

MactAir Pure Technologies: Nature-Inspired Indoor Disinfection

**Revolutionizing Air and Surface Purification
with Safe, Sustainable Solutions**



The Hidden Threat in Indoor Environments

- We spend 90% of our time indoors.
- Indoor air can be up to 5x more polluted than outdoor air.
- Pathogens, pollutants, allergens, and odors compromise health and safety.



Ultimate fresh, clean air environment naturally enriched with ions

How Nature Keeps the Environment Clean

Thunderstorms: Lightning generates ions that purify the air.

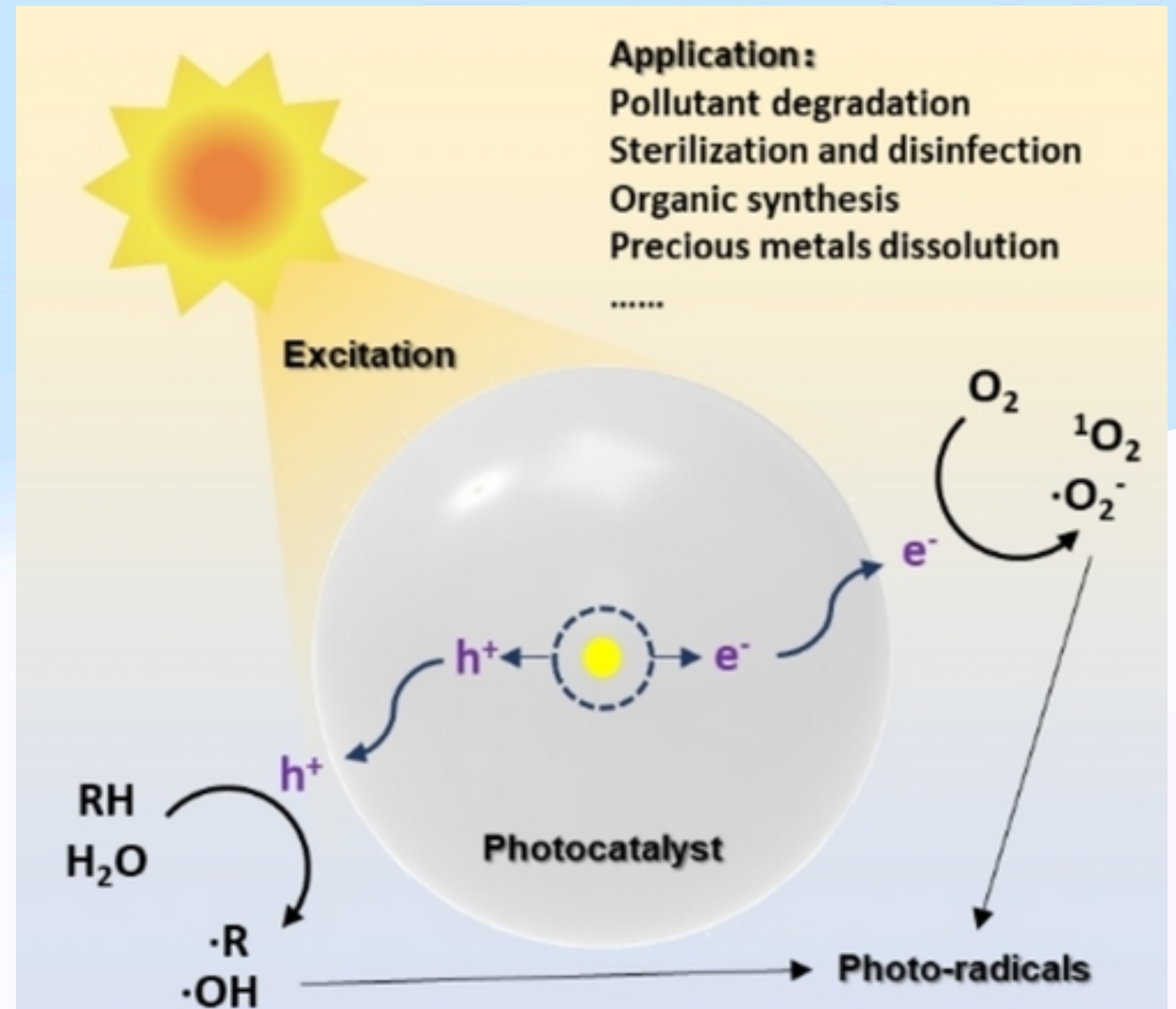
Forests: Trees release ions that bind to and neutralize pollutants.

