



# ENGINEERING REVOLUTIONARY DISINFECTANTS

for the **War Against  
Microbes**





**Since the beginning of time, humankind's most lethal enemy has been the Pathogen.** Today, we are still at risk of contracting infectious diseases in healthcare facilities, dental clinics, spas, cruise ships and other public spaces. Even animals in farms, veterinary clinics, and shelters are not immune.

**...and yet the very chemicals being used to fight pathogens are threatening our health & safety and damaging our environment.**

A dynamic splash of water with many bubbles, set against a light blue background. The splash is concentrated on the right side of the frame, with water droplets and bubbles falling downwards.

**only Accelerated  
Hydrogen Peroxide®  
combines unmatched efficacy  
with environmental integrity  
and application safety.**





*Engineering Revolutionary  
Disinfectants for the War  
Against Microbes*

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# Waging A War On Pathogens

**The mission of Virox® Technologies Inc.** is to equip the entire spectrum of global markets with state-of-the-art antimicrobial technology in the war against germs. Our company is dedicated to the development, optimization, and adaptation of a fundamentally new approach to this challenge — an approach that has been validated and endorsed by the scientific community and adopted by market leaders in a broad range of industries.

We believe that there is no longer the need to compromise on efficacy of application, or trade off on either personal safety or environmental integrity by harnessing the disinfecting powers of hydrogen peroxide. Our disinfectant technology is a synergistic blend of commonly used safe ingredients that appear on the EPA inerts list and the FDA's generally regarded as safe list.

For the first time, Virox has developed a new standard of performance. **The science is here, and the time is NOW.**



As a research-driven company, Virox currently sells house branded and private label products, and partners with market leaders in an array of industries, who have all validated the scientific claims and market acceptance of our patented technology.

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Virox is committed to innovating, developing and improving peroxide based, environmentally sustainable cleaners and disinfectants that allow our customers to reduce their environmental impact.

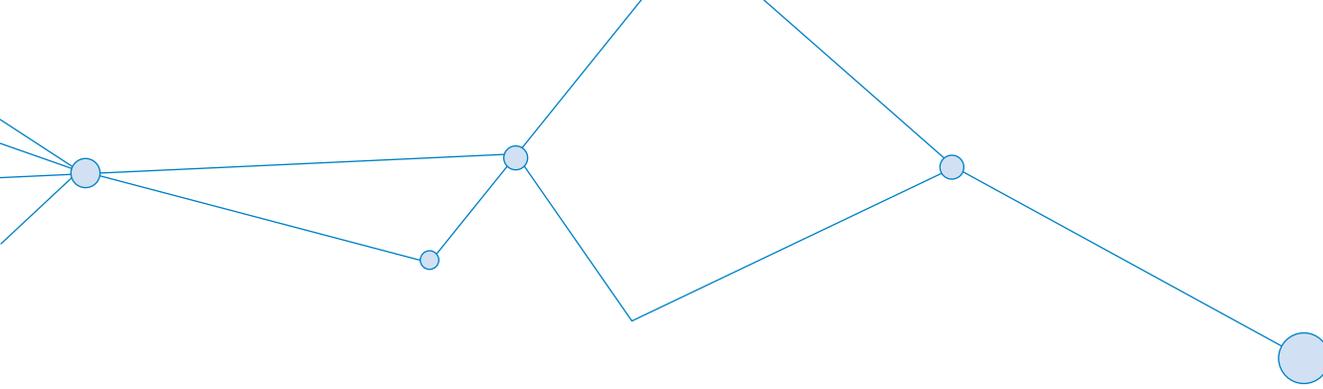
**“ A focus on human and environmental sustainability is a legacy we will pass on to future generations. ”**

**Randy Pilon, President & CEO**



# Deliberately Different. ■

**One disinfectant technology platform that  
combines unmatched efficacy with application  
safety? Now that's a Deliberately Different<sup>®</sup>  
way of thinking. ■**



# Our History

## 1998

*The discovery of a unique and innovative chemical synergy lead to the development of what would become known as Accelerated Hydrogen Peroxide® or AHP®. It represented a major break-through in disinfectant technology that was not only different but “deliberately different” – and would soon prove to be a game-changer.*

## Today

Virox Technologies Inc. has become an industry leader in infection prevention and control for a diverse number of market segments including: farm animal & companion animal health, professional beauty, laboratory, healthcare, dental, industrial & institutional markets, hand care, consumer products, mold remediation, and medical device disinfection and sterilization. AHP is available in more than 60 countries with over 9 patents and many more pending.

With continual research & development resulting in 10 issued patents and several more pending, Virox has become a valuable partner to our licenced companies.

Virox has received many business and industry awards. Some highlights include:

- *EPA Safer Choice Partner of the Year Award for Innovation* by the Safer Choice Design for the Environment
- *Champion Status for the Safer Detergents Stewardship Award (SDSI)* awarded by the EPA’s Design for the Environment (DfE);
- *Canadian/American Business Council Award* - Virox and its strategic partner Diversey were awarded the prestigious Business Achievement Award for their collaboration in developing and distributing a safe and environmentally friendly hydrogen peroxide-based disinfectant
- In 2013, Virox Technologies achieved *LEED® Silver certification* from the U.S. Green Building Council (USGBC), becoming the first chemical manufacturer capable of not just developing EcoLogo/UL and Green Seal Certified products, but manufacturing them in a LEED-certified facility

*See page 16 for a comprehensive list of awards.*



**When you use AHP<sup>®</sup> products, you are keeping harsh toxic chemicals from entering our environment. Accelerated Hydrogen Peroxide<sup>®</sup> breaks down into water and oxygen resulting in no environmental impact. Now that's **Green.****

# Multipatented Antimicrobial Technology

*It has long been known that hydrogen peroxide can kill pathogens without being harmful to the user. However, this remarkable chemical was not considered stable enough to be practical as the foundation for a system of commercial disinfectant cleaners. Virox scientists changed all that by developing Accelerated Hydrogen Peroxide®/AHP® — a stable disinfecting solution with enhanced germicidal activity that is safe for users and the planet.*

## Accelerated Hydrogen Peroxide/AHP

Virox Technologies Inc. has pioneered the broader acceptance of hydrogen peroxide based products with its patented technology known as Accelerated Hydrogen Peroxide. AHP is a synergistic blend of commonly used, safe ingredients that when combined with low levels of hydrogen peroxide produce exceptional



potency as a germicide and performance as a cleaner. These claims are all backed by governmental registrations and extensive third party analysis and testing. Powerful disinfectants are easy to formulate, however they are often toxic. AHP is unique as it achieves the ideal balance of safety and efficacy.

