airPHX | SPORTS (“air-fix”)

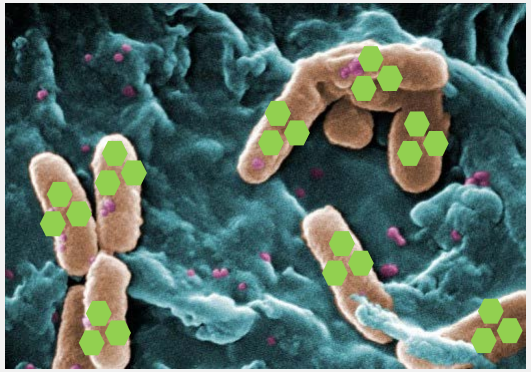
Air & Surface Sanitation System

airPHX - *The most effective approach*

A unique spectrum of Reactive Oxygen Species (ROS)

- Reactive, charged Oxygen derivatives
- Neutralize pathogens even deep in surfaces
- Destroys bacteria and viruses indiscriminately. MRSA, norovirus, athletes foot … and over 28 additional pathogens tested effective
- Eliminates odors
- ROS has a finite half-life and is neutralized as it destroys bio-matter

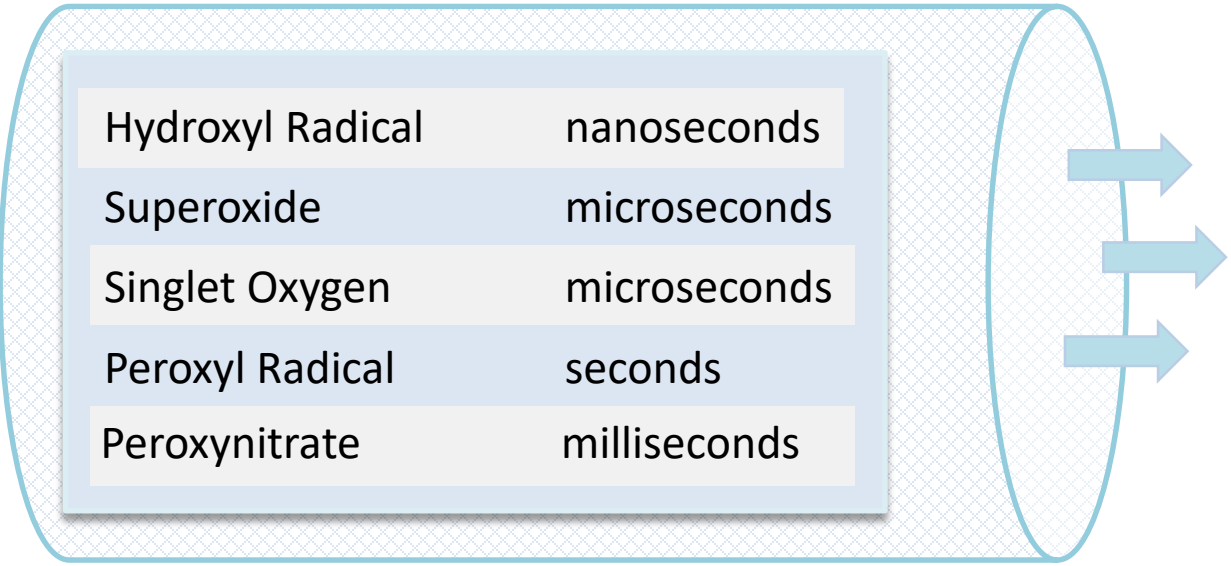
ROS kills from the inside, out:



1. **ROS de-stabilizes cellular membrane**
2. **Disrupts enzymatic process**
3. **Halts multiplication**
4. **Destroys organisms by oxidative stress**

Half-lives of Reactive Oxygen Species

In reactor – short half-life Reactive Oxygen Species



Hydroxyl Radical	nanoseconds
Superoxide	microseconds
Singlet Oxygen	microseconds
Peroxyl Radical	seconds
Peroxynitrate	milliseconds