Sunlight: Activates natural photocatalytic processes to clean and refresh.



How Photocatalysis Works

Outdoors, the sun's UV light interacts with naturally occurring titanium dioxide (TiO_2) in the atmosphere and water vapor to produce hydroxyl radicals ($\text{OH}\cdot$), which break down pollutants and pathogens.

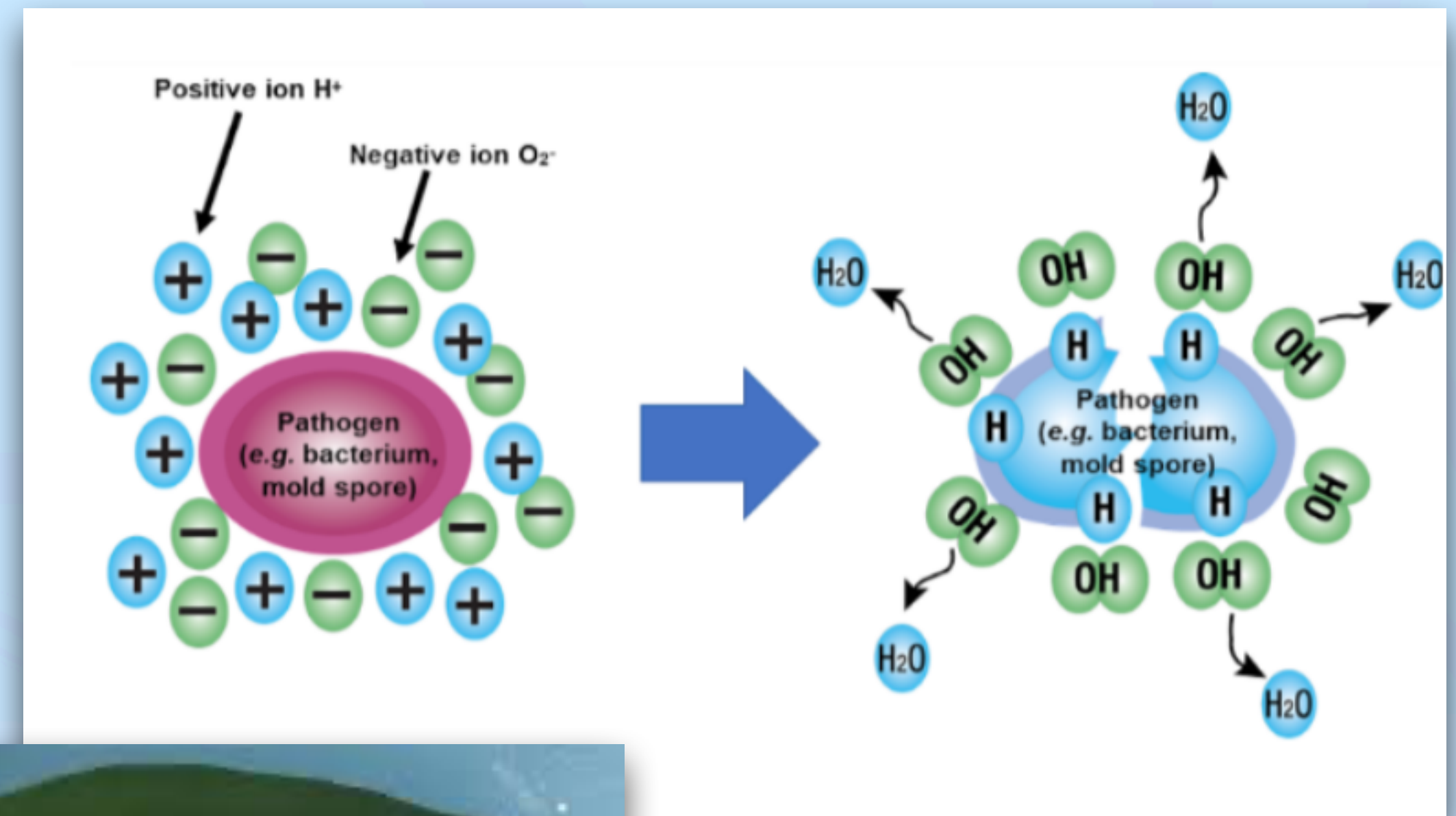


MactAir Mimics Nature Indoors

Multi-media filtration - Pre-filter (G4) + Activated Carbon + HEPA-H14

Photocatalysis: Like sunlight on leaves, light activates MactAir paint and within portable units to neutralize pathogens.

Ionization: Similar to forests, MactAir portable units release ions that purify air and surfaces.



