	4	4	4	4
2. + Theriox biocide	0	0	0	0	0
3. No biocide control	4	4	4	4	4
4. + Theriox biocide	0	0	0	0	0

Table 2: Fungal challenge test results
(0: No colonies found; 1: 1-10 colonies found; 2: 11-100 colonies found; 3: More than 100 colonies found recognizable; Streaks not fully overgrown; 4: Streaks fully overgrown)
†- standard fungal strains + wild type strains isolated from Synthomer production sites

Early testing of treated paints against mold and fungi, performed at Synthomer’s research lab in the UK showing efficacy after four inoculations (left)



Paint with anti-mold additive demonstrated at Tallahassee Memorial Hospital and Wakulla Springs nursing home (right)

DoD Executive Agent

Office of the Assistant Secretary of the Army for Installations, Energy, and Environment

UNCLASSIFIED: Distribution A. Approved for Public Release; distribution Unlimited, per AR 380-5, OPSEC Review conducted per AR 530-1 and AFCEC/CXAE. AFCEC-20240XX, August 2024
Revised 08.2024

FOR FURTHER INFORMATION

National Defense Center for Energy and Environment
<http://www.denix.osd.mil/ndcee/>

Dr. Jeffery Owens
Air Force Civil Engineer Center
<https://www.afcec.af.mil/>