



Odorox® Technology Self-study guide

Begin Training Guide

This document is designed for Odorox® device distributors to help them understand the science and technology behind the Odorox® products. We will introduce you to HGI, the Odorox® vision, and train you how to prepare for a sale, make the sale, and follow up after the sale in order to promote your business.



HGI
Industries Inc.




Directions:


Welcome to the Odorox® Technology Self-Study Guide

This course will help you become a more successful Odorox® device distributor. We will introduce you to HGI, the Odorox® vision, and train you how to prepare for a sale, make the sale, and follow up after the sale in order to promote your business. This course contains many resources including links to video, web pages, additional resources, and text entry boxes. In order to take full advantage of these resources, we recommend that you view this guide from a computer with internet access.

How to use this self-study guide to complete your training:

- Explore each section of the course
- Follow the links throughout this document to find additional resources
 - Links to other documents can be found in the text
 - **Video Links** will have a small arrow either in the center or at the bottom left of the graphic
- Extra tips and lessons can be found in **Tip Boxes** on the right side of scenario pages
- A **Menu** will be located on the Introduction page of each section and subsection of this guide
 - The section or subsection where you are at in the guide will be bolded, so you know where you are at in relation to the rest of the content
 - Clicking on the section or subsection will navigate you to that page
- Read each page carefully and think about how to apply the information found there to yourself and your business
- Reflect on the scenarios and give meaningful answers to all the questions. Select your answers from the drop-down boxes or write them in the **text entry boxes** provided
- **Answer keys** are available in drop down boxes on the knowledge check and on scenario pages.

 How would you respond to Martin? Which Odorox® device meets the needs of this situation?

 **Answers:** Click here to review answers.

Answer Key

Suggestions for using this Self-Study Guide

- Plan time to study the guide
- Set goals to complete the course
- Break the training up into sections
- Use this guide as a reference and refer to it often
- Review each section after relevant sales experiences

Tip Box

Video Link



Menu

Menu

HGI & the Odorox® Brand

Selling Approach

Prepare

Know the Product

Know the Competition

Make the Sale

Recognize Needs & Concerns

Share Benefits & Features

Follow Up

Identify & Use References

Identify New Opportunities

Course Summary

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HGI and the Odorox® Brand



HGI Industries Inc. is the parent company & manufacturer of the Odorox® product line. The company headquarters, main research, development, and all custom manufacturing, operates from its 32,000-sq. ft. facility in West Palm Beach, Florida.

Mission

Our mission is to improve quality of life by naturally and ecologically improving the air quality, neutralizing potentially harmful pathogens, mold and mildew, destroying bacteria and virus, eliminating offensive odor from indoor environments. HGI is a global market-focused company that develops and delivers innovative products for our clients, produces predictable earnings for its shareholders, consistently outperforms its peers, and provides a dynamic and healthy indoor environment.



Click the video link to go to the Odorox® website and view a video about the history of Odorox®

Leadership

An American-based company; HGI continues to lead the way in development of its revolutionary technology, as well as growing exponentially as a company. Due to the overwhelming response and need for the Odorox® product, HGI is currently expanding its manufacturing facilities worldwide. HGI continues to focus its efforts on penetrating application areas, including:

- Indoor air-quality (IAQ) market
- Personal health/wellness sector
- Travel industry
- Fire and water damage industry
- Food and Hospitality industry
- Agricultural and industrial applications such as food processing and wastewater plants.



Click the video link to learn from Steven Hardwood, Director of International Business Development, about HGI's strategic plan for global growth.



HGI and the Odorox® Brand



Green

HGI is committed to building upon its state-of-the-art technology and providing products at the highest level of excellence. We are setting the industry standard in order to benefit people and animals globally, while at the same time maintaining sensitivity to and contributing to the environment. HGI is excited to lead the way towards reversing the effects of industrialization on our planet. Odorox® technology harnesses the same UV energy as found from the sun and humidity to create atmospheric hydroxyls to provide a sanitizing air/surface mechanism. Odorox® devices do not use any chemicals.

Safe

HGI strives to assure all Odorox® products are safe for people, pets and plants. Odorox® Hydroxyl Generators are Electrical Testing Labs (ETL) certified for safety and quality assurance by the world's largest independent testing, inspection, and certification partner – Intertek. The Environmental Protection Agency (EPA) recognizes that atmospheric hydroxyls are a naturally occurring molecule and are safe.



Disciplined Strategy

Odorox® technology and its unique effectiveness combined with dramatic cost advantages in capital outlay, operating costs (power efficiency) and thus ROI, creates an aggressive competitive advantage. The Odorox® device atmospheric hydroxyl contains sufficient energy to enable it to be dispersed over a wide range of indoor area. No other company can match the cost, ease of use, and performance Odorox® hydroxyl generator technology. The Company is focused on utilizing its technology to neutralize mold and control odors where current solutions are inefficient or ineffective.



Introduction: Selling Approach

Successful Selling Approach

As a partner with HGI, you have the potential to be a successful distributor. This course will help you learn how to make the sales that are essential for your business. You will learn from examples of successful distributors and see which characteristics make them successful at selling Odorox® technology solutions.

Purpose

Being successful in any situation takes preparation, knowledge, and persistence. This course reviews the specific preparation, knowledge, and skills you need to be a successful Odorox® device distributor. This course will cover three basic steps of our Selling Approach; Prepare, Make the Sale, and Follow up.

As you go through this course, you will be given in-depth information on each step and you will learn how to effectively use steps to improve your business.

Content

Each of our selling steps—Prepare, Make the Sale, and Follow Up—have been broken down into subsections to make it easier for you to learn the information. Each section introduction includes an overview of the subsections and an estimated time for completion. Estimated completion times will also be listed in the table of contents. Each subsection features scenarios, information, and knowledge checks.

Prepare

- **Know the Product:** Learn the science and technology behind Odorox® products.
- **Know the Competition:** See how Odorox® outshines the competition.

Make the Sale

- **Recognize Needs & Concerns:** Understand how to recognize needs and concerns and overcome objections.
- **Share Product Features & Benefits:** Learn specific details about each device in the Odorox® product line.

Follow Up

- **Identify & Use a Reference:** Find out how to connect with your clients.
- **Identify New Opportunities** Discover new sales opportunities.

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HGI & the Odorox® Brand

Selling Approach

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Know the Competition

Make the Sale

Recognize Needs & Concerns

Share Benefits & Features

Follow Up

Identify & Use References

Identify New Opportunities

Course Summary



Knowing the Product: Introduction

Prepare to Sell by Knowing the Product

- In order to be successful at selling, it's important to know enough about your product to share its benefits and features while overcoming objections and concerns. Having enough information gives you the credibility, confidence, and knowledge you need to be successful.
- Each consumer has a different set of circumstances that dictate their needs; knowing your product helps you determine how best to meet those needs. Successful salespeople don't sell products, they sell solutions.
- When selling Odorox® product solutions, it's important to have a thorough understanding of the science and technology behind the products as well as the benefits of using them. This allows you to work with your clients to find the best solutions to meet their unique needs.
- This section teaches you about the technology used in Odorox® equipment as well as the science behind that technology. This will help you understand the benefits of using Odorox® devices.

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Share Benefits & Features
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Purpose

After completing this section, you should be able to answer questions regarding:

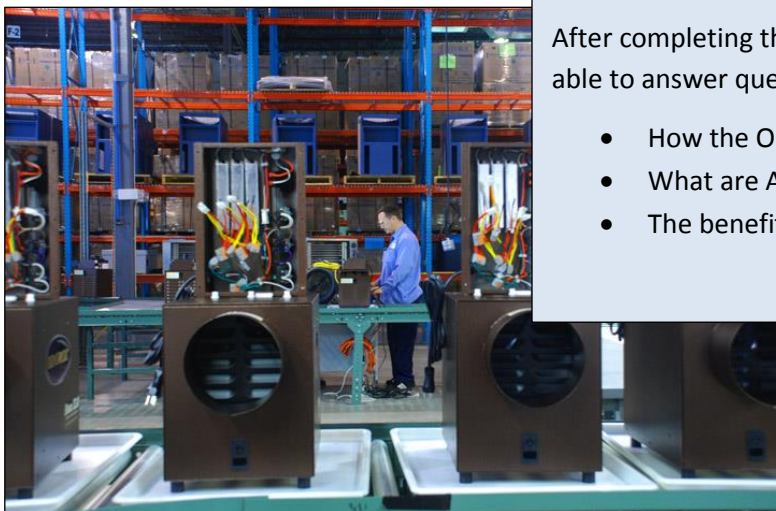
- How the Odorox® equipment works
- What are Atmospheric Hydroxyls
- The benefits of using Odorox® Devices

Content

In this section, you will learn about:

- The Odorox® Technology
- The Science of Hydroxyls
- The Effects of Air Quality and Pollution
- Indoor Air Pollution and Health
- Air Quality & Circulating 'Bad Air'

Estimated completion time: 45 Minutes



Knowing the Product: Bakery Odors on Clothing



Bakery Aroma: James, an Odorox® device distributor, was spending some time in a high-end mall. While he was clothes shopping, he noticed that odors from bake ovens next door were permeating the air and causing strong odors in the clothing. James talked to Mark, the owner, and told him there was a solution for removing the odors to increase customer interest and profitability.

Later that evening, James brought a portable device inside a changing room and hung one of the odorous garments in front of the unit. While they waited, James asked Mark questions to build rapport. After 10 minutes, James asked the owner to examine the garment and check for odors. Mark was amazed by the fresh, clean scent of the garment. James told Mark the unsavory scent within the whole store could be neutralized by using a larger unit.

Mark looked surprised and asked, “How does it work?”



How would you respond to the owner?



Throughout this section, you will learn about The Odorox® Technology and The Science of Hydroxyls.

As you read, think about how you could explain the following to the owner:

- How the equipment works
- What hydroxyls are

Tips

- It is necessary to talk to upper management since they have the buying power.
- Build rapport with the management team, their recommendation will carry authority due to their testimonial about the technology.
- Management may suggest another site that is even more odorous or perhaps a smaller section of the store; check the square footage guidelines before trying a larger test.
- Never oversell the Odorox® line, too small a device in a given area will not result in an obvious solution. If you are unfamiliar with a particular unit, experiment with it at home.

Lessons learned

- Always keep your eyes open for opportunities; you never know when a sale could arise.
- Apply this situation to similar situations; for example, you will not be able to contain the odors from a refuse dump, but you can try contacting the businesses or homes downwind of the dump site.
- The test should NOT be an inconvenience, run the equipment over night or when the area is closed.

You will have a chance to revisit these questions at the end of the section to check your understanding and see what new information you learned.



Knowing the Product: The Odorox® Technology

The Odorox® Technology

The brand name used for HGI's hydroxyl generators is Odorox®, which means *odor oxidation*, and the name fits since Odorox® devices use oxidation technology to eliminate odors and solves any indoor air and surface contamination challenge. With the Odorox® device product line:



- Bacterial, viral, and fungal species are under constant control.
- Mold spores and colonies are neutralized.
- Odorox® device users notice that pests are not able to locate food particles and pests leave.
- Towels stay free of mildew and musty odors.
- Odorox® device users tend to have longer sleep cycles.
- Odorox® device users see a reduction in the need for puffers and inhalers.

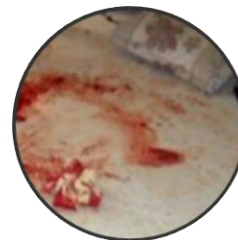


Restoring the Balance®

Through years of field-testing, HGI has developed a patented process that mimics the way Mother Nature cleans and purifies the atmosphere. Odorox® technology safely restores the balance of indoor air to nature's fresh, safe state.

Scalable Technology

Odorox® generators come in different sizes and are scalable to meet the needs of most situations. The generators are used for disaster restoration, mold mitigation, sewage backup, neutralizing Volatile Organic Compounds (VOCs), biohazard, trauma clean-up, residential air odors,



surfaces, or purify the air.