## An Approved & Validated Technology

- The benefits and efficacy of AHP have been validated by peer reviewed clinical studies conducted by recognized scientific organizations, third party researchers and labs in Canada, the U.S., Europe, and Asia.
- AHP has received approvals from Health Canada, US EPA (Environmental Protection Agency), US FDA (Food and Drug Administration), EU (European Union), New Zealand, Australia and 40 other countries.

- AHP® has been the subject of more than 45 favourably written peer reviewed scientific studies.
- After rigorous due diligence, Virox's Global Strategic Alliance Partners, who serve many industries, selected AHP® as their infection prevention platform, which is a testimony to the strength of the intellectual property and sustainability of the technology.

## Driven by Research, Validated by Science

### SURFACES

**Boyce, J. et al. (2017)** Prospective cluster controlled crossover trial to compare the impact of an improved hydrogen peroxide disinfectant and a quaternary ammonium-based disinfectant on surface contamination and healthcare outcomes. *American Journal of Infection Control*. 2017;45:1006-10

**Holtkamp, D.J. et al. (2017)** Efficacy of an accelerated hydrogen peroxide disinfectant to inactivate porcine epidemic diarrhea virus in swine feces on metal surfaces. *The Canadian Journal of Veterinary Medicine*. 2017;80:100-107

**Hole, K. et al. (2016)** Efficacy of Accelerated Hydrogen Peroxide Disinfectants on Foot-and-Mouth Disease Virus, Swine Vesicular Disease Virus and Senecavirus A. *Journal of Applied Microbiology* (2016). DOI: 10.1111/jam.13361

**Sattar, S. et al. (2015)** Disinfectant wipes are appropriate to control microbial bioburden from surfaces: use of a new ASTM standard test protocol to demonstrate efficacy. *Journal of Hospital Infection* (2015). pg 1-7

**Alfa, M.J. et al. (2015)** Use of a daily disinfectant cleaner instead of a daily cleaner reduced hospital-acquired infection rates. *American Journal of Infection Control* 43 (2015). pg 141-6

**Saklou, N.T. et al. (2015)** Comparison of disinfectant efficacy when using high-volume directed mist application of accelerated hydrogen peroxide and peroxymonosulfate disinfectants in a large animal hospital. *Equine Veterinary Journal*. doi: 10.1111/evj.12476

### DEVICES

**Chu, K. et al. (2014)** Bacterial Contamination of Ultrasound Probes at a Tertiary Referral University Medical Center. *AJR* 2014; 203:928-932 doi:10.2214/AJR.13.12407

### Omidbakhsh, N. and Kenny, N. (2008)

An Accelerated Hydrogen Peroxide (AHP)-based Fast-Acting and Reusable Microbicide for Manual Disinfection of Heat Sensitive Semi-Critical Medical Devices, *CJIC Vol 23 No 1*, pg 81-88

**Omidbakhsh et al. (2006)** A new peroxide-based flexible endoscope-compatible high-level disinfectant, *AJIC Vol 34 No 9*, pg 571-577

### HANDS/TOPICAL

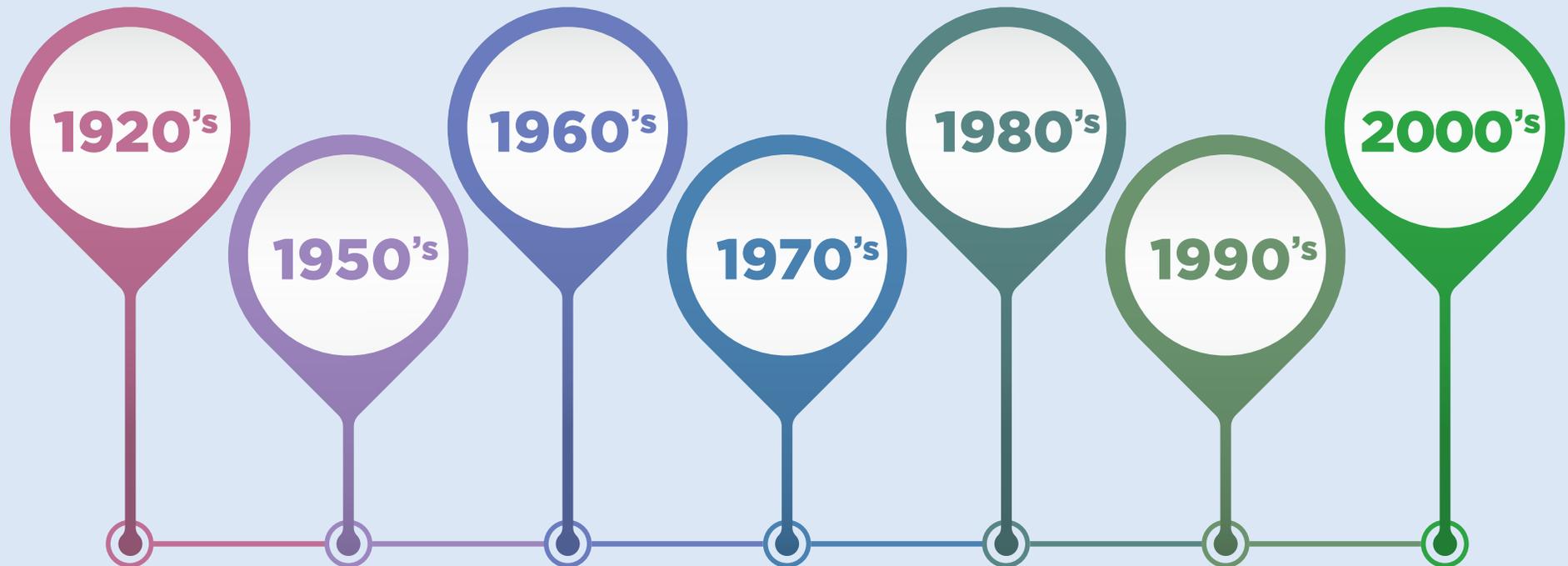
**Moriello, K. (2016)** In vitro efficacy of shampoos containing miconazole, ketoconazole, climbazole or accelerated hydrogen peroxide against *Microsporum canis* and *Trichophyton* species. *Journal of Feline Medicine and Surgery*, 2016. Pii: 1098612X15626197