Air & surface cleaning molecules

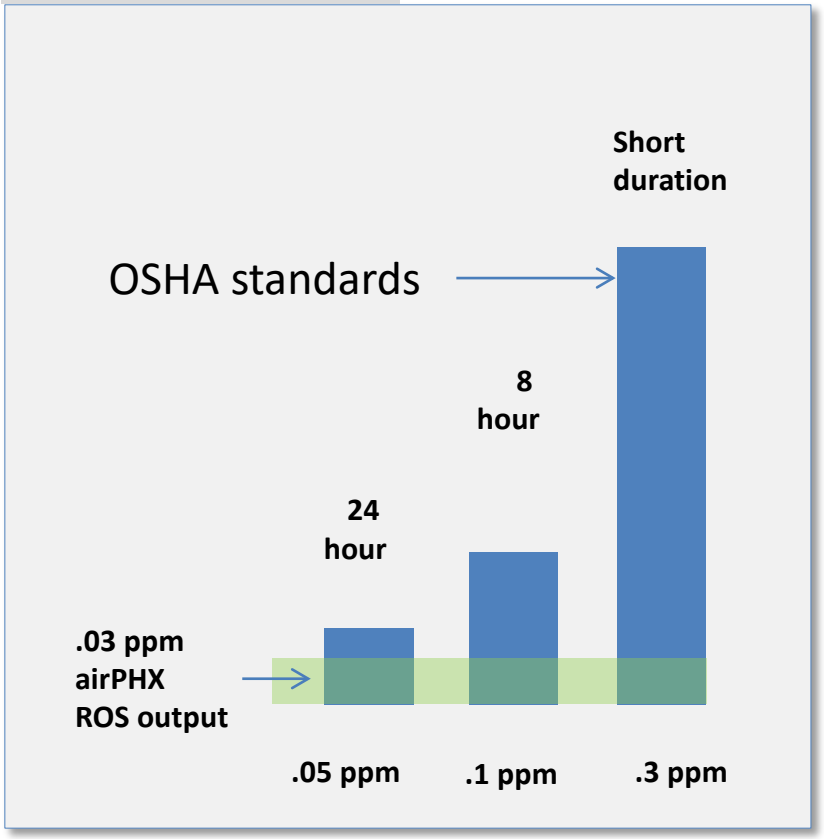
Hydrogen Peroxide	stable
Ozone	Seconds-minutes
Organic hydroperoxides	stable

Safety

- OSHA Compliant
- Operating in over 400 sites for over a decade
- Most reactive ROS molecules exist for fractions of a second, killing pathogens in the reactor
- Output ROS is not harmful to humans, neutralizing airborne and surface pathogens

USDA validated technology

airPHX operates well below OSHA standards, even for continuous exposure



airPHX uses Ozone as a "tracer" to determine the ROS density in the environment

Identification of Substance and Company

Hydrogen Peroxide (H_2O_2)

The low level Hydrogen peroxide byproduct of the clean process that takes place within an AirPHX unit is not hazardous according to the OSHA Hazard Communication Standard 29 CFR 1910.1200.

Produced as a byproduct of ambient air entering a reaction chamber in AirPHX equipment, where an electrical field temporarily stabilizes low levels of this molecule within an environment where an AirPHX air purification system is installed.

The AirPHX AMS technology is comprised of electromechanical air purification equipment that relies on electricity and the oxygen present in ambient air to produce marginal levels of reactive oxygen species where H_2O_2 is stabilized (average less than 0.07 ppm) within a treated area or space. Such treated area(s) should have consistent/constant airflow to provide a uniform distribution of the sanitizer.

Manufacturer/ Supplier **North America Distributor(s)**

Product Name	Description	Use
airPHX ROS system	Air purification unit	Antimicrobial intervention
Equipment produces reactive oxygen species (ROS) through capturing ambient air and passing it through a controlled sealed reaction chamber that is powered by standard 110V electricity without the addition of any chemicals or additives. The production of ROS is marginal, measured in very low concentrations (parts per million/ppm) and when not reacting with carbon based compounds the remainder of the species revert back to oxygen. The AMS series has self-limiting power modules that are factory calibrated and fine-tuned in the field and include a PLC controller that further regulates the system according to the application.		