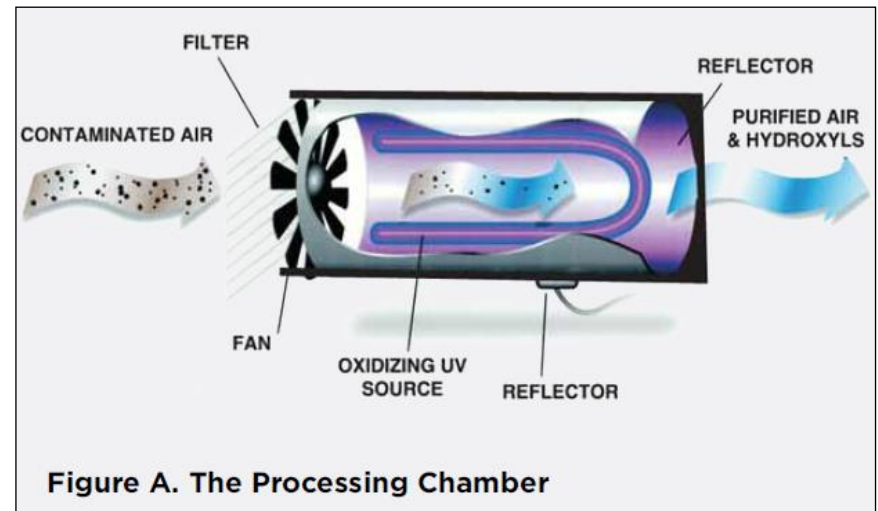
Knowing the Product: The Science Behind the Technology

The Odorox® Product Science

Although equipment varies in size and use, the science and technology behind each generator is the same. The generators create efficient ultraviolet (UV) energy using proprietary quartz optics and an optimized reflector designed to maximize the generator's deodorizing and disinfecting capability.

As shown in *Figure A.*, contaminated air is directed through a reaction chamber where ambient humidity and multiple UV nanometer wavelengths and frequencies combine to create an oxidizing formula that purifies the air/surfaces and produces atmospheric hydroxyls.

- The first segment of the chamber deodorizes the airflow with the oxidizing UV source.
- The second segment destroys bacteria as well as other micro-organisms and prevents them from multiplying.
- Throughout the process, wavelengths combine with ambient air and humidity to create hydroxyls, which are the key to the decontamination process.



The result is a dual process attack on contaminants:

- The processing chamber sanitizes airflow and produces atmospheric hydroxyls
- The hydroxyl free radicals exit the chamber to decontaminate surfaces and contents



Click the video link to watch Ralph Kubitzki, Director of Research and Communications, explain the technology behind the Odorox® hydroxyl generators.



Knowing the Product: The Science of Hydroxyls:



What are Atmospheric Hydroxyls?

Atmospheric hydroxyls ($\text{HO}\cdot$ or $\cdot\text{OH}$) are naturally occurring free radicals and in the literature are often called “Nature’s Broom.” They are essential common radicals in the outside atmosphere. Mother Nature uses these radicals to rid the outside air of odor, mold, and bacteria. Mold doesn’t grow in direct sunlight due to several factors which include atmospheric hydroxyls. They really “Restore the Balance” and are “Green Technology at Work®.”

Hydroxyls are created in our atmosphere when the sun’s ultraviolet energy reacts with oxygen, ozone, or water vapor in any of the following ways:

- Activated oxygen species strip a hydrogen atom from H_2O generating $\text{HO}\cdot$.
- UV absorption of H_2O also causes the loss of a hydrogen atom, generating $\text{HO}\cdot$.
- Ozone (O_3) decomposes to form $\text{HO}\cdot$.

Atmospheric Hydroxyls Produced by the Sun’s Ultraviolet Light are the Most Important Cleansing Agents in our Environment:

- According to the National Aeronautics and Space Administration (NASA), the sun produces steady concentrations of atmospheric hydroxyls at 500,000 to 2.6 million molecules / cm^3
- Atmospheric Hydroxyls keep the air fresh and decomposes organic and inorganic compounds
- Destroys ozone, methane, volatile organic compounds (VOCs), and peroxides
- Kills pathogens in air, porous materials, and surfaces



Click on the video to listen to Dr. Connie Araps, Chairman of the Scientific Advisory Board, explain how hydroxyls work in more detail.



Knowing the Product: The Science of Atmospheric Hydroxyls:



Atmospheric Hydroxyls are Environmentally Friendly and Safe

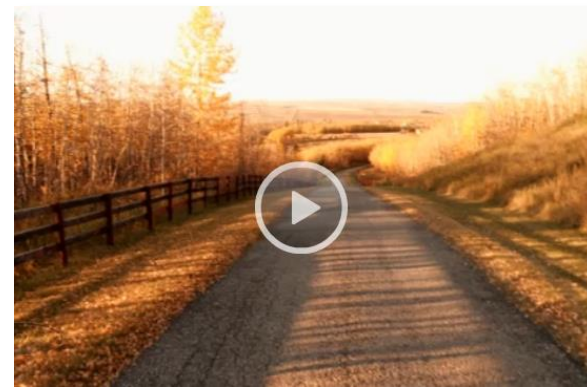
The average person breathes an average of 3,500 gallons of air each day. This means that with every outdoor breath you are inhaling 1.5 billion hydroxyls! Fresh, outdoor air can be up to 100 times cleaner than the air indoors. That is because hydroxyls clean the air outside. No other cleaning agent is more natural, pure, and harmless. Once hydroxyls latch on to an allergen, bacteria, or odor, it is neutralized without any risk to people, pets, or plants. Skin, mucosa, and plant surfaces are impermeable to atmospheric hydroxyls.

Atmospheric Hydroxyls—An Unmatched Disinfectant

Hydroxyls are the second fastest oxidizing agent in nature and:

- React with >5,000 organic compounds, more than any other oxidant
- Destroy ozone, methane, CHClF's, VOCs, peroxides
- Keep air "fresh" - decompose organic & inorganic volatilized compounds
- Kill pathogens in air, porous materials, and on surfaces
- Creates a cascade of other free radical oxidants that also help cleanse
- Are 2 ½ times more effective than chlorine and 13 times more effective at oxidizing pollutants than ozone (O₃)
- Are over one million times faster at oxidizing than O₃*, peroxides, etc.; (only fluorine – which does not occur naturally, is faster)
- Neutralizes at the molecular level and can penetrate and purify any porous object including wood, rubber, plastic, vinyl, textiles, electronics and other sensitive materials
- Decompose in < 1 second and do not accumulate
- Create free radical chain reactions faster than positive and negative ionic reactions

Click the video link to visit the Odorox® website and see more of the benefits of hydroxyls



Knowing the Product: Knowledge Check



Bakery Aroma Knowledge Check:

Recap: Think back to the situation with James, who deodorized a garment that smelled like bread. Mark, the owner of the clothing store, was amazed at how fresh and clean the garment smelled. James explained that if the odor from the garment could be neutralized with a smaller unit, the whole store could be neutralized with a larger unit.

Mark asked, “How does it work?”



Now that you have learned about Odorox® technology and the science of hydroxyls, how would you explain each of the following to the owner now?

- How the equipment works
- What are atmospheric hydroxyls



Review key terms and topics you could include in your response

Section Knowledge Check:



Answer the following questions:

1. Hydroxyls ($\text{HO}\cdot$) are naturally occurring
2. What agent has more oxidation potential than hydroxyls but does not occur naturally?
3. Odorox® equipment creates optimized energy with proprietary quartz optics and optimized reaction chamber design to maximize $\text{HO}\cdot$ formation.



Answers:



Summary: Odorox® Technology and Science

What We Have Learned

Odorox® Technology

- The Odorox® Brand Name stands for *odor oxidation*.
- Odorox® technology safely restores the balance of indoor air to that of nature's fresh, safe state.
- Odorox® generators come in different sizes and are scalable to meet the needs of most situations. The generators are used anywhere there is a need to eliminate odors, decontaminate surfaces, or purify the air.

Odorox® Science

- Generators create optimal ultraviolet (UV) energy using proprietary quartz optics.
- An optimized reaction chamber maximizes the deodorizing and disinfectant capability of each unit.
- The reaction chamber sanitizes airflow and produces atmospheric hydroxyls.
- The hydroxyl radicals exit the chamber to decontaminate air, surfaces, and contents.

Atmospheric Hydroxyls

- Hydroxyls are an unmatched disinfectant.
- Once a hydroxyl latches onto allergens, bacteria, or odors, they are neutralized without any risk to people, pets, or plants.
- Skin, mucosa, and plant surfaces are impermeable to hydroxyls.
- Hydroxyls (HO•) are naturally occurring free radicals often called "Nature's Broom" and are common radicals in the outside atmosphere.
- Mother Nature uses these radicals to rid the outside air of odor, mold, and bacteria. They are "Green Technology at Work®."
- They are created in our atmosphere when the sun's ultraviolet light reacts with oxygen, ozone, and water vapor.

How it Applies

To your business

In order to be successful at selling Odorox® devices, you need to know enough about the science and technology of the generators that you are comfortable sharing the benefits and features of the technology while overcoming objections and concerns about it. You now have enough information to give you the credibility, confidence, and knowledge you need to be successful.

In the real world

At the mall, James found that the owner of the store at which he was shopping was trying to overcome the odors from the bakery next door. Because he knew the science and technology of the Odorox® systems, he was able to address the business owner's needs and concerns. He

was able to show how the hydroxyls created in the generator attached to the baking odors absorbed in the fibers of the clothes, could be neutralized. James also showed that the hydroxyls were safe for customers and the fabrics he was selling. James was able to sell a solution; ridding the clothes of the bakery odor without harming the clothes or the customers.



Knowing the Product: Long-Term Care Facility



Long-term Care Facility: James, an Odorox® device distributor, was visiting his Aunt Sally at her long-term care facility. As soon as he entered the facility, his wife and children complained to him about the odors. A nursing assistant, overhearing their concerns, said that the facility manager had been working on fixing the problem. As James left, he made an appointment with the manager to come back and discuss solutions for the odor challenge.

At their appointment, James reviewed that not only does Odorox® technology eliminate odors, it also neutralizes bacteria and virus such as Influenza, MRSA, and C-Diff. that are prevalent in long-term care facilities. James suggested performing a small test in an area with both odor and pathogens. The infection control nurse suggested the laundry. The site engineer suggested that to ‘pass the test’ the equipment should reduce pathogens and odors by 60%.

The manager, incredulous, asks “Can Odorox® technology remove odors and destroy pathogens?”



How would you respond to the manager?



Throughout this section, you will learn about the health risks of pollution. As you read, think about how you could explain the following to the Manager:

- Why it is important to control indoor air quality
- How does Odorox® equipment optimize air quality

You will have a chance to revisit these questions at the end of the section to check your understanding and see what new information you learned.

Tips

- Identify all individuals who may be directly involved in implementing the solution or verifying that it works, such as the infection control nurse, building maintenance, handling, and the site engineer.
- Involve all identified parties to participate in the solution and verify that it works. Check in regularly and let them know what is happening and what is being accomplished.
- Decide with your identified parties what success will look like before you test the equipment in their facility. Examples would be 80% odor reduction or 50% reduction in infections.
- Begin running the equipment several hours before the dirty linens are brought in to pre-treat the area and get ahead of the odor curve.

Lessons Learned

- Be prepared to implement the solution one room at a time. Being successful in one area of the facility will lead to invitations to address other trouble spots in the facility.
- Expand your circle of influence by asking for the names of managers at affiliated facilities once you have implemented your solution successfully.



Knowing the Product: The Effects of Air Quality and Pollution

Industry Issues

Contaminants. Any airborne contaminant, whether it is natural or man-made, is considered air pollution. These pollutants can be found indoors or outdoors. We may not be fully aware of all the contaminants that may be present in our environments. In addition to obvious sources of pollution, such as pollen, automotive exhaust, germs, etc., there are hidden sources of pollution that we might not know about. These sources include gases given off by plastics as they age and the adhesives in carpeting.

Contaminants

- VOCs
- Chemical Contamination
- Pet and Plant Allergens
- Odors
- Mold
- Bacteria
- Virus
- Fungal Species

Consequences. Contaminants have potential health consequences. Some of those health consequences are listed below. Disease and death occurs directly from contaminants such as bacteria, virus, and fungi. Other diseases and deaths occur from cellular breakdown or systemic reactions that occur from contact with chemicals and VOCs.

Consequences

- Discomfort
- Headaches
- Allergy Symptoms
- Illness
- Disease
- Death

Outcomes. Outcomes of those consequences are poor health, missed work, and reduction in productivity. Business outcomes are increased operating costs, business losses, or litigation by employees or customers.

Outcomes

- Complaints
- Absenteeism
- Lower Productivity
- Added Operating Costs
- Lost Business
- Litigation



According to the U.S. Environmental Protection Agency (EPA), indoor pollution is concentrated 2 to 100 times higher than outdoor pollution. Energy-efficient buildings and houses increase the concentration of pollutants because there is less ambient air flow to dilute or evacuate the pollutants. We can be exposed to indoor pollution at home or at work, in our cars, and in public buildings.



Knowing the Product: The Effects of Air Quality and Pollution

Sources of Indoor Air Pollution



Combustion:

Any controlled combustion in your home or business, including combustion such as a gas furnace, gas water heater, fireplace, wood-burning stove, oil/kerosene lamps or heaters, tobacco produced gases and by-products that can negatively affect your health.



Building Materials:

Building materials that make up your home or structure contain contaminants such as adhesives and chemicals in the wood, carpets, and paint. Some materials, especially plastics, emit gasses that negatively affect health.