TiO2 prior to incorporation into paint and portable solutions

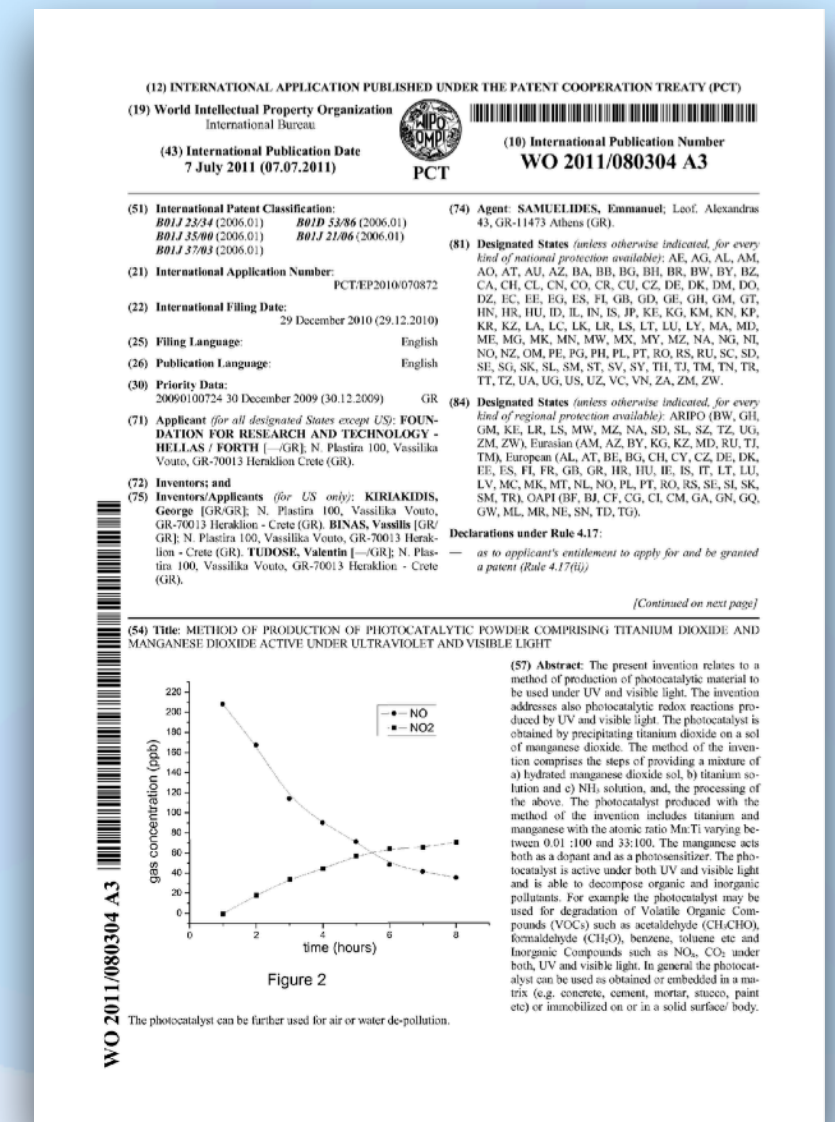
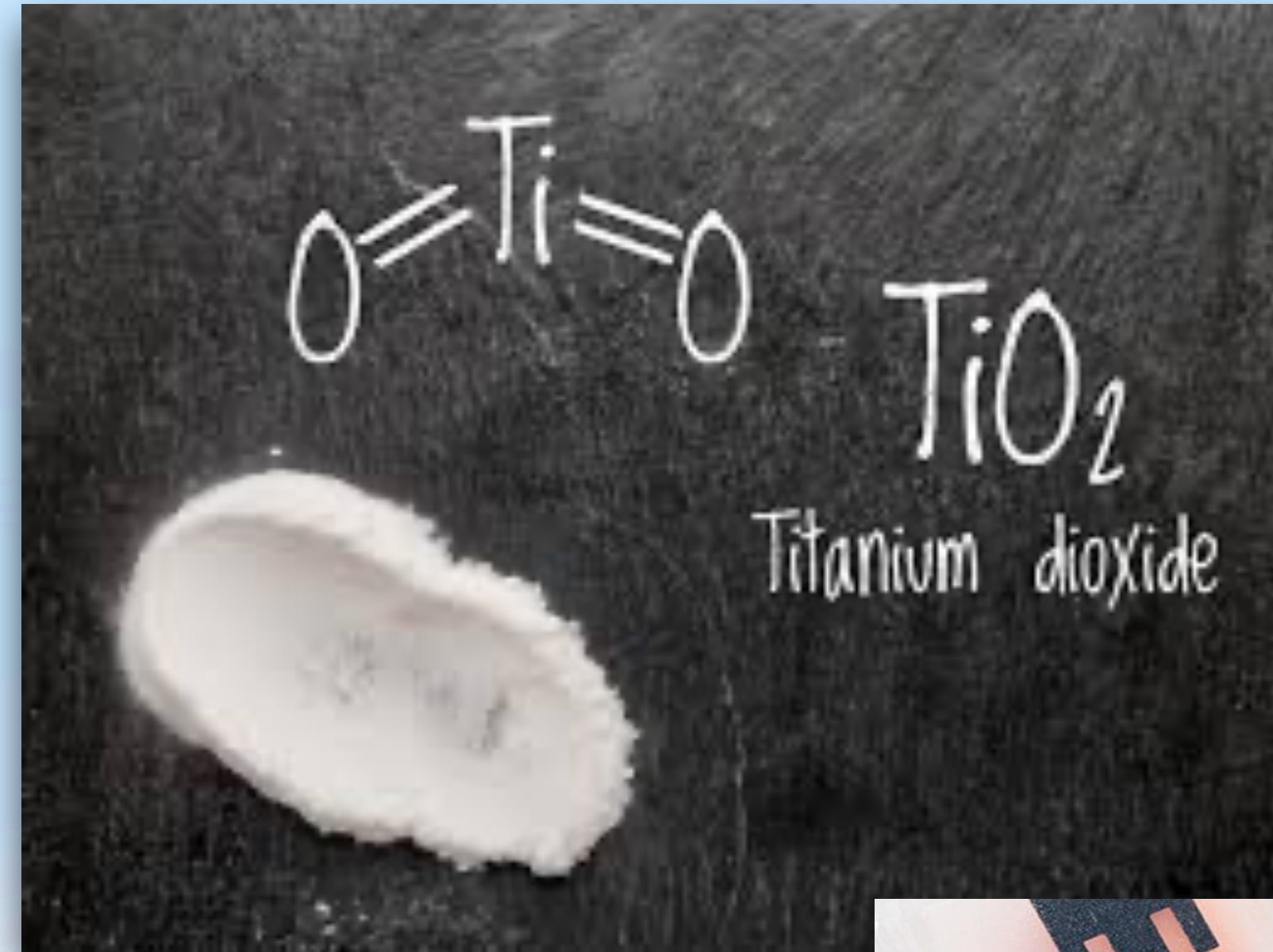