The following is an excerpt from the OSHA Permissible Exposure Levels for Hydrogen Peroxide

General Description Synonyms: High-strength hydrogen peroxide; Peroxide; Hydrogen dioxide; H2O2 OSHA IMIS Code Number: 1470 Chemical Abstracts Service (CAS) Registry Number: 7722-84-1
Exposure Limits OSHA Permissible Exposure Limit (PEL): **General Industry: 29 CFR 1910.1000 Table Z-1 -- 1 ppm, 1.4 mg/m3 TWA** Construction Industry: 29 CFR 1926.55 Appendix A -- 1 ppm, 1.4 mg/m3 TWA Maritime: 29 CFR 1915.1000 Table Z-Shipyards -- 1 ppm, 1.4 mg/m3 TWA American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV): 1 ppm, 1.4 mg/m3 TWA National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL): 1 ppm, 1.4 mg/m3 TWA

Additional NIOSH information

Physical Description Colorless liquid with a slightly sharp odor
Incompatibilities & Reactivity Oxidizable materials, iron, copper, brass, bronze, chromium, zinc, lead, silver, manganese.
Exposure Routes inhalation, skin and/or eye contact - **Symptoms** Irritation with levels above PEL
Generic First Aid Eye: Irrigate immediately Skin: Water flush immediately

Identification of Substance and Company

Ozone (O_3)

The low level Ozone byproduct of the clean process that takes place within an AirPHX unit is not hazardous according to the OSHA Hazard Communication Standard 29 CFR 1910.1200.

Produced as a byproduct of ambient air entering a reaction chamber in AirPHX equipment, where an electrical field temporarily stabilizes low levels of this molecule within an environment where an AirPHX air purification system is installed.

The AirPHX AMS technology is comprised of electromechanical air purification equipment that relies on electricity and the oxygen present in ambient air to produce marginal levels of reactive oxygen species where O_3 is stabilized (average less than 0.03 ppm) within a treated area or space. Such treated area(s) should have consistent/constant airflow to provide a uniform distribution of the sanitizer.

Manufacturer/ Supplier **North America Distributor(s)**

Product Name	Description	Use
airPHX ROS system	Air purification unit	Antimicrobial intervention
Equipment produces reactive oxygen species (ROS) through capturing ambient air and passing it through a controlled sealed reaction chamber that is powered by standard 110V electricity without the addition of any chemicals or additives. The production of ROS is marginal, measured in very low concentrations (parts per million/ppm) and when not reacting with carbon based compounds the remainder of the species revert back to oxygen. The units has self-limiting power modules that are factory calibrated and fine-tuned in the field and include a PLC controller that further regulates the system according to the application.		

The following is an excerpt from the OSHA Permissible Exposure Levels for Ozone

General Description
Synonyms: Ozone, Triatomic oxygen, O_3
OSHA IMIS Code Number: 1980
Chemical Abstracts Service (CAS) Registry Number: 10028-15-6

Exposure Limits

OSHA Permissible Exposure Limit (PEL): 0.1 ppm, 0.2 mg/m^3 eight (8) hour TWA

General Industry: 29 CFR 1910.1000 Table Z-1 – 0.1 ppm, 0.2 mg/m^3 eight (8) hour TWA

Construction Industry: 29 CFR 1926.55 Appendix A – 0.1 ppm, 0.2 mg/m^3 eight (8) hour TWA

Maritime: 29 CFR 1915.1000 Table Z-Shipyards – 0.1 ppm, 0.2 mg/m^3 eight (8) TWA

American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV): 0.1 ppm, 0.2 mg/m^3 eight (8) hour TWA

National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL): 0.1 ppm, 0.2 mg/m^3 eight (8) hour TWA

Additional NIOSH information

Physical Description Colorless gas with pungent characteristic odor (often associated with electrical sparks).

Incompatibilities & Reactivity All oxidizable materials (both organic and inorganic).

Exposure Routes inhalation, skin and/or eye contact **- Symptoms** Irritation with levels above PEL

Generic First Aid
Eye: Irrigate immediately
Skin: Water flush immediately