Outdoor Sources:

Any pollution that is present outside of your home or business can become indoor pollution once it enters. Other outside sources are pesticides, fertilizers, and other yard-care compounds, including lawn mower, diesel and car exhaust.



Cleaning and Maintenance:

Products for household cleaning and maintenance, personal care, hobbies, and other indoor tasks can contain chemicals that negatively affect health. They may also emit fumes that are harmful or odiferous.



Animal Sources:

Pet hair and dander can be allergy-causing and be considered a pollutant. By-products from insects and dust mites are also considered sources of indoor pollution.

Air Pollution Can be Deadly

60% of Americans live in areas that contain highly polluted air that can be endangering their lives. In California's San Joaquin Valley more people die from related air pollution than automobile accidents.



Click the video to learn more about air quality issues



Knowing the Product: Indoor Air Pollution and Health

Effects of Exposure to Indoor Air Pollutants

According to the EPA, health effects from indoor air pollutants may be experienced soon after exposure or may take longer to present.



Short-term effects:

- Irritation of the eyes, nose, and throat
- Headaches, dizziness, and fatigue



Long-term effects:

- Asthma, hypersensitivity pneumonitis, and humidifier fever
- Respiratory diseases, heart disease, and cancer

Other health effects may show up years after exposure and/or after lengthy or repeated periods of exposure. Sometimes the best treatment is to simply eliminate the source of exposure, if it is known.

Increasing Amount of Pollutants

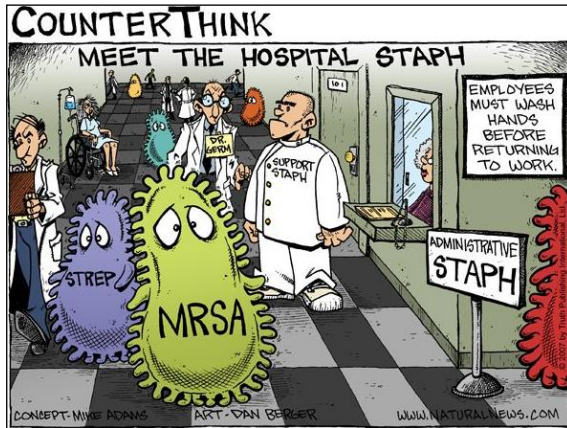
The EPA estimates that 500 million pounds of industrial chemicals are dumped in the public sewer systems annually. Other indicators that pollutants are increasing:

- 1 billion pounds of chemicals are released into the ground
- 50% of the nations' water supply is extracted from groundwater sources
- 50% of our water supply comes from rivers, streams and reservoirs
- 200 million pounds of chemicals are discharged into surface waters annually
- 2.5 billion pounds of toxic emissions are pumped into our air
- 5.5 trillion total pounds of chemicals are released into the environment
- Research indicates 75% of chronic disease is caused chiefly by environmental factors
- We are exposed to over 100,000 xenobiotic (unnatural) chemicals
- There are over 1000 new chemicals synthesized each year
- These can be found as food additives, industrial chemicals, pesticides, pharmaceutical and other drugs



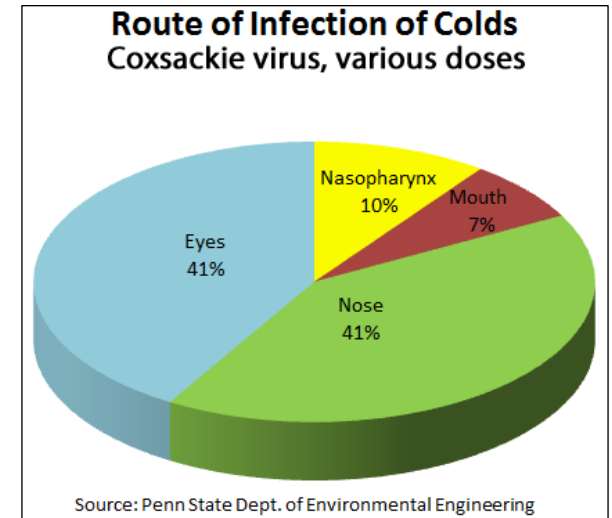
Knowing the Product: Air Quality & Circulating 'Bad Air'

Effects of Exposure to Indoor Air Pollutants are Worse Where People Gather



Where there is an increase in population density, there is increased risk for exposure. Places most problematic are:

- Hospitals and nursing homes
- Doctor's offices
- Schools
- Daycare centers
- Workplaces
- Malls, shops
- Airplanes and airports
- Trains and buses
- Cruise ships



Lethal bacteria cost hospitals and businesses millions of dollars each year in fines and maintenance as well as hundreds of thousands in unnecessary deaths.

Special Considerations for Hospitals and Other Medical Facilities:

There are special and specific issues with indoor pollution associated with hospitals and medical facilities due to the nature of people using those facilities. The following is a list of concerns that are specific to medical facilities:



Hospitals and Clinics:

- Hospital-acquired infections (HAI's) affect more than 25 percent of admitted patients
- 1.7 million infections occur each year and are associated with approximately 100,000 deaths
- Some patients are carriers for infections that other patients will contract



Long-Term Care Facilities:

- The elderly population is more susceptible to contracting sickness and disease
- Close quarters create areas that are difficult to sanitize
- Increased flatulence and decreased hygiene due to lack of mobility facilitate the spread of pathogens



Click the video to learn more about infection rates and related statistics



Knowing the Product: Knowledge Check

Long-Term Care Knowledge Check:



Recap: Think back to the situation with James, who arranged a trial of Odorox® equipment at the long-term care facility where his aunt lives. The trial will showcase how well the technology eliminates odors and pathogens prevalent in long-term care facilities. James agreed that having a standard to meet would not only show those at the facility how well the Odorox® system worked, it would encourage them to expand coverage at that facility and refer him to other facilities with similar issues.

The manager asked, *"It removes odors and kills pathogens?"*



Now that you have learned about the negative effects of indoor air pollution, how would you answer the manager differently on the following topics?

- Why it is important to control indoor air quality
- How does the Odorox® equipment optimize air quality



Review key terms and topics you could include in your response

Section Knowledge Check:



Answer the following questions:

1. Volatile Organic Compounds (VOCs) are a(n)
2. A new car creates indoor air pollution?
3. Homes and buildings that are _____ are more likely to have indoor air pollution.



Answers:



Summary: Effects of Air Pollution

What We Have Learned

Health Consequences of Air Pollution

Short-term Effects:

- Irritation of the eyes, nose, and throat
- Headaches, dizziness, and fatigue
- Discomfort and allergy symptoms

Long-term Effects:

- Asthma and other respiratory diseases
- Heart disease
- Cancer

Outcomes:

- Complaints
- Absenteeism and lower productivity
- Added operating costs and lost business
- Litigation

Sources of Indoor Pollution

Combustion: gas furnaces, gas water heaters, fireplaces, wood-burning stoves, oil or kerosene lamps or heaters, and tobacco.

Building Materials: adhesives, chemicals in wood, carpets, paint, and plastics that emit gasses.

Outdoor Sources: outdoor pollution that gets inside, pesticides, fertilizers, other yard-care compounds, diesel and automotive exhaust.

Cleaning and Maintenance: products for household cleaning and maintenance, personal care, and hobbies.

Animal Sources: pet hair and dander, by-products from insects and dust mites.

How it Applies

To your Business

In order to be successful at selling Odorox® devices, you need to be educated about universal issues such as air pollution that our technology is uniquely able to address. Universal issues such as poor indoor air quality are concerns in all of the industries we serve. Knowing the negative consequences and outcomes of these universal issues helps us to educate our customers about them and allows us the opportunity to sell them the healthy solutions our products offer.

In the Real World

At the long-term care facility, James' family was overwhelmed with the odors that were present there. In addition, James was aware of the pathogens that are of special concern in medical facilities like the one in which his aunt lives. James was also aware that in certain situations, he needs to address the concerns of a group of interested parties, not just the owner or the manager of the company or facility. This group of people usually includes the owner or manager, but may include anyone else interested in improving the health and safety of those in the facility/environment.

Because James knew the science and technology behind the products he was selling, he was comfortable providing a 'test' demonstration of the equipment. He welcomed the engineer's suggestion that they have an objective verifiable goal to meet, as this would provide a benchmark to meet. He knew that if he was able to exceed the stated goal, placing a unit would be easier as he'd already proved that the solution met their needs.



Knowing the Competition: Introduction

Prepare by Understanding the Competition

When selling, it is critical understand competing technologies because you need to know how your products differ from the competitors' products in technology, ability, and quality and why your products are superior. Knowing who your competitors are, what they offer, and the technology they use will help you as a salesperson. This is because you will be able to offer objective, reasonable, and knowledgeable insight into why your solutions are better at meeting their needs.

This section teaches you about the different technologies used by various filtration system manufacturers. It helps you understand how the Odorox® technology provides a better solution to our clients.

Purpose

After completing this section, you should be able to answer consumer questions regarding:

- The technology used by Odorox® device filtration systems versus the technology used by other filtration systems
- The benefits of hydroxyl technology versus the limits of other technologies
- The strengths of the Odorox® UV system versus the limits of UV/filtration systems provided by HVAC manufacturers

Content

In this section, you will learn about:

- Evolution of Cleansing Methods
- Competitive Technologies
- Comparing Technologies
- Difference in UV Systems
- Odorox® Chemistry

Estimated completion time: 42 Minutes

Menu

HGI & the Odorox® Brand

Sales Approach

Prepare

Know the Product

Know the Competition

Make the Sale

Recognize Needs & Concerns

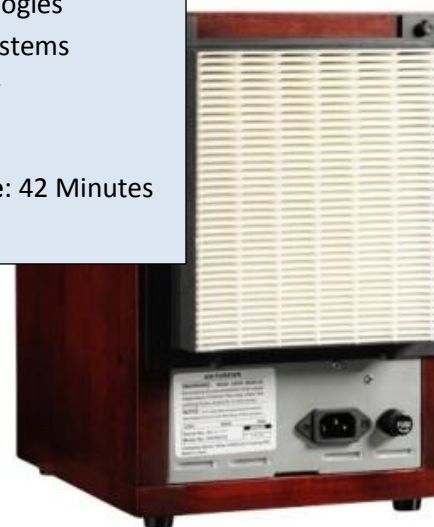
Share Benefits & Features

Follow Up

Identify & Use References

Identify New Opportunities

Course Summary



Knowing the Competition: Cat Odors and Allergens



Cat Odors and Allergens: Sylvia, an Odorox® distributor, was good friends with a neighbor who breeds pedigree cats for sale, but Sylvia noticed that her children, when they played with Karl's cats, were now coming home with allergy issues. Sylvia asked how Karl, the breeder, was responding to the odors and allergens. Karl mentioned he had just purchased a Titanium Dioxide device. The device had a NASA label on it, so it was good for the environment. He also upgraded his home filtration system by adding a 3M

Filtrite® Filter. However, cat feces, urine odors, and cat dander were starting to become an issue. Karl thought he had purchased the best that money could buy, but the salesperson neglected to mention the limitations of the NASA device.

Sylvia pointed out that most systems only cleaned the air that managed to flow through the filter. She suggested trying an Odorox® device. It produced atmospheric hydroxyls that actually left the device and effected change at a distance. Sylvia brought over a portable device to tackle an area in the house where the odors were particularly intense. The owner noticed a marked improvement in the odor, even in areas of the house far from the Odorox® device.

Karl was amazed and wondered, "Don't all filtration systems work the same?"



How would you respond to the cat breeder?



Throughout this section, you'll learn about "Knowing the Competition." As you read, think about how you could explain the following to the owner:

- What are the benefits of hydroxyl technology over the Titanium Dioxide technology?
- What are the limitations of the Titanium Dioxide device and 3M filtration system?

You will have a chance to revisit these questions at the end of the section to check your understanding and see what new information you learned.

Tips

- Tactfully ask potential customers how they decided to purchase a specific product.
- Find a time that is mutually convenient to demonstrate the Odorox® device.
- Leave business cards at owners' homes. Business cards will speak for you when you are not there.