**Grascha, P. (2014)** Why low pH does not necessarily mean skin irritancy. *The Canadian Journal of Infection Control*, 2014. pg 161-164

### Bashiri, A., Dingwell, R.T. and

**Leslie, K.E. (2006)** Efficacy of Two Hydrogen Peroxide Teat Disinfectant Against *Staphylococcus aureus* and *Streptococcus agalactiae*. *American Dairy Science Association*, 2006. 89:3696-3701

# The Evolution of Modern Disinfection



**Chlorine Bleach** products made commercially available, however are unstable and are poor cleaners.

**Alcohols** continue to be used for disinfecting. **Phenolic** disinfectants change little over the next 50 years.

Antibiotic resistant microbes start to appear. **Aldehydes** for medical device disinfection is introduced. **Triclosan** is introduced in hand washing products.

**Quaternary ammonium** compounds introduced, however, became known to have environmental and broad spectrum disinfection challenges.

Antibiotic resistant *Staphylococcus aureus* appears. **Health risks working with phenolics** are identified and restrictions for use implemented.

New strains of antibiotic-resistant pathogens continue to appear. Special handling requirements for **Glutaraldehyde** implemented.

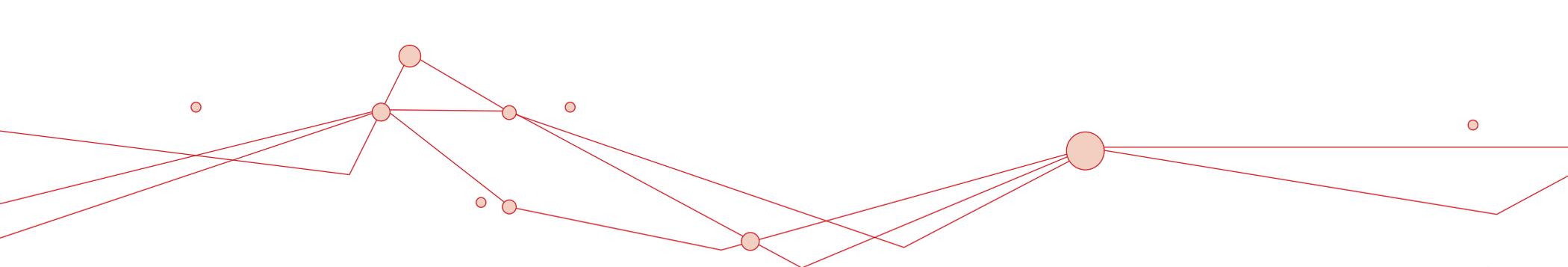
The next generation technology utilizing **Accelerated Hydrogen Peroxide®/AHP®** is introduced. FDA bans **Triclosan**.



**ACCELERATED**<sup>®</sup>  
HYDROGEN PEROXIDE

Patented

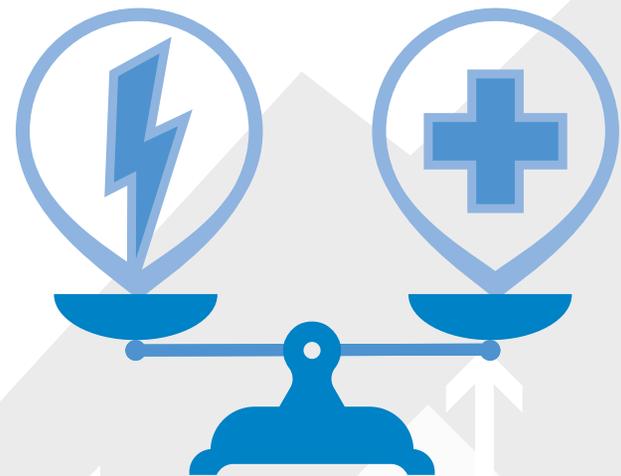




# The Superiority of AHP<sup>®</sup>

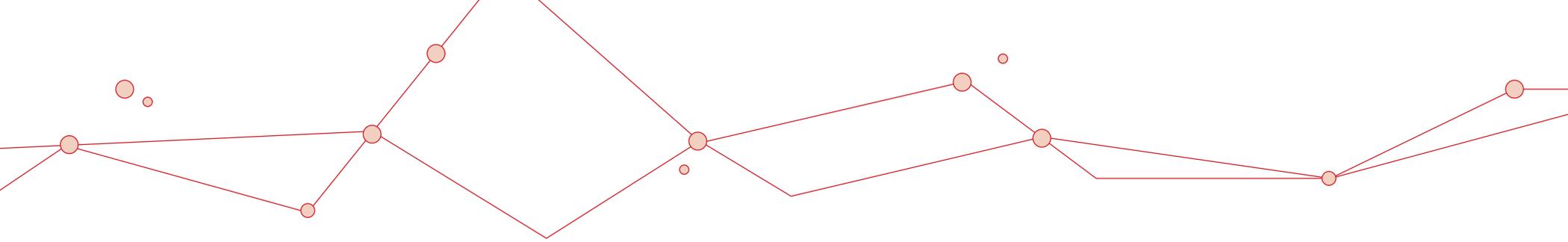
*AHP formulations are not mere substitutes for current chemistries, they represent the next generation in disinfectant technology with demonstrable superiority.*

AHP Products are Distinguished  
by these Key Essential Traits



## Balance

**Efficacy & Safety** - AHP products are more than just tough on leading pathogens of concern including: spores, mycobacterium, fungi, enveloped and non-enveloped viruses, and vegetative bacteria, they're also easy on users, materials and devices.



“ With its contact time of 1 minute or less, AHP® improved our efficiency in turning rooms allowing us to help more patients. ”

Dr. Julie Reck



## Speed

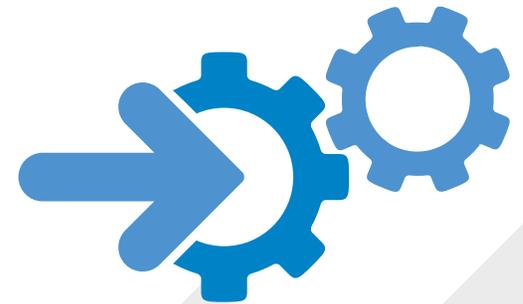
**Contact Time** - AHP is fast acting with short contact times that ensure user compliance with label claims.



