

**amira**



**V-PHP  
Biodecontamination**

# Disclaimer

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- Amira – who we are
- V-PHP biodecontamination vs other methods
- Why H<sub>2</sub>O<sub>2</sub>?
- Limit and Benefit of the Technology

## Agenda



- We are a key player in the controlled contamination environment sector.
- We produce and distribute state-of-the-art instruments for **particle and microbiological monitoring** suitable for different industries such as life sciences, pharma, university, electronic.
- We offer high-quality solutions developed for and with our customers.
- We are a dynamic, motivated and talented team.

A large, light gray magnifying glass graphic is positioned on the right side of the slide. The lens of the magnifying glass is centered on the text 'About us'.

# About us

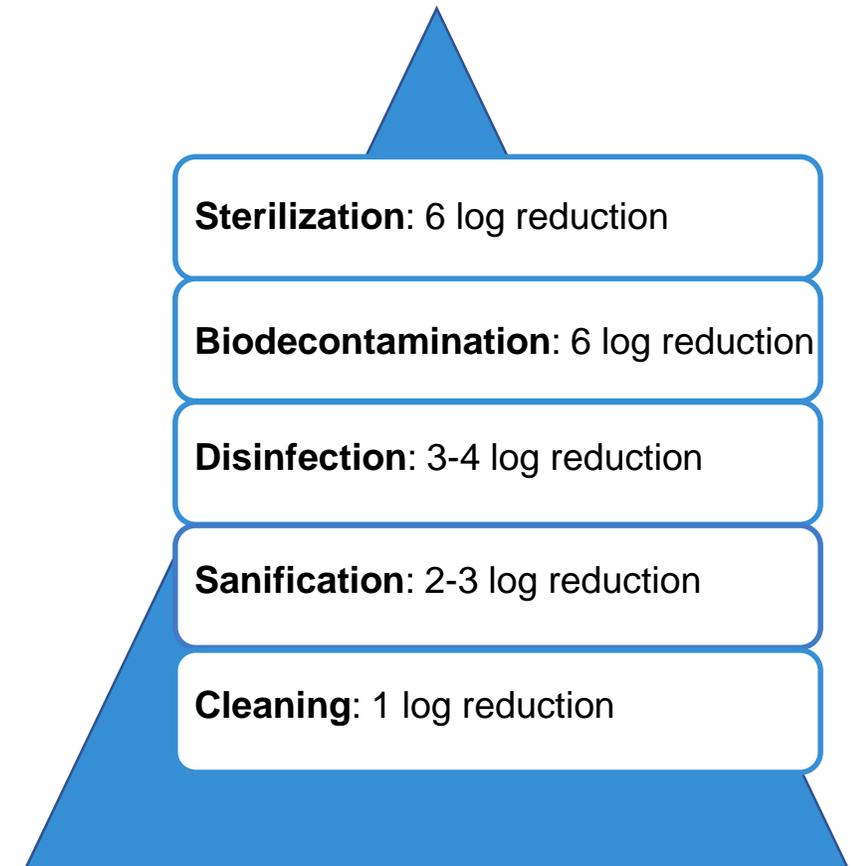


# Biodecontamination

βίος, -ου, ὁ (anciant greek) = **Life**

De + Contamino (anciant latin) =  
**to take out the dirty**

Bio-Decontamination = **to take out  
any life form**



# Biodecontamination

## Who needs it

Any environment sensitive to microbiological contamination

- Pharmaceutical aseptic production, Microbiological laboratories
- Isolators, autoclaves, pass-boxes
- BioSafety applications, Fermentation labs, Hospitals, etc...