Lessons Learned

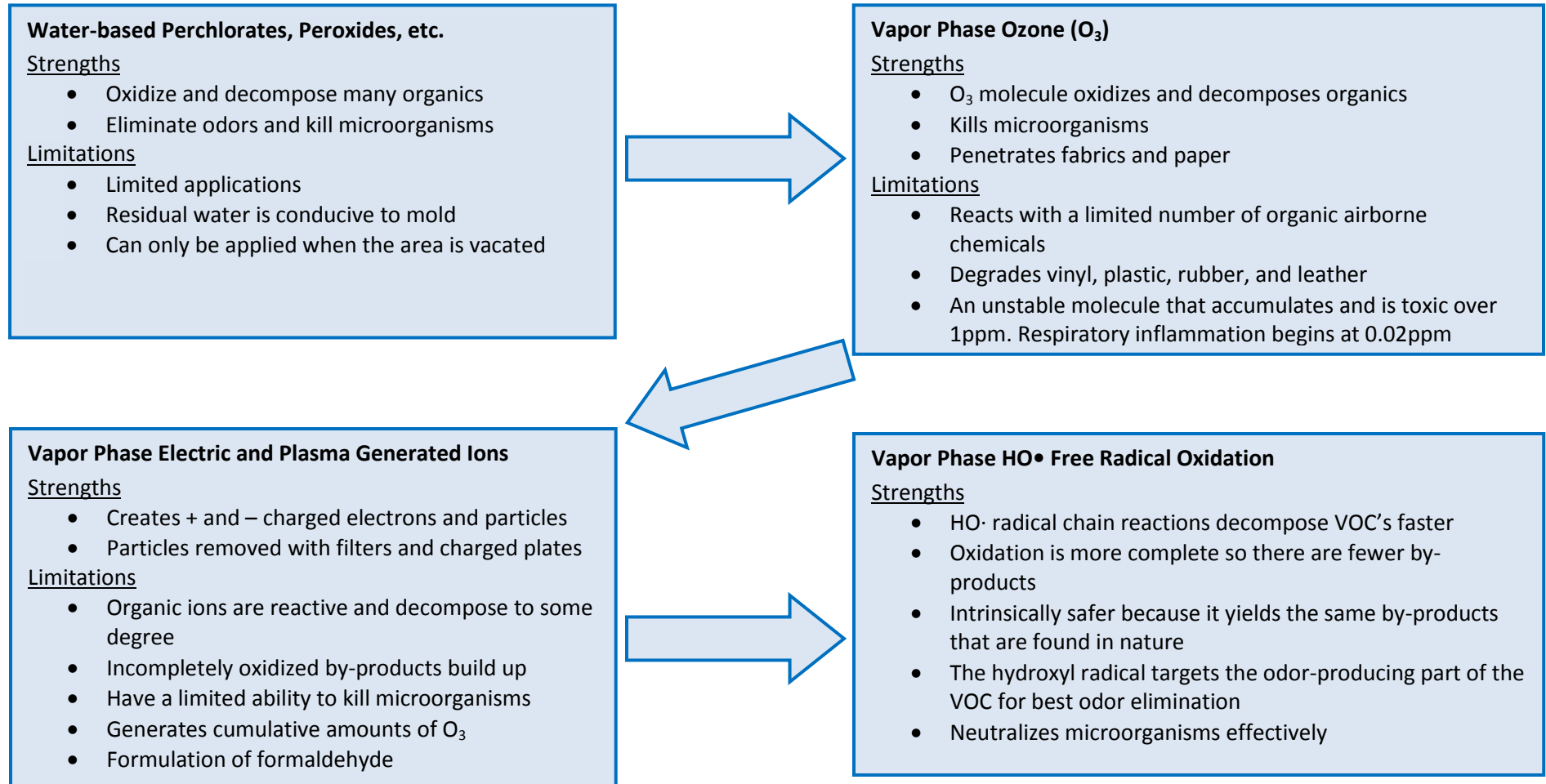
- Monitor the situation closely. Friends tend not to want to offend and will often leave out negative details in order to spare anyone's feelings.
- Recognize that cat owners are a close knit group. They talk to one another about products that exceed expectations.
- Typically pets tend to sleep directly in front of Odorox® devices. They sense the connection with the outdoors and prefer to lodge there.
- Owners generally treat pets as family members and there must be a feeling on your part of genuine care for the welfare of their four-footed family members.



Knowing the Competition: Evolution of Cleansing Methods

An Evolution

Air and surface cleansing methods have evolved from simple water-based sprays and disinfectants to systems that create a more advanced way of cleaning that uses a vapor phase that creates HO• free radical oxidation.



Knowing the Competition: Other Technologies

Other Technologies

Other products on the market focus on cleaning up the challenge with the use of harsh chemicals and inefficient filtration systems, but do not treat the problem at the source.

Technology	Use	Pollutant	Limitations	Examples
Air Filters	Trap particles in filter	Particles	Ineffective in removing smaller particles, which settle to the floor and never reach filters. Cumulates over time.	HEPA Filters MERV Filters Light Duty Filters
Adsorption Filters	Work like a microscopic sponge to pick up odors and particles	Gases	Have higher costs and can, when saturated, release gases back into the air in higher concentrations.	Carbon Media Filters
Ultraviolet Germicidal Irradiation (UVGI)	Use UV light to kill microorganisms	Biologicals	Mold spores tend to be resistant to UV. They require longer dosage time to be neutralized.	Mercury Vapor Lamp
Photo Catalytic Oxidation (PCO) Generators	Highly reactive electrons bind with airborne particles to oxidize or burn them.	Gases, Biologicals	Applications are limited to low ppb because catalysts must adsorb VOC to effect decomposition. The catalyst surface is prone to contamination. VOC's and Pathogens are treated within the device only. Formaldehyde generation is typical	Titanium Dioxide (TiO ₂)
Ozone Generators	O ₃ molecules can attach to and degrade other substances.	Gases, Biologicals	React with a limited number of organics. Useful O ₃ levels generally fall above OSHA guidelines of < 100 ppb. Will generate formaldehyde gas.	EdenPure Alpine



Knowing the Competition: Comparing Technologies

How do Odorox® devices differ from other products?

Odorox® devices have the ability to deploy effective numbers of hydroxyls at a distance to effect positive change. Extensive third-party testing has shown that the distribution of Odorox® hydroxyls neutralize anomalous gasses, pathogens, and fungal species. Other devices on the market rely only on the polluted air passing through the product while Odorox® devices do not.

Odorox® Technology

- Odorox® device hydroxyls penetrate into fabrics, porous materials, and anywhere air molecules can reach.
- Hydroxyls react several thousand times faster than even the best chlorinated products.
- Hydroxyls are non-toxic and can be generated 24 hours a day.
- Hydroxyl activity will return normal bio-available oxygen values to a residence or commercial facility.
- Hydroxyls clean the air and surfaces in contained spaces.
- Odorox® SlimLine™ model is used to decontaminate ambulances.
- Odorox® technology is used in the food and beverage industry to control bacterial and fungal species.

Other Devices

- Filters and carbon/charcoal will trap and hold pathogens and odors. In time, by way of accumulation, these will begin to emit those same odors and pathogens.
- Air ionization will weigh down the particulate matter. Eventually the home will fill with the very pollutants that are trying to be eliminated.
- Scented oils and chemical fragrances often contain olfactory toxins that are designed to limit the nose's ability to sense odor.
- Chemicals must remain in a wetted state for at least ten minutes in order to achieve the specified kill rate. Applying a spray chemical to soft material does not achieve the desired kill rate, even if it is wetted for ten minutes.



Click the video to learn more from Ralph Kubitzki, Director of Research & Communications, about the Odorox® technology compared to the competition.



Knowing the Competition: Knowledge check



Cat odors and allergens Knowledge Check:

Recap: Think back to the situation with Sylvia, who targeted intense odors in a cat breeder's house. Karl, the breeder, noticed a big difference in the odor, even in areas of the house far from the Odorox® device.

The cat owner asked, *"Don't all filtration systems work the same?"*



Now that you have learned about this competing technology, how would you now answer the following questions?

- What are the benefits of Odorox® hydroxyl technology over the Titanium Dioxide technology?
- What are the limitations of the Titanium Dioxide device and 3M filtration system?



Review key terms and topics you could include in your response.

Section Knowledge Check:



Answer the following questions:

1. Which technology works like a microscopic sponge?
2. Titanium dioxide is an example of which air and surface cleansing technology?
3. Odorox® device produced hydroxyls actually leave the device, so it effects change at a distance.



Answers:



Knowing the Competition: Increased Fish Volume

Now that you have learned about the different technologies, practice using your knowledge with the following scenario.



Seafood Odors: Luigi has a booming seafood market and wishes to expand. Neighboring vendors adore Luigi and his staff, but the vendors are worried that increased fish volume will affect their client base and negatively impact neighboring vendors. Luigi has researched charcoal/zeolite adsorption and is somewhat convinced that this is the best solution.

Luigi has never met with an Odorox® distributor, but his wife works with one of the distributors at the large food court nearby. She mentions that Luigi's fish are starting to cause the whole area to smell. Raphael, the Odorox® distributor, asks Luigi's wife for more information and learns that Luigi has tentatively decided on a product.

☐ ? How would you overcome any concerns or objections Luigi has and show him the benefits of using Odorox® technology over charcoal/zeolite adsorption?

☒ Review key terms and topics you could include in your response.

Tips

- Look beyond the initial sale.
- Odors = Opportunity
Opportunity Addressed = Sales
- Speak with authority to instill confidence with your prospective clients.
- Always provide accurate information and detail when talking. Stretching the truth or overselling the product will hurt your credibility.
- Let commercial clients, that use your product, know that Odorox® products can also be used in their home. This helps to increase sales.

Lessons Learned

- The Odorox® device sends out atmospheric hydroxyls which are able to neutralize the odors so efficiently that not even flies can locate the seafood.
- Some odors will keep distributors away from some opportunities. Those who forge ahead will reap the rewards that others were afraid to touch.



Knowing the Competition: Summary

What We Have Learned

Vapor Phase HO• Free Radical Oxidation

- HO• radical chain reactions decompose organics faster.
- Oxidation is more complete so there are fewer by-products.
- The by-products are the same as are found in nature.
- The hydroxyl radical targets the odor.
- Kills microorganisms.
- Has excellent penetrating power.

Odorox® Technology

- Odorox® hydroxyls penetrate into fabrics, porous materials, and anywhere air molecules can reach.
- Hydroxyls react several thousand times faster than even the best chlorinated products.
- Hydroxyls are non-toxic and can be safely generated 24 hours a day.
- Hydroxyl activity will return normal bio-available oxygen values to residence or commercial facilities.
- Hydroxyls decontaminate the air and surfaces in contained spaces.

Other Devices

- Filters and carbon/charcoal will trap and hold pathogens; eventually the medium begins to emit those same odors and pathogens.
- Air ionization will weigh down the particulate matter, eventually filling the home with pollutants.
- Scented oils and chemical fragrances often contain olfactory toxins that are designed to limit the nose's ability to sense odor.
- Chemicals must remain in a wetted state for at least ten minutes in order to achieve the specified kill rate (99%).

How it Applies

To your Business

When selling Odorox® devices, it is critical to understand competing technologies. You will need to know how our products differ in technology, ability, and quality. We need to be able to explain how and why our products are superior. Knowing what the competitors have to offer and the technology they use will help you sell Odorox® systems because you will be able to offer objective, reasonable, and knowledgeable insight into why your solutions are better at meeting their needs.

In the Real World

Sylvia's neighbor is aware that his home-based cat-breeding business is creating air quality issues in his home. These issues are interfering with his quality of life and the quality of life of all visitors to his home. He purchased a titanium unit with a NASA seal, thinking that the endorsement from NASA guaranteed a solution to his challenge. Sylvia, because she knew the technology of the competitor's product, was able to educate her neighbor about the limitations of that system. Sylvia then took that opportunity to show him an Odorox® system and test a unit in his home. That unit exceeded her neighbor's expectations, and Sylvia was able to sell him the real solution.



Rafael was able to meet with Luigi as he was considering purchasing a competitor's unit. He reviewed the benefits and limitations of the competitor's unit, then discussed the benefits of an Odorox® system. Rafael was able to objectively describe the benefits and limitations of the competitor's unit. Luigi was willing to try out Raphael's suggestion and subsequently purchased an Odorox® system.



Knowing the Competition: Facilities Management



Mold Intrusion

A commercial facility is experiencing odor, pathogen, and mold intrusion. Bob, the Facilities Manager, is especially concerned with some of the dental offices in his facility. They are upsetting the folks that do not particularly like the odor of adhesives and Novocain®.

Bob is also a member of the Facilities Management Association. He is looking at UV Technology imbedded into his HVAC system and is well

versed with the TRANE, Honeywell, and Ruud Ultraviolet Technologies. He has all but made up his mind to purchase a well-documented UV system. It is sold through his existing HVAC contractor and uses the Photo Catalytic UV method so the choice seems simple to him. Gena, an Odorox® vendor, is also a part of the Facilities Management Association and hands him an Odorox® product flyer. He is curious and has a few questions.

Bob wants to know, “What is the difference between the Odorox® UV system and the ones provided by the Giant HVAC manufacturers that uses the Photo Catalytic UV method?”