## Cleaning

AHP is a **one step** disinfectant cleaner ensuring confidence surfaces are properly disinfected.

**Dirty Surfaces** - AHP cleans while it disinfects and disinfects while it cleans in one step.



## Compatibility

AHP has **excellent compatibility** with most surfaces thus protecting customer assets.

“ AHP® is among those very rare disinfectant technologies that make every effort to minimize worker and patient exposures to harmful chemicals. ”

Dr. Syed Sattar



## Safety

**Toxicity** - AHP has been formulated to be essentially non-toxic and non-irritating with the lowest EPA (category IV) rating.



## Environmental Impact

Hydrogen Peroxide is **100% biodegradable** and breaks down into oxygen and water. AHP only contains ingredients that are considered environmentally preferable and sustainable. Further, AHP is certified by leading safety boards including UL (EcoLogo designation) and US EPA Design for the Environment (DfE).

AHP® is the world's **First & Only**  
disinfectant technology platform formulated for:

**Hands**



**Surfaces**

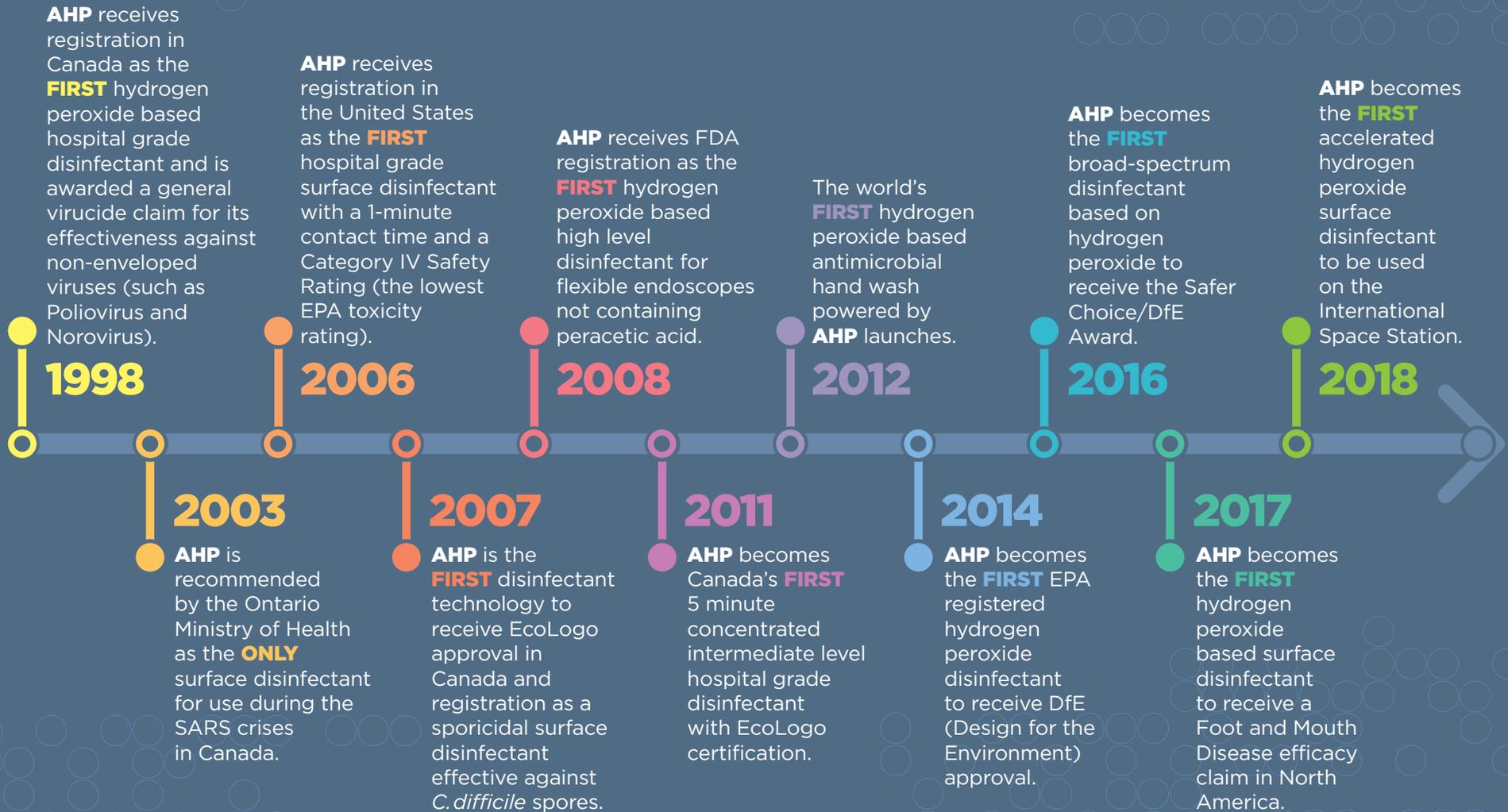


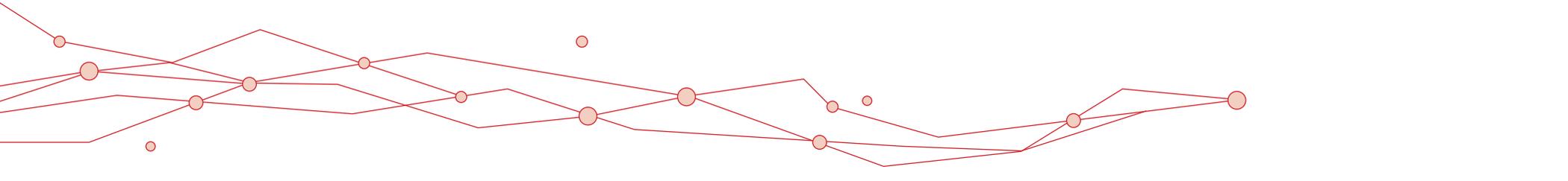
**Devices**



# A Proven Track Record of Success

**AHP® was both the FIRST EcoLogo registered disinfectant-cleaner in Canada and the FIRST DfE registered hydrogen peroxide disinfectant in the US.**





# Awards and Associations

## Proud To Be A Leader

Virox has long prided itself on developing and manufacturing cleaners and disinfectants that provide a safer and greener alternative to end users, occupants and the planet. Proof of this comes with multiple awards and recognition for sustainability, as well as several green certified products.