Self cleaning exterior of San Raffaele Hospital, Milan

Why Titanium Dioxide (TiO₂)?

The Science Behind MactAir's Technology

- 9th most abundant element on Earth.
- Non-toxic and widely used (e.g., sunscreen, toothpaste, paint, pharmaceuticals, medical, food)
- Safe, sustainable, and highly effective when activated by any light. *(While conventional TiO₂ requires UV light)*



Patent - Visible light activated TiO₂



Safe and Powerful !

‘...destroy, dilute, then PPE’*

- Healthcare utilizes Chlorine Dioxide at 1.36 eV
 - Requires PPE, only functions when wet in liquid state
- MactAir provides safer, *stronger Hydroxyl Radical ions at -2.8eV*
 - Protects continuously
 - No Chemical, No Ozone
 - Lethal mechanical disruption and kill of all known pathogens, bacteria, mold, fungus,...

Oxidizing Agent	Electrochemical Oxidation Potential (eV)
Fluorine	3.06
Hydroxyl Radical	2.80
Oxygen	2.42
Ozone	2.08
Hydrogen Peroxide	1.78
Hypochlorite	1.49
Chlorine Dioxide	1.36
Molecular Oxygen	1.23

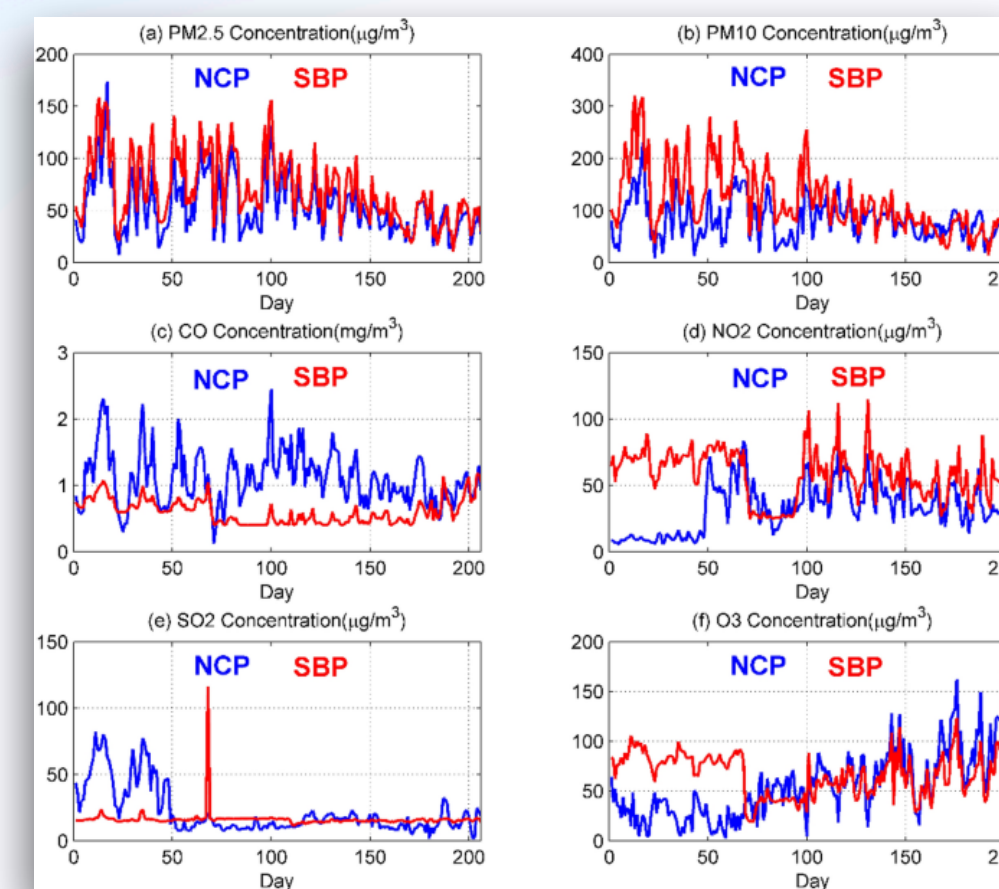
Table 1. Oxidizing Agent Oxidizing Potentials

*industrial hygiene, *the mantra*

The Benefits of MactAir

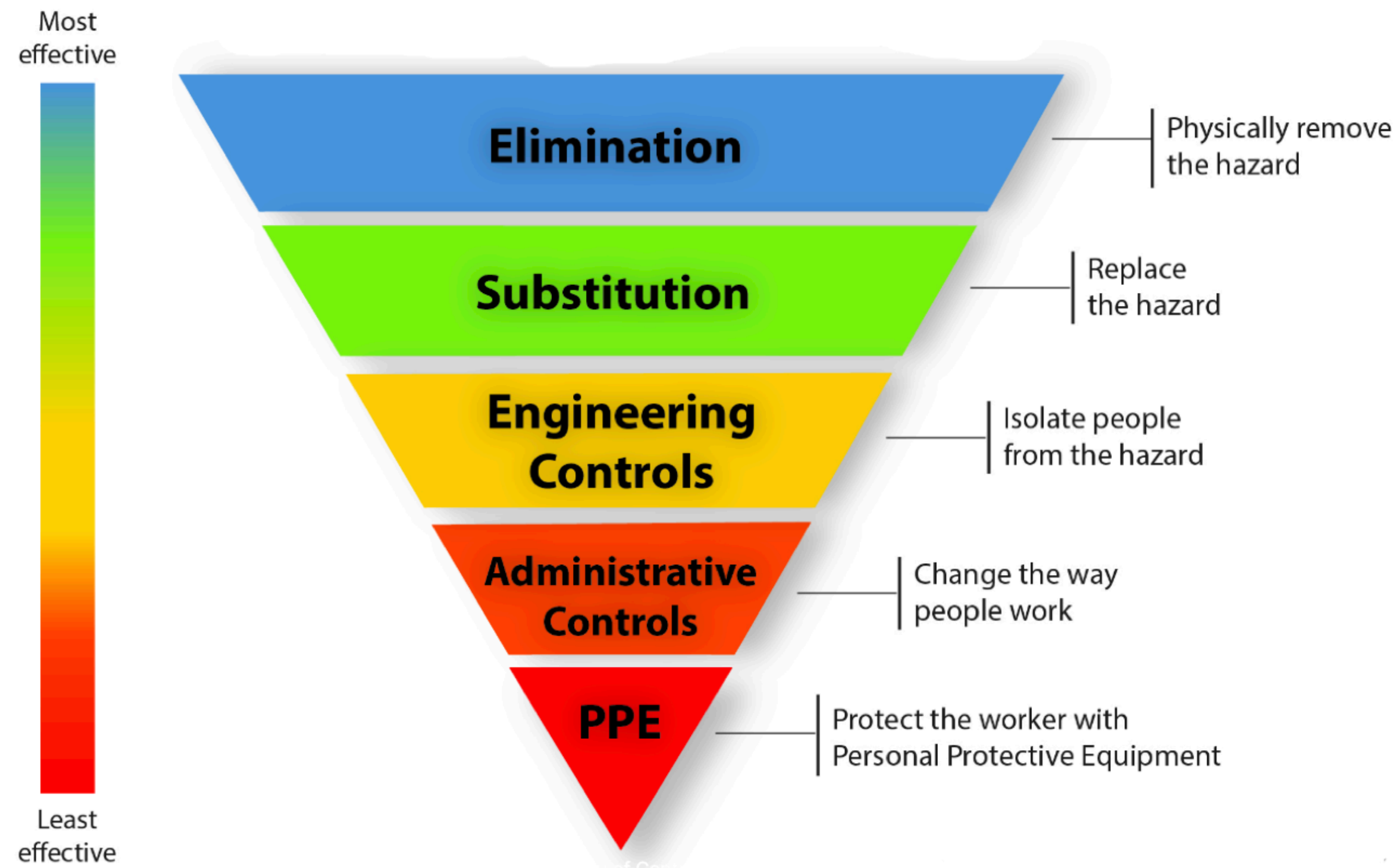
Safe, Continuous, and Proactive Disinfection