Tips

- Look for ways to get an introduction.
- When you can speak with authority you instill confidence in your prospective client

Lessons Learned

- Do not let the potential job size throw you off. The rewards are commensurate with the size of the job. Usually, the bigger the job, the more people will hear about what you have accomplished.
- Addressing the local chapter of the Facilities Management Association will give you local contacts and access. This approach has a great multiplier effect.



How would you approach Bob and answer his question?



Throughout this section, you’ll learn about leading methods of forming hydroxyls. As you read, think about how you could explain the following to the Facilities Manager:

- How would you answer Bob if he asked, “What is the difference between your UV system and the ones provided by the HVAC manufacturers?”

You will have a chance to revisit this question at the end of the section to check your understanding and see what new information you learned.



Knowing the Competition: Difference in UV Systems

Leading Methods of Forming Hydroxyls

There are two main methods for forming HO \cdot : Photo Catalytic UV and Multiple Wavelength UV.

Photo Catalytic UV (TiO $_2$)

Hydroxyls are produced by irradiating a TiO $_2$ catalyst coated surface with 254 nm of UV energy. The UV energy interacts with the TiO $_2$ catalysts to theoretically produce HO \cdot and superoxide radicals. 254 nm of UV cannot independently create HO \cdot or ozone.

Strengths

- Decomposes some VOCs
- Pathogens are adsorbed on catalyst
- Ozone free

Limitations

- Not proven to generate HO \cdot
- Cannot remediate ppb levels VOC
- Buildup of formaldehyde is 3.4 – 4.6 times background

Multiple Wavelength UV - Odorox $^{\circ}$ Technology

Atmospheric hydroxyls are produced by irradiating water vapor (H $_2$ O) in air with UV energy. This process creates an optimal concentration of free HO \cdot . Ozone does not accumulate. It is created and destroyed by the UV source.

Strengths

- Produces natural, optimal HO \cdot concentrations
- Decomposes high ppb levels of VOC's
- Ensures that formaldehyde does not accumulate
- Decomposes VOC and pathogens throughout the environment
- Natural UV irradiation – no chemicals or catalysts



Click the video link to learn more about Odorox $^{\circ}$ technology compared to the competition.

Bottom Line

The Odorox $^{\circ}$ product, by comparison is more effective and safer. An independent lab confirmed the Odorox $^{\circ}$ Boss $^{\text{TM}}$ unit produces the same HO \cdot concentrations as are found in nature. HGI ensures safe natural indoor hydroxyl levels by using customized UV optics, recommending devices for various sized enclosures, and using integrated process controls that automatically maintain oxidant levels on larger systems.



Knowing the Competition: Difference in UV Systems

The Process



Multiple Wavelength UV - Odorox® Technology

The Odorox® device utilizes multiple wavelengths of UV energy which are able to generate atmospheric hydroxyls by reacting with water vapor. The process creates hydroxyls both inside and outside the reaction chamber, allowing it to deodorize compounds in the air as well as those absorbed by structures and contents.

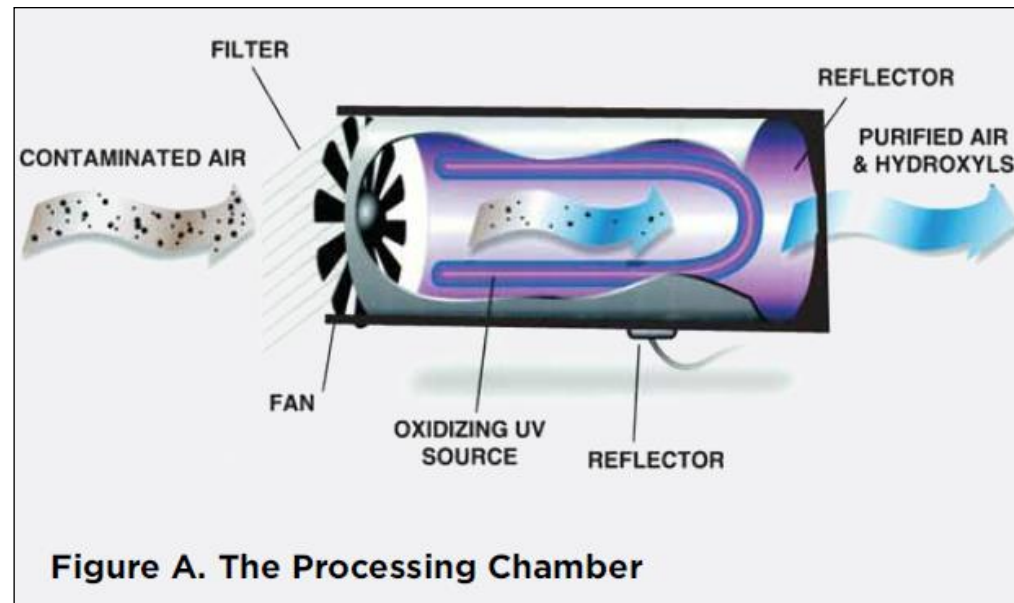


Photo Catalytic UV

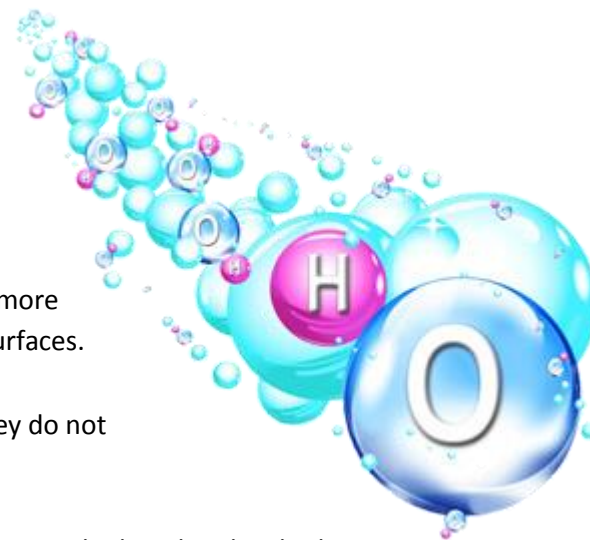
The Photo Catalytic Oxidation (PCO) method requires the contaminant to enter the device and come into very close contact with the coated surface inside the machine. This is not a technology that can effectively be used for treating surfaces and contents in the treatment space. It is intended to treat small volumes of air very slowly.

Knowing the Competition: Odorox® Chemistry

Unsurpassed Chemistry

Odorox® devices use a special “natural cascade” process to improve sanitization. Once the hydroxyls are created, they are sent to “seek and destroy” odor molecules, bacteria, virus, mold, and VOC’s. . These atmospheric hydroxyls simultaneously decontaminate air and surfaces.

- Does not require all of the contaminants within a room to pass through the processing chamber. This action guarantees a more effective and rapid decontamination.
- Outside the unit, the hydroxyls immediately begin a cascade reaction in the air, thus creating even more hydroxyls. The cascade of hydroxyls quickly disperses throughout the air and penetrates porous surfaces.
- These radicals are able to circulate in the air longer. The by-products are also rapidly oxidized so they do not accumulate.
- The hydroxyl molecule that eliminates pollutants in the far corner of the room is not necessarily the same hydroxyl molecule that exited the Odorox® hydroxyl generator.
- Any quenched hydroxyls are continuously replaced by the system, providing a constant flow of hydroxyls.



Click the video link to see Dr. Connie Araps, Chairman of the Scientific Advisory Board, provide more information about how Odorox® outperforms the competition.



Knowing the Competition: Knowledge Check

Facilities Management Knowledge Check:



Recap: Think back to the situation with Bob, the Facilities Manager. His commercial facility is experiencing odor, pathogen, and mold intrusion. Bob is looking at UV Technology imbedded into his HVAC system and has all but made up his mind to purchase a well-documented UV system sold through his existing HVAC contractor. Bob is handed an Odorox® flyer and he is curious and has a few questions. Bob wants to know, “What is the difference between the Odorox® UV system and the ones provided by the Giant HVAC manufacturers that use the Photo Catalytic UV (TiO2) method?”

[?] Now that you have learned how Odorox® differs from other UV systems, how would your answer to the following question be different?

- What is the difference between Odorox® UV systems and the ones provided by the HVAC manufacturers that only use Photo Catalytic UV method?

[✓] Review key terms and topics you could include in your response.

Section Knowledge Check:

[?] Answer the following questions:

1. In which HO· forming method are hydroxyls produced by irradiating H₂O in air with UV energy?
2. Which HO· forming method requires the contaminant to come into very close contact with the coated surface inside the machine?
3. Odorox® technology uses a special _____ process to improve sanitization.

[✓] Answers:



Knowing the Competition: Summary

What We Have Learned

Leading Methods of Forming Hydroxyls

Photo Catalytic UV - PCO

- Hydroxyls are produced by irradiating a coated surface with UV energy.
- UV energy interacts with the catalyst to theoretically produce HO• and superoxide radicals.

Multiple Wavelength UV

- Hydroxyls are produced by irradiating O₂ and H₂O vapor in air with UV energy.
- This process creates an optimal concentration of free HO• and ozone does not accumulate.

Odorox® Technology

- The Odorox® method utilizes multiple wavelengths of UV energy, which are able to generate hydroxyls by reacting with water vapor.
- The process creates hydroxyls both inside the reaction chamber and outside the machine, allowing it to deodorize compounds in the air as well as those absorbed by porous structures and contents.
- The Odorox® device method is effective and safe.
- Odorox® device produces the same HO• concentrations that are found in nature.

Unsurpassed Chemistry

- The Odorox® atmospheric hydroxyl “Cascade” creates additional hydroxyl radicals. The cascade of hydroxyls quickly disperses throughout the air, decontaminating surfaces and porous objects.
- Contaminants do not need to pass through the processing chamber. This action guarantees a more effective and rapid decontamination process.

How it Applies

To your Business

Not all Hydroxyl-producing units are created equally. Knowing how Odorox® products differ in technology, ability, and quality from other HO• producing units is critical. Knowing how and why our Hydroxyls, and the chemical reactions they create, are superior helps you sell Odorox® systems. You will now be able to offer objective, reasonable, and knowledgeable insight into why your solutions are better for the environment and at meeting client needs.

In the Real World

Bob has done his research and knows that he wants a UV-based system, but isn't aware that the competitor's technology has limitations that the Odorox® system doesn't have. Gena, who knows Bob from the Facilities Management Association, overhears him discussing his plans to purchase the competitor's system. She hands him information on the chemistry behind the Odorox® systems and how those systems compare with the system he is planning on purchasing. Gena always carries Odorox® tech information for situations just like this.



Bob reads through the information Gena hands him. He has questions about the differences in chemistry and how the cascade radicals work. Gena is able to answer all of Bob's questions and he meets with Gena to schedule a demonstration of the equipment at the dentist's office in his building.



Prepare: Summary

Over the past two sections, you have learned the importance of preparing as you strive to make the sale. You have learned the science and technology behind Odorox® products and you have seen how Odorox® outshines the competition.

Coming Up Next

Now that you have prepared, it is time for you to learn how to make the sale. In the next two sections, you will learn how to recognize needs and concerns and how to overcome objections, and you will learn specific details about each device in the Odorox® product line.

Questions Answered

- How Odorox® equipment works
- The technology used in Odorox® devices versus the technology used by other systems
- What a Hydroxyl is
- The benefits of hydroxyl technology versus the limits of other technologies
- The benefits of using Odorox® devices®
- The strengths of the Odorox® UV system versus the limits of other UV systems

What You Learned

- Odorox® technology uses oxidation to eliminate odors and solve indoor air and surface contamination.
- Atmospheric hydroxyls are natural free radicals that rid the outside air of odor, mold, and bacteria. Odorox® technology produces hydroxyls to clean the air/surfaces indoor.
- There is an increasing amount of pollutant in the air.
- Indoor air pollution can cause health problems such as headaches, asthma, and cancer.
- The effects of exposure to indoor air pollutants are worse where people gather. This includes hospitals and long-term care facilities.
- Air and surface cleansing methods have evolved from water-based perchlorates and peroxides to vapor phase HO· free radical oxidation.
- Odorox® technology produces hydroxyls that penetrate anywhere air molecules can reach and these hydroxyls return normal bio-available oxygen values to the indoors. Other devices can only affect the air that passes through their device filters; the indoor air is eventually filled with pollutants.
- Odorox® devices use multiple wavelength UV to produce hydroxyls. This mimics nature and makes Odorox® products safer and more effective.
- Odorox® chemistry, as in nature, creates a cascade reaction that allows the radicals in the air to last longer and reach further.