## AWARDS

- **LEED® Silver Certification**  
From the U.S. Green Building Council (USGBC), becoming the first chemical manufacturer capable of not just developing EcoLogo/UL and Green Seal Certified products, but also manufacturing them in a LEED-certified facility;
- **EcoLogo Certified**  
AHP® was the FIRST disinfectant technology to receive EcoLogo approval in Canada as a green certified disinfectant cleaner;
- **EPA Safer Choice Partner of the Year Award**  
For Innovation by the Safer Choice Design for the Environment;
- **Safer Detergents Stewardship Award (SDSI)**  
Champion Status (highest level) for AHP® in the EPA's Design for the Environment SDSI Award;
- **Green Guard**  
AHP® validated by GREENGUARD an industry-independent, third-party testing program for low-emitting products and materials;



- **Green Seal Certified**

AHP® is certified by Green Seal – provider of science-based environmental certification standards that are fair, unbiased, and credible;

- **Canadian/American Business Council Award**

In recognition for developing and distributing a safe and environmentally friendly hydrogen peroxide-based disinfectant;

- **National Hog Farmer Award**

Virox Animal Health™ receives National Hog Farmer Award for “Most Promising New Product”

- **BSI Registered**

Virox operates an Environmental Management System which complies with ISO requirements (ISO-19001/14001);

- **Ontario Business Achievement Award**

Virox Awarded 2013 Ontario Business Achievement Award as a Global Innovator

## STRATEGIC PARTNERSHIPS

- **Fear Free<sup>SM</sup> Partner**

Proud partner with Dr. Marty Becker, developer of the Fear Free<sup>SM</sup> initiative designed to reduce fear, anxiety and stress in animals before and during a veterinary visit;

- **AAHA Emerald Member**

Strategic Alliance Partner and Emerald Member of the American Animal Hospital Association;

- **NAVTA**

The National Association of Veterinary Technicians providing input on national issues involving the veterinary profession;

- **AASV**

Member of the American Association of Swine Veterinarians;

- **CVMA**

Exclusive sponsor of the Canadian Veterinary Medical Association’s Emerging Leaders Program (ELP);

- **APIC**

Member of the Association for Professionals in Infection Control and Epidemiology (APIC) – the leading professional association for infection preventionists (IPs);

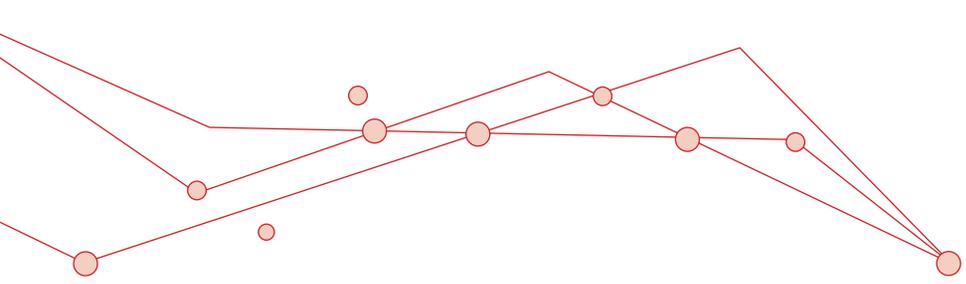
- **IPAC**

Member of Infection Prevention and Control Canada (IPAC) – developing, implementing, and evaluating strategies and programs to prevent and control infectious diseases



APIC™





# Disinfecting Across Multiple Markets

## In-House Brands

**Virox Technologies** has introduced the benefits of AHP® to a number of markets with targeted formulations and brands. As we entered the various market rivalries these products

provided a viable and Deliberately Different® alternative to harsh legacy disinfectants accounting for their rapid uptake and growth.