- 24/7 air and surface purification.
- Safe for people, pets, and equipment.
- 100% natural process
- Sustainable: No harmful chemicals or UV light.
- Effective against all pathogens, allergens, mold, and odors.



Prevention is more effective than treatment

Hierarchy of Controls



Examples

**Identify/screening;
cleaning & disinfection**

Replace w/less hazardous alternative

Ventilation, physical barriers, social distancing

Policies & procedures to reduce exposure; education & training

PPE is the last line of defense

References:

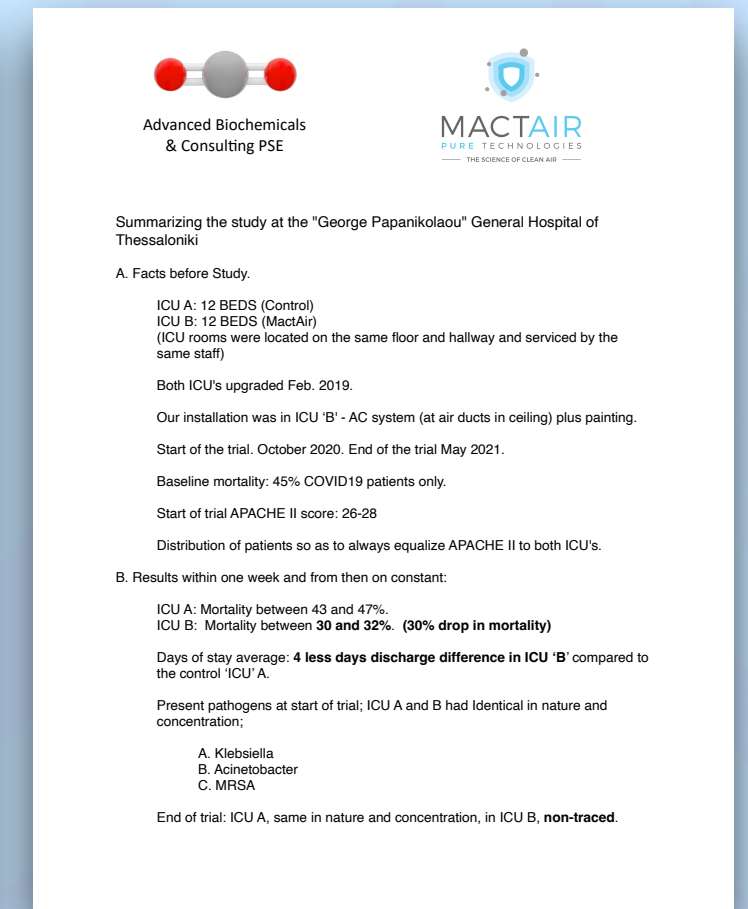
1. The Joint Commission. R3 Report Issue 41: New and Revised Requirements for IPC for Critical Access Hospitals and Hospitals [Internet]. [Cited 2024 Apr 6]. Available from <https://www.jointcommission.org/standards/r3-report/r3-report-issue-41-new-and-revised-requirements-for-infection-prevention-and-control-for/>
2. CDC. NIOSH: Hierarchy of Controls [Internet]. Available from <https://www.cdc.gov/niosh/topics/hierarchy/default.html>

Proven Results in Action

- Case study: *George Papanikolaou* General Hospital achieved >90% pathogen reduction.
- Applications: Hospitals, schools, long term care, pharmacies, transit, high-density residential spaces.