Recognizing Needs and Concerns: Introduction

Sell by Recognizing the Needs and Concerns of Clients

- Another crucial component of successful selling is recognizing the needs and concerns of your clients. Regardless what your product is, you will achieve more if you are able to find out what their needs and concerns are. If you know what they are worried about and what challenges they are facing, you can show how your product meets their needs and alleviates their concerns. We aren't selling products; we are selling solutions that our products provide.
- Once you understand the product, you should work on building working relationships with possible clients. Working relationships enable you to discuss the unique circumstances of their needs. To do this you need to listen to your clients. Clients are more likely to discuss their needs and concerns more freely if you have built a trusting working relationship. Clients are also more likely to accept the needs they may not have seen that you point out if you've built a working relationship. Having a thorough understanding of client needs and concerns will help you direct them to the most appropriate solution.
- This section teaches you about the challenges faced by various industries. We will teach you about the unique strengths of each of our products to meet the various needs of our consumers.

Menu

HGI & the Odorox® Brand

Selling Approach

Prepare

Know the Product

Know the Competition

Make the Sale

Recognize Needs & Concerns

Share Benefits & Features

Follow Up

Identify & Use References

Identify New Opportunities

Course Summary

Purpose

After completing this section, you should be able to answer client questions regarding:

- The Odorox® Product Line
- What Odorox® products are appropriate for various situations
- How the technology will meet challenges faced by various industries
- Where the technology will work
- How and why to swab for contamination

Content

In this section, you will learn about the Odorox® Product Line and how it can be applied in the following industries:

- Residential and Small Office
- Hospitality Industry
- Disaster Restoration
- Agricultural Industry
- Commercial
- Industrial



Recognizing Needs & Concerns: Loss at the Farm



Loss at the Farm: Billy has a large turkey farm. He is concerned about the 10% (or approximately \$660,000) annual loss in hatching operations, though industry statistics indicate that these losses are standard. He feels that with a few changes he could decrease this number; he's sure the key is improving sanitation surrounding the hatching process. He's tried various sanitizers and increasing air exchange rates but has had no net change in loss.

While at the Agricultural Innovation Expo, he sees a display of the Odorox® system and arranges for the sales rep to visit his farm. Jeff arrives the following week and swab tests known problem areas such as the air filtration system and cracks in the concrete floor with his Bio-Reveal kit®*. Billy sees for himself the high levels of contamination. He agrees to test the Odorox® system in his incubation/hatching room. After the trial, he notices that the air is fresher, the hatchlings are more robust. A follow-up test with Bio-Reveal shows a startling reduction in pathogens.

Billy asks, "Will this work in my cow barn?"

? Why was Jeff at the Agricultural Innovation Expo? Why did he perform a Bio-Reveal test during his sales meeting with Billy?

Throughout this section, you will learn about recognizing client needs and concerns. As you read, think about how you could explain the following to prospective clients in each industry:

- How swabbing for contamination defines the challenge and verifies the solution.
- Why we swab at various levels and in different locations.
- How the equipment meets the challenges specific to the application and industry.

Q You will have a chance to revisit these questions at the end of the section to check your understanding and see what new information you learned.

Tips

- Focus on selling solutions, not on selling equipment; we are selling the solutions that our equipment produces.
- Know your products so you can give the most cost-effective solution available.
- Be proactive, meet and engage people; avoid waiting for the prospective client to come to you.
- Some of the challenges will be the same across industries, but each industry will also have unique challenges that will need to be addressed and knowing what those are will help make selling the products easier.

Lessons Learned

- Not all solutions will be as cost-effective as others. If you can't add value, find another solution.
- Use the sales tools, such as Bio-Trace/Reveal®, to show the effectiveness of the Odorox® system.
- Trade and industry shows are great places to find leads and increase sale opportunities.

* Bio-Reveal kit® is a pen sized swabbing tool that will REVEAL the total biological count in about 15 seconds. The technology recognizes ATP Adenosine Triphosphate that is in all living cells. The device gives a 'Total Life Count' and does NOT give speciation.



Recognizing Needs & Concerns: Challenges for Industries

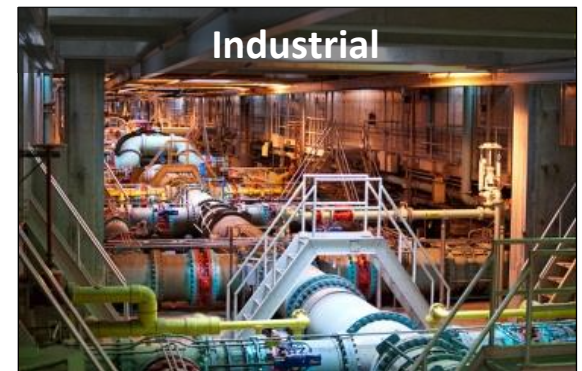
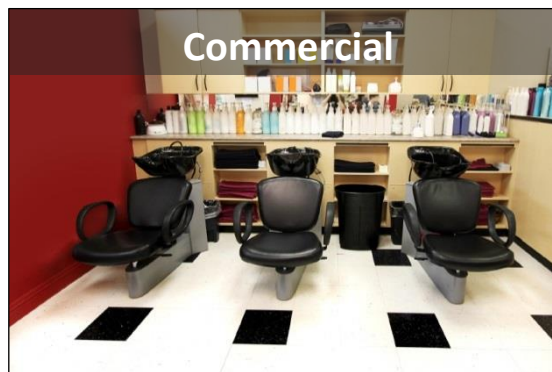
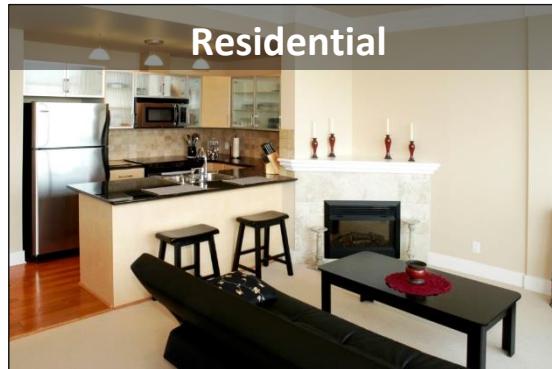
Challenges that all Industries are Facing

Costs have risen in every industry and everyone is looking for solutions to help reduce costs associated with poor air quality. Some of those costs are:

- Lost work time
- Lost productivity
- Lost products
- Fines
- Litigation

Air and surface contamination costs businesses billions of dollars each year.

Industries We Serve



Recognizing Needs & Concerns: Residential and Small Office

Challenges in the Residential/Small Office Industry

As buildings become more energy-efficient, it is becoming harder to create healthy indoor air. Naturally occurring hydroxyls do not have a long enough life span to travel indoors; therefore according to the EPA, indoor air is 2 to 100 times more polluted than outside air.

Consequences of poor indoor air quality:

- Irritation of the eyes, nose, and throat
- Headaches, dizziness, and fatigue
- Asthma, Chronic Obstructive Pulmonary Disease (COPD), and hypersensitivity pneumonitis

To counteract pollution affects, **there are two kinds of controls:**

- **Reactive controls**, such as inhalers and medications, treat the symptoms of exposure but don't remove the pollution that caused the issue or triggered the attack.
- **Proactive controls**, like Odorox® technology, remove pollution and triggers such as mold, dust, and allergens.

Removing triggers can improve sleep and reduce trips to the Emergency Room. In addition, improved sleep also decreases fatigue and anxiety and normalizes energy and general health.



Click to hear Dr. Araps discuss residential use of Odorox® technology

Decreasing the Spread of Bacteria



Odorox® technology in an office or residential environment will help eliminate the spread of bacteria, resulting in fewer sick days and improved indoor air quality. Improved air quality leads to:

- Increased alertness
- Increased productivity

Adding an Odorox® device to your home or office will reduce bacteria, virus, and allergens, creating a healthy environment. It will eliminate smoke, cooking, pet, and other unpleasant odors.

US Department of Energy

US Department of Energy reports that improving buildings and indoor environments could reduce health-care costs and sick leave and increase worker performance, resulting in an estimated productivity gain of \$30 to \$150 billion annually.



Recognizing Needs & Concerns: Residential Applications

Puff Back Case Study

Pleasant Gap, PA 2009

The Challenge

Puff back is when improper burner function in an oil furnace causes an explosion. Expelled soot is black and sticky; it is accompanied by an unbearable odor. Both are difficult to remove.

A residential oil puff back in Pleasant Gap, PA purged oil from the furnace throughout the entire home and out the chimney. Oil covered surfaces in all rooms and wicked into surfaces in the home.



Solution and Results

Hydroxyl Generators installed for 1 week eliminated the odor from the air and all the surfaces in the home.



Residential Kitchen Fire

Odessa, FL 2009

The Challenge

A residential kitchen fire originating from faulty wiring in the oven created smoke that affected expensive “irreplaceable” items such as an antique pool table and a Persian rug. Also affected were closets full of clothing.



Solution and Results

Odorox® units were brought in. They eliminated all smoke odor from the home and its contents simultaneously. An entire closet of smoke-damaged clothes were treated on site.



Recognizing Needs & Concerns: Hospitality Industry

Challenges in the Hospitality Industry



Odorox® products can be used in the following hospitality applications:

- Restaurants
- Bars and clubs
- Spas
- Hotels, resorts, and timeshares
- Conference and event halls
- Cruise ships

Odorox® technology can offer solutions to hospitality challenges such as:

- Eliminating odors caused by bacteria, virus mold, and VOCs
- Eliminating other odors such as cooking, new paint, smoke, and chlorine

The Odorox® Device Advantage

- Can be used in occupied areas because they are safe for people, animals, plants, and sensitive items such as rubber, plastic, vinyl, leather, and electronics
- More effective than filters, chemicals, and masking agents
- Ideal for eradicating unpleasant odors, VOCs, chemical fumes, and gases
- Kills bacteria, virus, and mold Doesn't use chemicals, so there is no residue or storage issues
- Custom solutions such as portable devices for intermittent needs, or permanent installations for areas with continuous issues
- Low operating and maintenance cost



Recognizing Needs & Concerns: Hospitality Applications

Dedicated Smoking Rooms Case Study

Baymont Inn, 2009

The Challenge: “On Thursday, July 2 we had Odorox® Environmental come to our hotel and deploy the XL3 in one of our dedicated smoking rooms. In general, these rooms maintain an odor of smoke that is very difficult to eradicate through our current cleaning efforts, which consist of treating rooms with labor, chemicals, and an ozone machine.”

The Solution: “Much to my amazement, the room that was treated with nothing but the XL3 and its hydroxyl technology had absolutely no trace of smoke smell whatsoever in less than 24 hours! Even the drapes, carpet, and bed linens were devoid of any trace of smoke odor. “



The Results: “Needless to say, I was beyond impressed. In addition, the machine allowed us the capability of removing other odors from wherever else we used it, such as eating areas, laundry areas, hallways, and any other place we deemed important to our Guest satisfaction. That machine was like a miracle! In my 20 plus years in hotel operations, I can say I have not come across anything quite like this.”

Sincerely,
Debbie Speziale, General Manager



Recognizing Needs & Concerns: Disaster Restoration

Challenges in the Disaster Restoration Industry



Odorox® products can be used in the following restoration applications:

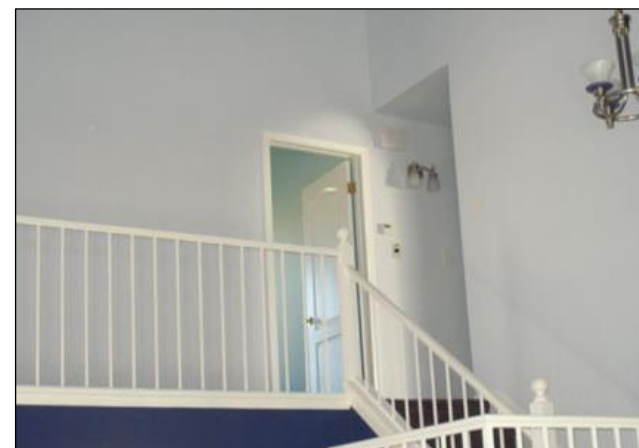
- Fire and smoke restoration
- Water damage restoration
- Deodorizing textiles and other odor removal areas
- Trauma and biohazard scenes
- Mold remediation

Odorox® technology can offer solutions to restoration challenges such as:

- Eliminating smoke and other odors
- Destroying bacteria, virus, and mold in air and on surfaces
- Preventing buildup of hazardous VOCs and inorganic gases

The Odorox® Device Advantage

- More effective than ozone, chemicals, filters, foggers, scrubbers, and masking agents
- Ideal for eradicating unpleasant odors (skunk, dead animal, feces), VOC's, chemical fumes, and gases
- Can be used in occupied areas because it is safe for people, animals, plants, and sensitive materials such as rubber, plastic, vinyl, leather, electronics, and wet items
- Reduces additional living expenses and/or business interruptions by eliminating odors while site is occupied
- Neutralizes odors during physical cleaning and deodorizes throughout the drying process, making completion of the job faster
- Eradicates bacteria and virus associated with trauma and biohazard scene clean-up
- Increases profits by creating new streams of revenue without purchasing new equipment or materials
- Restores more items to pre-loss condition, increasing customer satisfaction
- Removes stubborn odors from soft furniture, clothing, and draperies
- Low operating and maintenance cost; operates using less than two amps



Recognizing Needs & Concerns: Restoration Application

Large Retailer Fire Case Study

Rug & Home Store, Gaffney, SC 2009



The Challenge

A fire was caused by a short in the company's electrical panel. Fire, smoke, soot, and water damage were found in varying degrees throughout the 75,000 square foot store. Paul Davis National mobilized quickly from various locations around the US. They sent over 100 trained technicians and staff, including teams from the company's catastrophic emergency division, to perform physical remediation. They called HAS services for assistance.