REScue®

PREvail®

PREvention®

INTERvention®

PEROXiwash™

PREempt®

PEROXigard®

REJUVenate™

RESTORox™

# Companion Animal

PREvail®

RESCue®

PEROXiwash™

# Farm Animal

# Life Science Laboratory

PREvail®

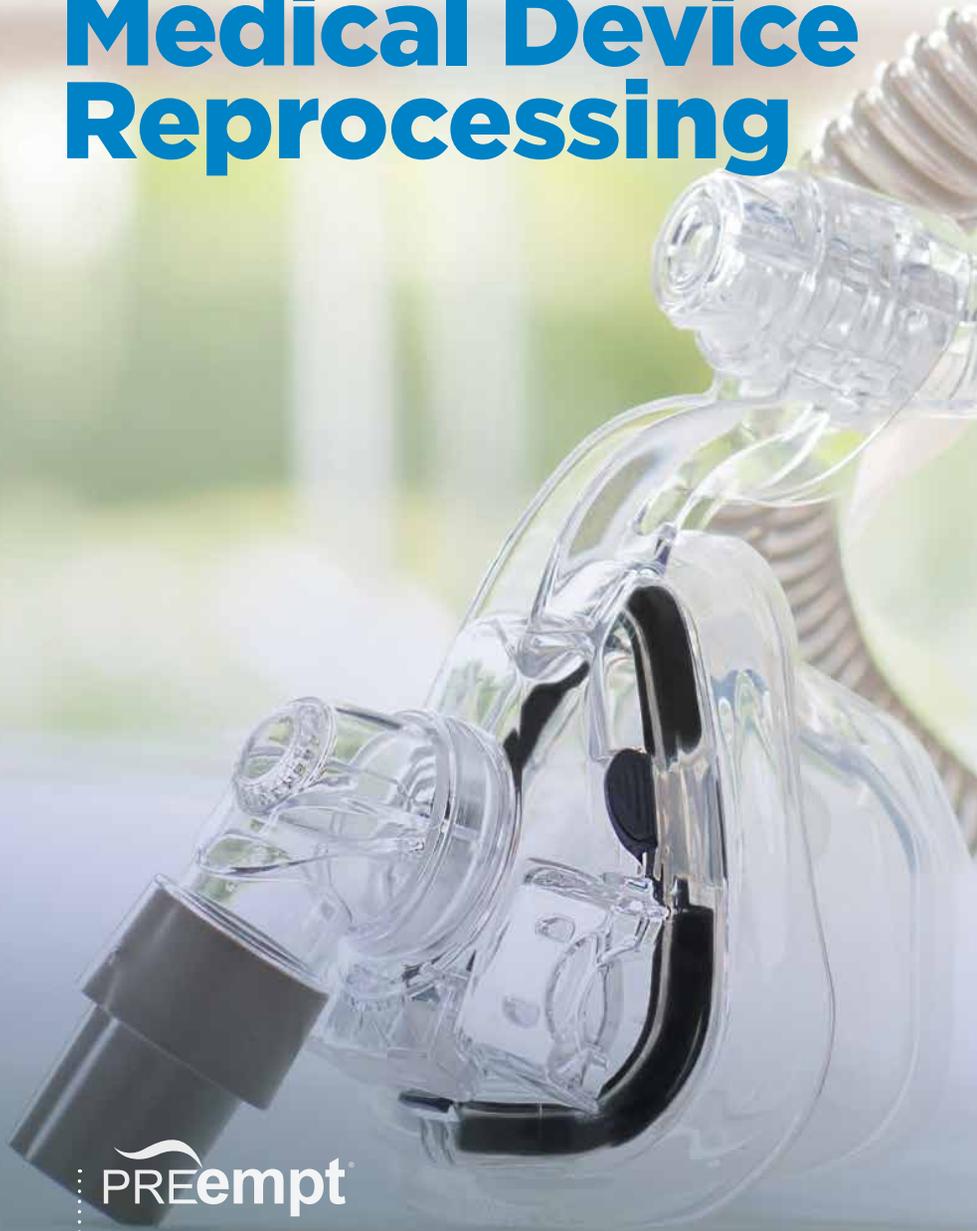
INTERvention®

PEROXiwash™

PREempt®

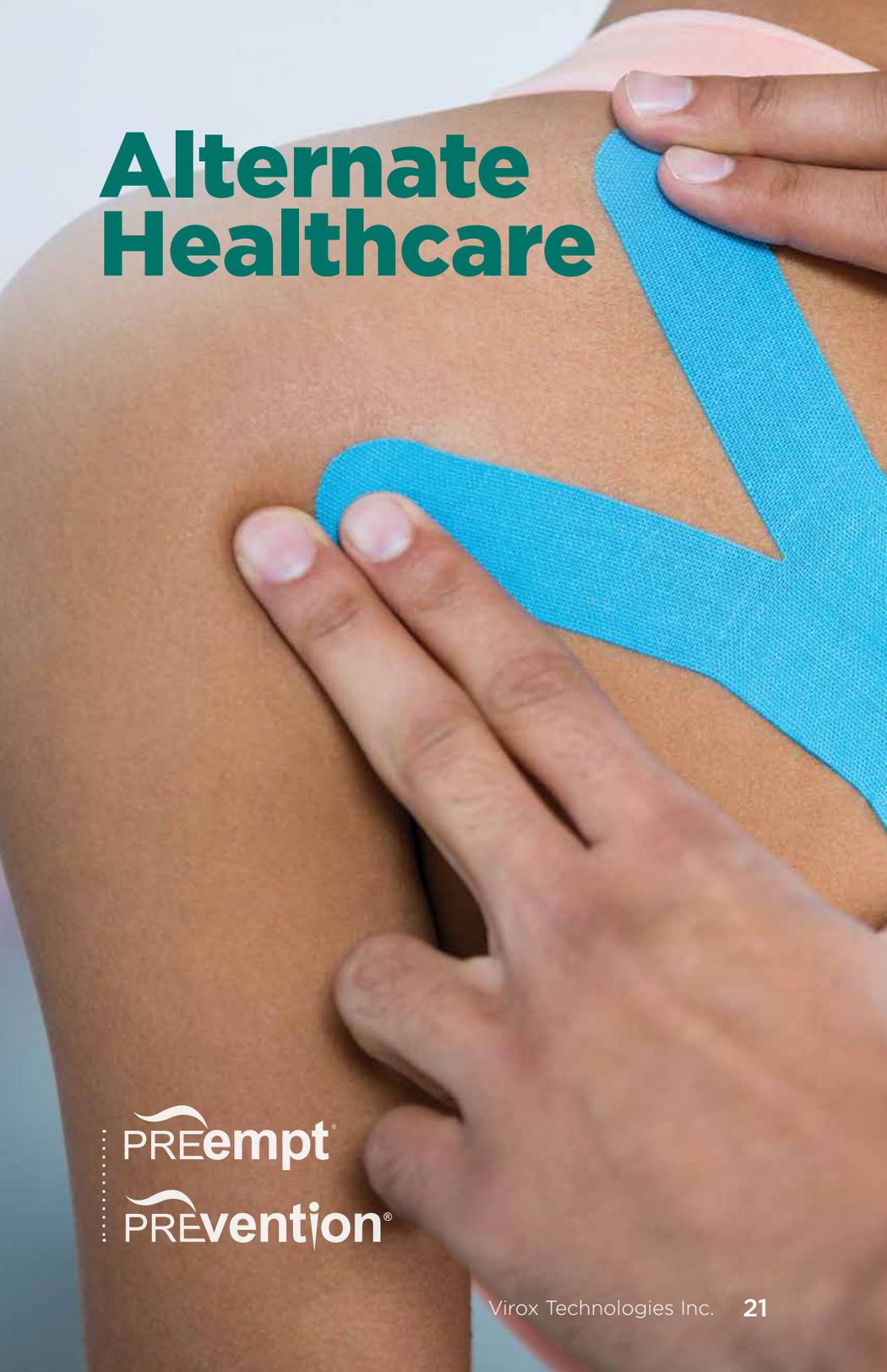
PEROXigard®

# Medical Device Reprocessing



PREempt®  
PREvention®

# Alternate Healthcare



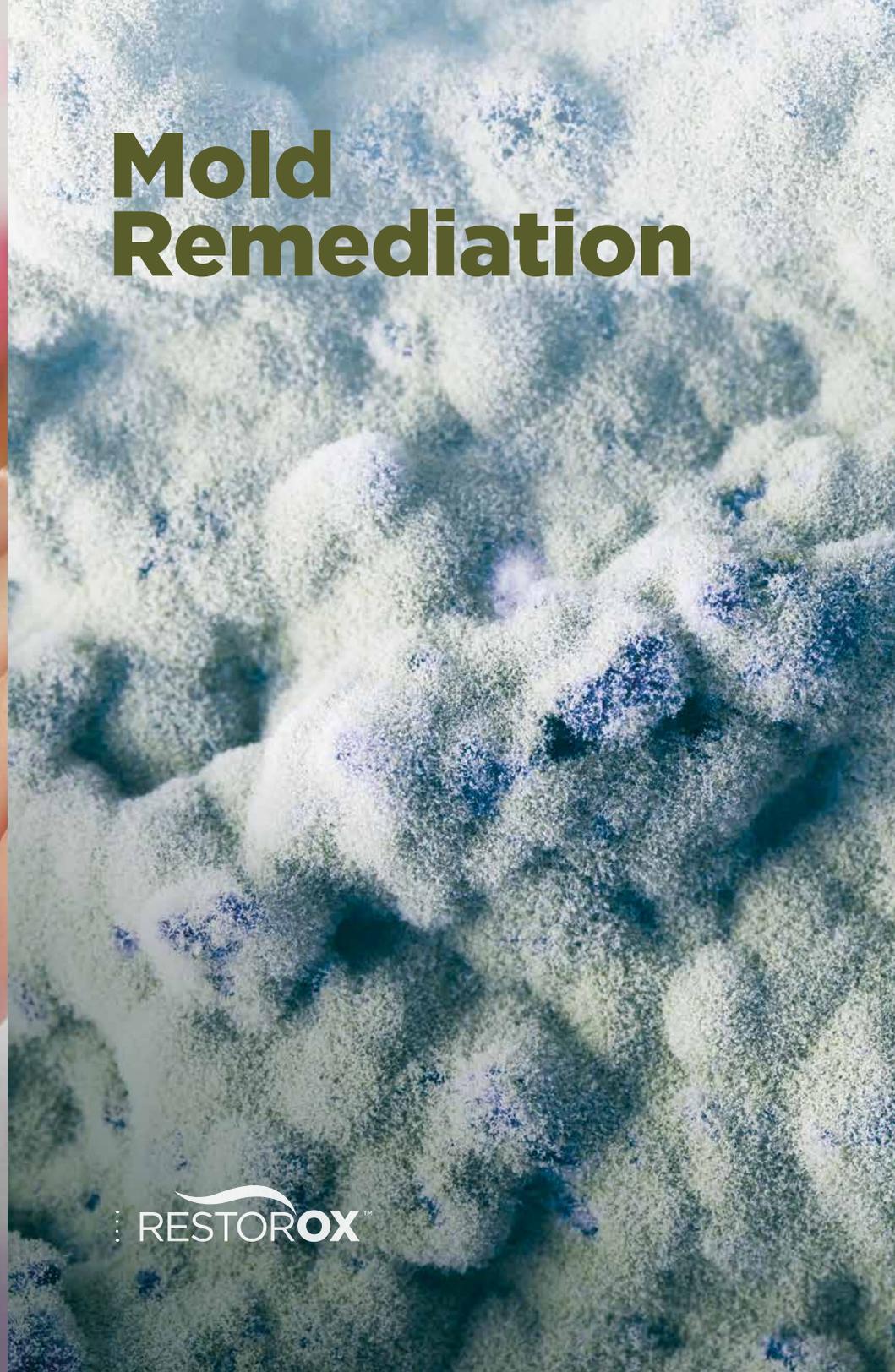
PREempt®  
PREvention®

# Professional Beauty



PREempt<sup>™</sup>  
REJUVenate<sup>™</sup>  
PREvention<sup>®</sup>

# Mold Remediation



RESTOROx<sup>™</sup>

# In Good Company

## Virox Technologies Inc. Partnerships

Our globally recognized and respected strategic alliance partners have demonstrated brand equity unparalleled in their respective markets, through joint development of high quality products, sustainable innovation, and superior end-user experience.