"George Papanikolaou" General Hospital of Thessaloniki



Jubilee Church in Rome is self cleaning

MactAir portable & paint continuous disinfection technology

Healthcare / Commercial high volume protection

TOTAL AIR & SURFACE DISINFECTION

MACTAIR
PURE TECHNOLOGIES

— THE SCIENCE OF CLEAN AIR —

Dynamic Air Filtration + Continuous Disinfection

HELPS PREVENT SPREAD OF COVID - 19

DISINFECTING & REMOVING

- Viruses
- Bacteria
- Fungi / Mold
- Microparticles
- Gaseous pollutants
- Odours

APPLICATIONS

- Hospitals
 - Intensive Care
 - Operating Rooms
 - Emergency Triage
 - Patient Waiting Areas
- Health Clinics / Medical Offices / Pharmacies
- Schools / Daycare
- Retirement Residences / Long Term Care
- Offices / Meeting Rooms
- Transportation (Bus, Train, Plane)

CE

OZONE FREE

UL 2998 compliant

PREFILTER G4 (ISO 16890)

ISO 14001:2015

YIELD 99.995% BY EN 1822

HEPA H-14 EN 1822

ISO 45001:2018

ASHRAE

Standard 241: Control of Infectious Aerosols

ACTIVE CARBON

EN ISO 9001:2015

Dynamic disinfection technology produces powerful hydroxyl radicals that neutralize all pathogens in the air and on surfaces, including viruses and bacteria.

		M-500	M-1000
AIR FLOW	m ³ /h ³	500	1000
MOTOR	Type	Plug Fan	Plug Fan
POWER MOTOR	W	70	140
OPERATING VOLTAGE	V	110/220	110/220
LAMP POWER	W	20	30
COVERAGE SQUARE	m	to 80	to 160
DIMENSIONS	mm	530x460x780	530x460x780

FILTERS			
PRE-FILTER	G4	ISO 16890	ISO 16890
ACTIVE CARBON	AC	CARBON	CARBON
HEPA FILTER 7m ²	H14	EN 1822	EN 1822

OZONE-FREE PLASMA + PHOTOCATALYTIC ION GENERATORS

*System specifications may change to evolve efficiency outcomes

*Health Canada and Canada Consumer Product Safety Act compliant

www.MACTAIR.com

PAINT THAT PROTECTS MORE THAN JUST WALLS

The quality of the air we breathe is vital – to our health, our wellbeing and our peace of mind.

The air inside the buildings we live in, work in and visit is often contaminated with pathogens (viruses, bacteria, fungi, parasites, and other disease-causing microbes), pollutants, allergens and odours. And because we spend more time indoors than out, that's a big deal – now more than ever.

AiROH has an advanced formula that can help people breathe easy. It's infused with an enriched titanium dioxide (TiO₂), a naturally occurring mineral that, when exposed to light, (even non-UV), disinfects indoor air and surfaces – from open spaces to hard-to-reach places.

Colour us impressed. Once **AiROH** has been applied to walls, there is no maintenance, ongoing operating cost or electricity required.

Designed for indoor areas that experience continuous people flow, **AiROH** is ideal for medical and long-term care facilities, schools, workplaces and public buildings. It can be used in tandem with our MACTAIR purification system or on its own.

It's a low cost, proactive approach to clean air.

AiROH works overtime to disinfect and protect 24/7.*

*When exposed to light whether natural or artificial.

Sick Building Syndrome (SBS) SBS can be difficult to control, live and work in these unhealthy structures. A fresher environment can help mitigate the symptoms of those who suffer from Sick B

**ASHRAE
Standard 241,
Control of
Infectious Aerosols**

Tests conducted using
clinics have shown a
(3-4 days less) and

**ASHRAE
Standard 241,
Control of
Infectious Disease
compliant**

Tests conducted using **AirOH** in hospital ICUs, operating rooms and medical clinics have shown a (sharp) marked reduction in the length of hospital stays (3-4 days less) and in the number of HAIs and associated deaths (30-40% fewer

Each day, approximately **ONE IN FIVE PATIENTS** contracts at least one infection in association with his or her hospital care.