The Solution

Within 12 hours of the call, HAS services placed two Odorox® MVP 48 hydroxyl generators, one upstairs, the other downstairs. Two Odorox® XL4 hydroxyl generators were placed directly at the source of odor. Physical remediation was performed at the same time the hydroxyl generators deodorized the air, structure, and contents of the building.

All of Rug and Homes' extensive and very valuable inventory was treated on site, right where it was during contamination, including inventory in the show room and closely stacked inventory in storage rooms.



The Results

The Odorox® systems were able to eliminate all odors from the air, structure, and contents simultaneously. All 10,000+ items of Rug and Homes' extensive and very valuable inventory was saved and Rug & Home was able to reopen its doors for business the following Thursday, July 2, in time for the busy July 4th shopping weekend.



Recognizing Needs & Concerns: Agricultural Industry

Challenges in the Agricultural Industry



Odorox® products can be used in the following agricultural applications:

- Hog, poultry, and dairy Farms
- Equestrian facilities
- Slaughterhouses, rendering facilities, and meat/food processing plants
- Fisheries and hatcheries
- Manure tanks and fertilizer storage
- Grain storage, feed silos, and hay barns
- Vegetable, fruit, flower, and plant greenhouses

Odorox® technology can offer solutions to agricultural challenges such as:

- Eliminate odor-causing compounds and pathogens
- Reduce illness in plants and animals by neutralizing pathogens

The Odorox® Device Advantage

- Can be used in occupied areas because it is safe for people, animals, plants, and sensitive materials
- More effective than filters, chemicals, masking agents, and ozone
- Ideal for eradicating unpleasant odors, VOCs, chemical fumes, and gases
- Kills bacteria, virus, and mold
- Controls pests and fungus on animal feed grains and hay
- Eradicates odor-causing aerosolized compounds such as, but not limited to, hydrogen sulfide, alcohols, ketones, aldehydes, acetic acid, creosotes, dimethyl disulphide, ammonia, amines, chlorine, phenols, acrylates, mercaptans, sketoles, dimethyl sulfide, sulfur dioxide
- Low operating and maintenance cost; operates using high efficiency controls
- Various mounting options for different applications



Recognizing Needs & Concerns: Agricultural Applications

Hog Barn Case Study

Nebraska Hog Barn, 2007



The Challenge

By law, the hog barn's waste pits can only be emptied once every six months to a year and attempts to control odor through an extensive ventilation system were inefficient. Lack of adequate air exchange led to high concentrations of ammonia and hydrogen sulfide in the barn. These gases reduced the hogs' lung capacity 60% in the first week of life. HGI research staff wore military-grade gas masks to enter the barn without damaging their own lungs.

The hogs were underweight and lacked optimal color due to reduced oxygen values. Some animals showed little interest in food and were malnourished. Some had episodes of extreme coughing and feed was supplemented with antibiotics and cough suppressant. The pigs frantically scattered when staff entered the barn, leading to injuries from collisions, scratching, and biting which resulted in infection and death. This breeder farm routinely experienced losses of up to 35%.

The Solution

Two ODOROX® MVP 14™ Hydroxyl Generators were installed, each injecting hydroxyls into a contaminated bay of 400 pigs and ducted to the waste pit associated with that bay. Air quality samples were taken periodically throughout the Odorox® validation experiment.



Results

As the air quality improved, oxygenated veins in the hogs ears showed a blue color and their behavior quickly improved. Malnourished hogs began drinking, eating, and gained weight very quickly. The hogs progressed from stressed and restless to calm and content; they became happy and curious, social and animated. Debilitating odors and bacteria were eliminated and gas masks were no longer needed to enter the contained experimental test areas.



Recognizing Needs & Concerns: Commercial Industry

Challenges in the Commercial Industry



Odorox® commercial products can be used in the following applications:

- Hospitals, nursing homes, and doctor's offices
- Churches, schools, and daycare centers
- Supermarkets, malls, and pet stores
- Transportation (airports, train stations, buses, etc.)
- Health clubs and sports facilities
- Apartments and other property management applications

Odorox® technology can offer solutions to commercial challenges such as:

- Eliminating smoke, odors, and pathogens in the air and on surfaces
- Reducing illness in susceptible seniors and contagious children

The Odorox® Device Advantage

- Can be used in occupied areas because atmospheric hydroxyls are safe for people, animals, plants, and sensitive materials such as rubber, plastic, leather, and electronics
- More effective than filters, chemicals, masking agents, and ozone
- Ideal solution for eradicating unpleasant odors, volatile organic compounds (VOCs), chemical fumes, and gases, and neutralizing bacteria, virus, and mold
- Addresses "sick building syndrome"
- Ideal for the indoor environment of those who are chemically sensitive or medically compromised
- Low operating and maintenance cost; operates using high efficiency controls
- Various mounting options for different applications



Recognizing Needs & Concerns: Commercial Applications

Costco Case Study – Requires Narrative

Miami, FL 2008

The Challenge

An electrical short in a flower refrigerator sparked a blaze, igniting pallets of paper products in the middle of the warehouse. It took 75 firefighters 2 hours to extinguish the blaze. The 140,000 sq ft / 7,000,000 cu ft facility sustained heavy smoke damage and it was forecast that the store would be closed for up to a month, losing \$6,000,000 in contents and \$1,000,000 per day in sales. In addition, there were concerns about damaging customer relations as the fire struck a week before Christmas.



The Solution

Numerous generators were required to decontaminate 7,000,000 cu ft. in such a short timeframe as possible. Odorox® equipment was placed strategically throughout the store later that same day. Initial efforts were focused at the source of the fire. An Odorox® hydroxyl generator was placed on a rolling pallet jack and powered by a portable generator to allow easy movement. The distribution of hydroxyls by air is critical to complete a job of this size so air movers were placed to effectively distribute hydroxyls throughout the store. A furniture display was arranged around it to allow the store to open to the public 36 hours later. Once the store opened, units were installed atop isles out of site and reach of the public. Additional Odorox® hydroxyl generators and air movers were placed at night after closing. Equipment continued to run for 48 hours while the store was open and business carried on as usual.

The Results

Approximately \$6,000,000 worth of contents were salvaged. Customers filled the store making purchases while Odorox® hydroxyl generators continued to treat the store. The prompt action of HGI trained staff and the constant monitoring by the local Odorox® device distributor resulted in virtually providing uninterrupted service to the Costco customer base. The Odorox® device intervention saved the insurance company the huge expense of business interruption and replacement of contents. Without the Odorox® technological solution, Costco losses were estimated at 34,000,000. Implementation of the Odorox® solution resulted in a mere 36 hour interruption of services.



Recognizing Needs & Concerns: Industrial Industry

Challenges in the Industrial Industry



Odorox® commercial products can be used in the following industrial applications:

- Recycling , Composting, and Municipal Solid Waste Facilities and Trash Transfer Stations
- Wastewater/Sewage Treatment Facilities, Lift Stations, and Sludge/Slurry Handling
- Oil/Petrochemical Refineries, Chemical Manufacturing, and Mining
- Industrial/Diesel Exhaust
- Containment Buildings
- Aeration Ponds
- Breweries



Click the video link to see Mark E. Mino, President at HGI Industries Inc., explain how Odorox® technology was successful in the brewery industry.

Odorox® technology can offer solutions to industrial challenges such as:

- Total neutralization of contaminants
- Produces no harmful by-products or materials that require further treatment
- Doesn't require any chemicals or disposal of contaminated odor absorption media

The Odorox® Device Advantage

- Can be used in occupied areas because hydroxyls are safe for people, animals, plants, and sensitive materials such as rubber, plastic, vinyl, leather, and electronics
- More effective than filters, chemicals, masking agents, and ozone
- Ideal for eradicating unpleasant odors, VOCs, chemical fumes, and gases
- Kills bacteria, virus, and fungi
- Green pest control: insects and pests cannot locate food sources
- Eradicates airborne odor-causing compounds such as, but not limited to, Hydrogen Sulfide, Alcohols, Ketones, Aldehydes, Acetic Acid, Creosotes, Dimethyl Disulphide, Ammonia, Amines, Chlorine, Phenols, Acrylates, Mercaptans, Carboxylic Acids, Dimethyl Sulfide, Sulfur Dioxide, Butyric Acid
- Low operating and maintenance cost
- Small footprint installations can be retrofitted to existing facilities



Recognizing Needs & Concerns: Industrial Applications

Wastewater Treatment Case Study



The Challenge

Wastewater treatment plants are notoriously odiferous. In addition to the human waste, gases such as hydrogen sulfide (H_2S) that are emitted during process have strong odors, and are poisonous, corrosive, flammable, and explosive. The wastewater pre-treatment canal at this site was emitting extremely high concentrations of H_2S gases. Odorox® technology was requested to replace the costly, yet inefficient, activated carbon canisters that were in place to deodorize the air at the site.

The Solution

Odorox® equipment is easily adaptable for retrofitting existing plants. Generators were custom designed for a Trickling Filter and placed throughout the plant. Contaminated air was directed into a processing chamber and then exhausted directly into the atmosphere, after gases and odors were eliminated from the air. Hydroxyls were directly injected into sewer lines and a lift station wet well. The open pre-treatment canal area was contained with nylon reinforced polyethylene and treated with atmospheric hydroxyls.



The Result

The result was a 90% reduction in concentrations of noxious gases at the source with a 100% reduction in the surrounding areas.



Recognizing Needs & Concerns: Knowledge Check

Industry Challenges Knowledge Check:



Recap: Think back to the situation with Jeff, who had a sales meeting with Billy at his farm. Jeff met Billy at the Agricultural Innovation Expo. Billy agreed to a trial of Odorox® equipment after Jeff was able to show him just how contaminated his turkey hatching facility was using the Bio-Reveal kit®. The trial was Jeff's opportunity to show how well he knows Billy's agricultural-specific needs and to show how well Odorox® technology meets those needs.



Now that you have learned about some challenges in each of the industries, how would you respond differently to Billy?

- How swabbing for contamination defines the challenge and verifies the solution
- Why we swab at various height levels and in different locations
- How the equipment meets the challenges specific to your application and industry



Review key terms and topics you could include in your response

Section Knowledge Check:



Answer the following questions:

1. _____ controls like Odorox® technology, remove pollution and triggers such as mold, dust, and allergens.
2. Odor is the only challenge that all industries have in common.
3. One of the main selling points of Odorox® device technology mentioned in this section is that it has low _____ compared to other systems.



Answers:



Summary: Industry Challenges

What We Have Learned

Common Solutions Odorox® Products Provide

- Can be used in occupied areas because Odorox® produced atmospheric hydroxyls are safe for people, animals, and plants; also safe for sensitive materials such as rubber, plastic, vinyl, leather, and electronics
- More effective than filters, chemicals, masking agents, and ozone
- Ideal for eradicating unpleasant odors, VOCs, chemical fumes, and gases while killing bacteria, virus, and mold
- Low operating and maintenance cost

Special Considerations for Specific Applications

Restoration

- Eradicates unpleasant odors (skunk, dead animal, feces), VOC's, chemical fumes, and gases
- Reduces additional living expenses or business interruptions
- Neutralizes odors during physical cleaning and deodorizes throughout the drying process, making completion of the job faster
- Neutralizes bacteria and virus associated with trauma and biohazard scene clean-up

Agricultural

- Controls pests and fungus on animal feed grains, hay, and bedding
- Eradicates airborne odor-causing compounds such as, but not limited to, Hydrogen Sulfide, Dimethyl Disulphide, Ammonia, Amines, Chlorine, Mercaptans, Sketoles, Dimethyl Sulfide, Sulfur Dioxide

Industrial

- Eradicates airborne odor-causing compounds such as, but not limited to, Hydrogen Sulfide, Alcohols, Ketones, Aldehydes, Acetic Acid, Creosotes, Dimethyl Disulphide, Ammonia, Amines, Chlorine, Phenols, Acrylates, Mercaptans, Carboxylic Acids, Dimethyl Sulfide, Sulfur Dioxide, Butyric Acid

How it Applies

To your business

To find the most appropriate solution to a client's challenge, you need to be able to find out what their needs and concerns are. If you know what they are worried about and what challenges they are facing, you can show how Odorox® technology meets their needs and alleviates their concerns.