The SciCan logo consists of the word "SciCan" in a green, sans-serif font.



The STERIS logo features a blue icon of three wavy lines to the left of the word "STERIS" in a bold, black, sans-serif font.

The DeLaval logo features a blue icon of a stylized 'd' with an orange dot to the left of the word "DeLaval" in a bold, blue, sans-serif font.



# Dentistry



**SciCan**  
OPTIM™

# Dairy



**DeLaval**  
Prima™

# Endoscopy



 **STERIS**<sup>®</sup>  
RESERT™

# Hand Care



  
OxyBac™

# Consumer



# Cruise Ships



Oxivir™

# Healthcare



Oxivir™

# Industrial, Institutional

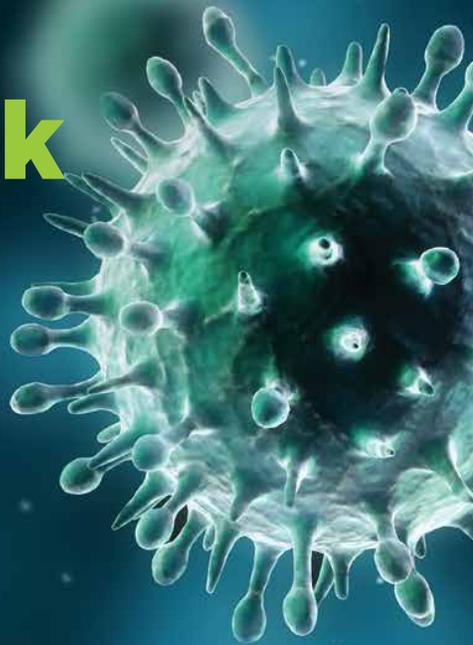


Alpha-HP™ | PERdiem™

In 2003 — Accelerated Hydrogen Peroxide® was the **Only** surface disinfectant technology recommended for use by the Ontario Ministry of Health during the

# SARS Outbreak

in Toronto  
Canada.



And now... it is the **First** Accelerated Hydrogen Peroxide® surface disinfectant to be used in...