SICU - 2000 National and State Healthcare-Associated Infections Progress Report)

Healthcare-Associated Infections (HAIs) are the **FOURTH LEADING CAUSE** of death in America.

CURIE - Health care associated infections: background and fact sheet

How it works

- 1 A light source illuminates the coated surface instantaneously activating the TiO2 within the paint.
- 2 During the photocatalytic reaction, negative electrons are continuously released and the TiO2 surface becomes positively charged. To replace the negative electrons, TiO2 takes electrons from moisture in the air.
- 3 Without its electrons, the moist air transforms into hydroxyl radicals (OH·). OH is considered the ultimate oxidizer, outperforming even free chlorine (Cl) and hydrogen peroxide (H2O2).
- 4 Hydroxyl radicals then seek out airborne and surface pathogens in their path and destroy 99.9999999% of them within 30 minutes. It's natural purification in action.
- 5 The result? Air becomes purified, odorless and safe to breathe. Surfaces are disinfected and contaminants and pathogens are significantly reduced.

We're passionate about creating safer, healthier, more productive indoor spaces for all.

To learn more or purchase, visit www.mactair.com or contact info@mactair.com

(+) 375 Annaglen Blvd. Suite 100 Mississauga ON L5T 3A7

(+) 7 Kavalieratos Str Kifisia 14564 Greece

MACTAIR
PURE TECHNOLOGIES

Small space / residential size for targeted protection

An advertisement for MACTAIR Pure Technologies. The background is a solid teal color. At the top center is the MACTAIR logo, which consists of a blue shield icon with a white 'A' inside, followed by the text 'MACTAIR' in a bold, sans-serif font, and 'PURE TECHNOLOGIES' in a smaller font below it. Below the logo, the text 'WHAT IS' is in a small, white, sans-serif font, followed by 'AIR PURIFICATION?' in a large, bold, white, sans-serif font. Underneath this, the text 'Breathing clean air is essential for health.' is in a smaller, white, sans-serif font. Below that, a paragraph of text in a white, sans-serif font reads: 'Indoor air contains allergens (pollen, mites, moulds, etc), noxious substances, VOCs, bacteria, suspended smells, pathogens and viruses.' This is followed by another paragraph: 'MACTAIR filters out impurities and proactively disinfects the air you breathe by producing highly charged air that seeks out and destroys viruses, bacteria and mold where you are at risk.' Below this text is a horizontal line. To the left of the line is a white rectangular box with a black border containing the text 'PATENT PENDING' in a bold, black, sans-serif font. To the right of the line is the text 'Purification where you need it!' in a white, sans-serif font. Below the text and line is a large, dark grey rectangular unit, which is the MA GENERATOR. The unit has a white grille at the top with many small, vertical slats. A small, vertical blue light is visible on the front of the unit. On the left side of the unit, the text 'MA GENERATOR' is written vertically in a white, sans-serif font. At the bottom right of the unit, the MACTAIR logo is visible in a smaller size. In the bottom left corner of the advertisement, the text 'uous Air & Disinfection' is written in a large, bold, black, sans-serif font, with the first part of the word 'uous' being cut off by the edge of the image.

Continuous Air & Surface Disinfection

plasma generator

Produces both -ve and +ve ions which inactivate harmful substances in the air.

ionizer

Releases negative ions into the air to effectively neutralize VOCs and bacteria causing odours.

activated carbon filter

Traps dust, pollen and odor particles.

HEPA filter

High Efficiency Particulate Air filter traps and removes **99.97%** of the mites, bacteria, fungi and mold in the air. Combined with the Activated Carbon Filter it becomes a high performance product.

PLUS

photocatalytic ion generator

Revolutionary clean technology produces powerful hydroxyl radicals that neutralize all pathogens* in the air and on surfaces, including viruses and bacteria.

*pathogen - a bacterium, virus, or other microorganism that can cause disease

MACTAIR
PURE TECHNOLOGIES

www.mactair.com contact us: info@mactair.com

Mactair Pure Technologies
7 Kavalieratou Str 14564 Kifisia
Greece

Mactair Pure Technologies
375 Annaeem Blvd. Suite 100
Mississauga ON L5T 3A7

MA-55-279

Why use basic paint when MactAir paint disinfects indoor spaces?

Partner with MactAir to Make Spaces Safer

- Help revolutionize indoor health and safety.
- Utilize our technology in your space today.
- Join the movement to redefine clean air and surfaces.

www.mactair.com