# Biodecontamination: different chemical methods

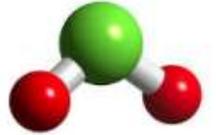
## Ethylene oxide

- Largely used in pharma & hospital biodecontamination processes
- Only applicable in hermetically sealed environments
- Flammable, carcinogen and toxic



## Chlorine dioxide

- Mainly used in potable water decontamination processes
- Only applicable in hermetically sealed environments
- When broken down by light and water forms toxic chlorine gas and highly corrosive hydrochloric acid



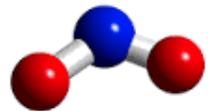
## Formaldehyde

- Historically used in pharma & hospital biodecontamination processes
- High level of carcinogenicity for humans
- Residual left on surfaces

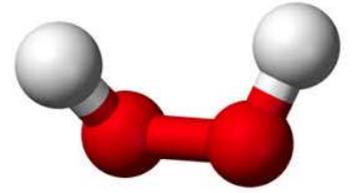


## Nitrogen dioxide

- New method for biodecontamination
- Only applicable in hermetically sealed environments
- Carcinogen, toxic and pollutant



# Hydrogen Peroxide



**Environmental friendly**

**Non cancerogenic**

ROS able to achieve sterilization

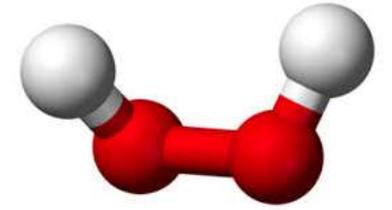
**Old and very well known molecule**

**Easy to find on the market**

Full approved by FDA, EPA, USP



# Hydrogen Peroxide



## VAPOUR

In physics a **vapour** is a substance in the gas phase at a temperature lower than its critical point, which means that the vapor can be condensed to a liquid by increasing the pressure on it without reducing the temperature.

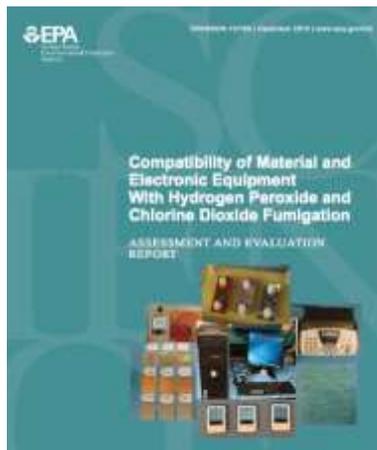
- Easy to distribute
- No residues
- High material compatibility (gas)

## AEROSOL, SPRAY, DRY FOG, ...

An aerosol is a suspension of tiny particles of liquid, solid, or both within a gas.

- Not easy to distribute
- Residues after evaporation
- Possible compatibility risk for material (liquid)

# V-PHP material compatibility – International literature



**All Category 2 and 3 materials demonstrated sufficient compatibility with H<sub>2</sub>O<sub>2</sub> vapor.**

**No visual or functional changes were noted for any Category 4 equipment that had been exposed to H<sub>2</sub>O<sub>2</sub>, regardless of concentration and run conditions.**

Title: *Compatibility of Material and Electronic Equipment with Hydrogen Peroxide and Chlorine Dioxide Fumigation*

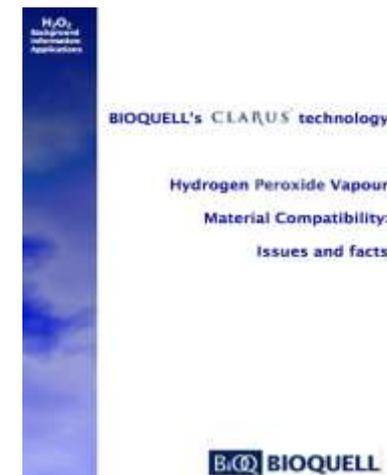
Date: 2010



**The physical and chemical properties of the materials showed little to no change following exposure. The process did not affect material's strength or cause embrittlement of any of the elastic materials tested. Chemical results showed no changes observed with the test samples.**

Title: *MATERIAL COMPATIBILITY WITH VAPORIZED HYDROGEN PEROXIDE (VHP®) STERILIZATION*

Date: 2002



**A series of tests to ascertain the effect of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) vapour on various commonly encountered materials. The test cycles are intentionally designed to be generally more destructive than the actual gassing environment.**

Title: *Hydrogen Peroxide Vapour Material Compatibility: Issues and facts*



# V-PHP - benefits and limits

## BENEFITS

- Non-toxic
- No residues
- Good material compatibility
- Good comparative safety profile
- Accepted by FDA, USP and EPA
- Good history of use / efficacy data
- Easy to test with biological indicators

## LIMITS

- Works in closed environment
- Efficacy affected by presence of organic and inorganic materials
- Aeration time affected by absorbing materials