# Space

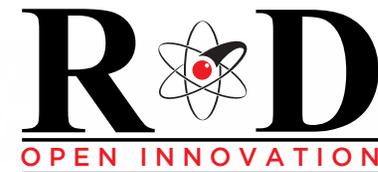
.....  
2017 — AHP® surface disinfectant approved for use on the International Space Station.



# Pushing Onward & Upward

## Constantly Evolving

Through its Open Innovation philosophy, Virox Technologies has developed research and development capabilities to optimize ongoing innovation of its technology to address commercial opportunities in the \$20+ billion global market for cleaning and disinfection products.





# **Innovate. Formulate. Educate.**

**There are over 8000 disinfectant products in North America and that number is quickly increasing, making it more difficult to select the right product, match it with the right protocol and conduct the right training to prevent the spread of infectious disease.**

**Not to worry, we're here to help.**

# Getting Our Message Out There

## Virox Technologies in the Public Eye

In addition to their technical expertise and management capabilities the company's priorities are to:

- Expand the application of existing products and technology into new end-user markets
- Maintain a business platform that is built on credibility, third party validation, endorsement of professional and academic communities, and peer-reviewed documentation
- Ensure the scientific community supports and endorses AHP® technology
- Continue an education platform through blogs, websites and engaged social media



# Manufacturing & Operations

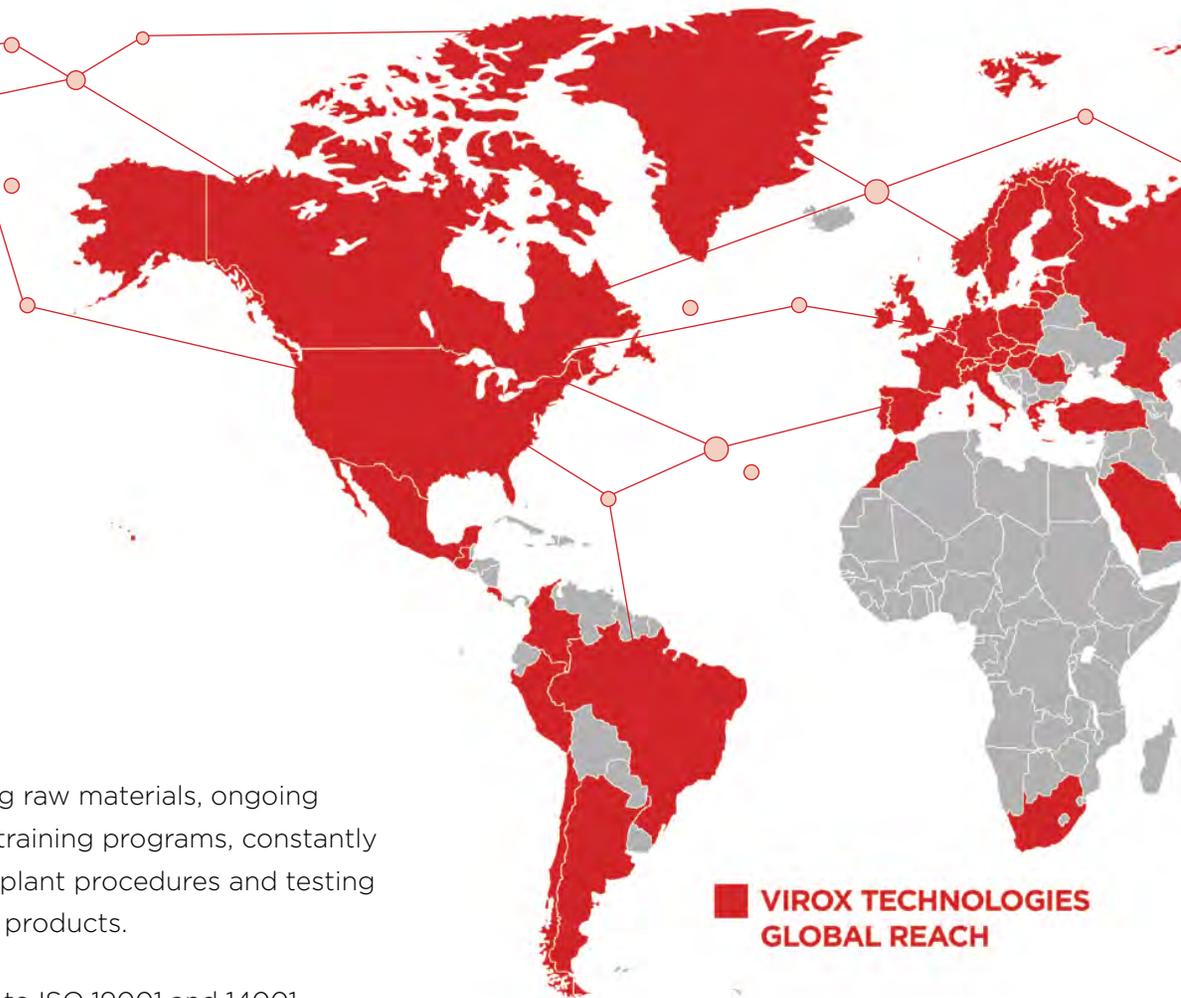
## Experts in Manufacturing Hydrogen Peroxide Based Products

*Virox is a full service manufacturer focused exclusively on Hydrogen Peroxide-based products.*

In our 60,000 sq. ft. facility the Virox Manufacturing Group is responsible for implementation and monitoring of quality manufacturing and environmental systems. Quality begins with scrupulous vendor selection, testing

of incoming raw materials, ongoing employee training programs, constantly improving plant procedures and testing of finished products.

In addition to ISO 19001 and 14001 standards, Virox Technologies Inc is a Health Canada, US EPA as well as US FDA licensed establishment which operates as per GMP (Good Manufacturing Practices) Guidelines from HPFBI (Health Products & Food Branch Inspectorate) and quality system regulations (21CFR820).



**VIROX TECHNOLOGIES  
GLOBAL REACH**







Virox® Technologies Inc. is committed to innovating, developing, and improving peroxide based, sustainable cleaners and disinfectants to improve

the health of people and animals all the while reducing their environmental impact. This is why **One Health®** is at the core of all our initiatives.



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The science is here  
and the time is NOW. 



Engineering Revolutionary Disinfectants  
for the War Against Microbes