Building working relationships with clients enables you to discuss the unique circumstances of their needs. By listening to your clients, you can have a thorough understanding of their needs and concerns which will help you direct them to the most appropriate solution that will achieve the best results.

In the real world

Jeff, who lived in the Mid-West, knew that agricultural and farming applications are quite common in his area, so he found out where the farmers went to find equipment and solutions to their agricultural challenges.

He learned about the Agricultural Innovation

Expo and knew he would have many opportunities to meet prospective clients with challenges that Odorox® technology could address.

When Jeff met Billy, he had an understanding of the science and technology behind the Odorox® systems, product knowledge, and the confidence to use both to offer practical solutions.



Recognizing Needs and Concerns: The Right Product



Family Allergies: Mark and Gracie and their family are dealing with various allergies. Their son, George, is on a puffer and will soon be heading off to college. Mark and Gracie want to improve the air quality in their home. Gracie has looked in the yellow pages and is hoping to find a solution to their respiratory issues. Mark feels that better air filtration is an inexpensive answer to the issue but Gracie would like a second opinion from someone in the industry. She is not convinced that filtration is the sole answer to the air quality issue. She calls Paul at the Odorox® outlet on Main Street. He agrees to meet with the family later that same evening. Paul has several options he could present to the Burns family: Odorox® IDU™, SanX™, SlimLine™, or Oasis™.

When Paul meets with the Burns family, Mark comments that he feels better filtration is all that is needed. He says, “Convince me that I am wrong.”

? How would you respond to Mark? Which Odorox® unit is the best choice for the Burns family?

Q Throughout this section, you’ll learn about the different Odorox® product offerings. As you read, think about the following questions:

- What Odorox® products are appropriate for the family?
- Why would the IDU™ unit be used instead of the Oasis™?
- Why did Paul suggest the SanX™ unit over other possible units for George, who was leaving for college?

You will have a chance to revisit these questions at the end of the section to check your understanding and see what new information you learned.

Tips

- Place ads in the yellow pages or online.
- Come prepared with portable units to demonstrate.
- Be sure to include all possible stakeholders in an informed discussion.
- Find a time that is mutually convenient to demonstrate the Odorox® device.

Lessons Learned

- The buying process is assisted and facilitated by experiencing the product. This experience breaks down barriers and satisfies the need to know.
- Preparation and pre-planning for a sale will mean that you are ready to provide information in a timely fashion. Stock your vehicle with brochures, business cards, and other handouts.
- Most buying decisions can be emotional. Families usually consider all the factors and people involved.



Recognizing Needs and Concerns: The Odorox® Product Line

Residential and Commercial Models

As buildings have become energy efficient it has become more difficult to create healthy indoor air. The FDA reports that indoor air is 2 to 100 times more polluted than outside air because hydroxyls are not produced indoors and the outdoor hydroxyl is not energetic enough to travel indoors, due to its very short life.



Poor indoor air quality can cause or contribute to the development of chronic respiratory diseases such as asthma, COPD and hypersensitivity pneumonitis. In addition, it can cause headaches, dry eyes, nasal congestion, nausea and fatigue. People who currently have respiratory diseases are at greater risk.

HGI Industries has designed a number of different Odorox® brand products to work in a wide variety of industries and uses. The technology has been applied in slightly different ways so that the applicable device will work on the intended task and the unit will be a size and structure to fit the environment.



Click the video to see Ralph Kubitzki, Director of Research & Communications, explain the overall use of the Odorox® product line.



Recognizing Needs and Concerns: The Odorox® Product Line

Residential and Commercial Models Product Overview



SanX™

The SanX™ unit is the right choice in small areas for light commercial or residential use. The unit is finely tuned to treat bacteria, virus, and chemicals commonly associated with indoor environments.

Portable unit, recommended treatment area is 300 sq. ft.



SlimLine™

The SlimLine™ unit is the right choice for medical, clinical, institutional, light commercial or residential. The unit is finely tuned to treat bacteria, virus, and chemicals commonly associated with indoor environments.

Portable unit, recommended treatment up to 1500 sq. ft.



IDU™

The Odorox® Induct Unit (IDU™) is used to neutralize odors, bacteria, virus, VOC's, off gassing, and mold contamination. It is ideal for residential, medical, clinical, institutional, hazmat, veterinary, or hospitality use and is designed to be permanently installed into the HVAC system.



MDU™

The MDU™ (Mobile Disinfection Unit) is the right choice for medical, clinical, institutional, hazmat, veterinary, or hospitality use up to 1800 sq. ft. The MDU™ is finely tuned to treat odors associated with bacterial, viral, and mold contamination.

NOTE: All ATS Laboratory experiments were conducted with this unit



Recognizing Needs and Concerns: The Odorox® Product Line

Residential and Commercial Models Product Overview (continued)



Oasis™

The right choice for residential applications. The Oasis™ unit is designed so that it can be permanently installed to an HVAC System. The unit is finely tuned to treat residential odors as well as bacterial, viral, and mold contamination. Full time 500 cfm fan delivery.



Boss™

The right choice for the professional fire and water damage restoration contractor. The Boss™ unit can deodorize and decontaminate up to 2000 sq. ft.

Note: We are assuming an 8-9 foot ceiling when we quote sq. ft.



Boss XL3™

The Odorox® Boss XL3™ is a compact unit. The right choice for professional restoration contractors and large area odor control resulting from fires, flood contamination, sewer backup contamination, toxic odors, and chemical spills. The Boss XL3™ unit can deodorize and decontaminate up to 3000 sq. ft.



Click the video link to see Ron LaSota's, Director of Channel Engagement, testimony of the different ways he has seen the



Recognizing Needs and Concerns: The Odorox® Product Line

Heavy Commercial & Industry Models Product Overview

The Odorox® device line of commercial products are the perfect tools for restoration contractors, property managers, real estate sales, sports facilities, senior care homes, day care, restaurants, hotels, or any environment where odor and bacteria need immediate attention.

Odorox® devices can neutralize smoke or pathogen residual in minutes allowing the space to be rented or enjoyed with little or no loss in revenue. Continuous elimination of bacteria in the air and surfaces will provide significant reduction in illness for susceptible seniors and children.

The commercial and industrial models create optimal concentrations of atmospheric hydroxyls so the technology can be effectively used on some of the toughest bacteria and odor issues in any industry. The larger machines are built with separate control panels and built in sensors. As the pathogens or VOC's are eliminated, the internal controls begin shutting down optics, keeping the space clean and safe.



Decon Scrubber™

The right choice for removal and decontamination of large volumes of particulate and pollutants from the air and surfaces. This device is setup to be hospital compliant. Standard filtration kit includes 2 MERV 8 pre-filters and one 4 inch MERV 13 polishing filter. HEPA filtration is also available.



HRC06™

The HRC06™ (Hydroxyl Room Curtain) unit is used to eliminate odors, bacteria, virus, VOC's, off gassing and mold contamination. This is a hard wired wall mount unit.



Recognizing Needs and Concerns: The Odorox® Product Line



MVP™ Product Line

The Odorox® MVP™ (Master VOC Processor) product line is unique, sophisticated, and the most technologically advanced industrial foul-air management system in the world. The MVP™ units are capable of breaking down massive amounts and types of VOCs (Volatile Organic Compounds) at lightning speed while simultaneously neutralizing a long list of biological pathogens.

The MVP™ series Odorox® hydroxyl generators are the perfect solution for the toughest industrial challenges. These units are designed for small -to large-sized industrial facilities, including water and sewage treatment facilities, agricultural facilities such as poultry, hog, stock farms, slaughterhouses, rendering plants, welding shops, machine shops, pump houses, gas and oil industries. In short, wherever foul-air problems exist. These units can be pieced together as modules with additional MVP'S, for a complete solution to address the worst industrial odor challenges.



MVP14™

Small facilities



MVP48™

Large facilities



Recognizing Needs and Concerns: Knowledge Check

Family Allergies Knowledge Check:



Recap: Think back to the situation with the Burns family, who were dealing with serious allergy issues. Mark Burns thought their problem could be solved with just a filtration system, but Gracie was not sure. Plus, their son George was leaving for college soon and had to rely on a puffer. Paul, an Odorox® distributor, came to meet with them and Mark wanted to make sure he purchased exactly what he needed. Mark admitted that he feels filtration is all that is needed. He says, “Convince me that I am wrong.”

☐ Now that you have learned about the patented Odorox® product line, would you add or change how you would respond to the Burns family? What products would you recommend? Would you recommend the IDU™ and/or the SanX™?

☒ Review key terms and topics you could include in your response.

Section Knowledge Check:

☐ Answer the following questions:

1. Which Odorox® product is portable due to its compact size and light weight?
2. Which Odorox® products are designed to be permanently installed in HVAC systems?
3. The Decon Scrubber™ unit is engineered and designed with an optional _____ filtration system.

☒ Answers:



Recognizing Needs and Concerns: Summary

Meeting Client Needs

We can't meet customer needs until we know what they are. In the previous subsection, we discussed building working relationships with our clients so that we could determine what their air quality solution needs were. Having knowledge of Odorox® products and their capabilities is just as crucial as knowing what a client needs. When we are able to match the most appropriate product to their needs, we have created a winning solution.

The Patented Odorox® Product Line

Residential and Commercial Models			
SanX™	<ul style="list-style-type: none"> • Portable unit for small areas up to 300 sq. ft. • Light commercial or residential use • Treats bacteria, virus, and chemicals commonly associated with indoor environments 	Oasis™	<ul style="list-style-type: none"> • Ductable unit for residential use - treats up to 2150 sq. ft. • Permanently installed in HVAC System • Treats residential odors as well as bacterial, viral and mold contamination
SlimLine™	<ul style="list-style-type: none"> • Portable unit treats up to 1500 sq. ft. • Medical, clinical, institutional, light commercial, or residential use • Treats bacteria, virus, and chemicals commonly associated with indoor environments 	Boss™	<ul style="list-style-type: none"> • Up to 2000 sq. ft. • Professional restoration contractors • Deodorizes and decontaminates fire and water damage and heavy odors
IDU™	<ul style="list-style-type: none"> • Residential, medical, clinical, institutional, hazmat, veterinary or hospitality use. • Induct installation permanently installed in HVAC system • Neutralizes odors, bacteria, virus, VOC's, off gassing and mold contamination 	Boss XL3™	<ul style="list-style-type: none"> • Up to 3000 sq. ft. • Professional restoration contractors • Large area odor control resulting from fires, flood contamination, sewer backup contamination, toxic odors and chemical spills
MDU™	<ul style="list-style-type: none"> • Up to 1800 sq. ft. • Medical, clinical, institutional, hazmat, veterinary or hospitality use • Treat odors associated with bacterial, viral and mold contamination 	Decon Scrubber XL™	<ul style="list-style-type: none"> • Removal and decontamination of large volumes of particulate and pollutants from the air. Complete filtration/ decontamination unit • Enhanced ability to neutralize intense odors
Heavy Commercial and Industry Models			
Decon Scrubber™	<ul style="list-style-type: none"> • Removal and decontamination of large volumes of particulate and pollutants from the air. Complete filtration/ decontamination unit 	HRC06™	<ul style="list-style-type: none"> • Neutralizes odor, bacteria, virus, VOCs, and off gassing • Commercial, institutional, veterinary, or hospitality use
MVP Product Line			
MVP14™ And MVP48™	<ul style="list-style-type: none"> • Rapid neutralization of massive amounts of VOC's and a long list of biological pathogens. • Heavy duty air processing operations such as hog, chicken farms, food processing, paper mills, waste water treatment facilities, trash transfer sites, rendering plants, etc. These systems are at the heart of our Engineered Solutions Program (ESP). 		



Key Features: Introduction

Sell by Sharing Key Features and Benefits with Clients

- Our clients want to own a product that is effective but still is safe for them and the environment. In order to be successful at selling Odorox® technology, it is important to understand why our products are safe to use. Even better, we have access to research that proves how safe they are.
- Our mission is to improve quality of life by naturally and ecologically improving the indoor air quality. To meet this goal, it is important that you know how to choose the right device in order to meet the client's needs.
- This section will teach you about the safety and environmental impact of Odorox® technology as well as its effectiveness. The last part of this section will give you more in-depth knowledge about the Odorox® product line that will help you know how to select the best device for each client.

Purpose

After completing this section, you should be able to answer client questions regarding:

- The safety of Odorox® hydroxyl generators
- The environmental impact of Odorox® devices
- How Odorox® technology destroys odors
- What odors Odorox® devices eliminates
- Recommended use guidelines for various devices
- Why there are so many devices to choose from?

Content

In this section, you will learn about:

- “Nature’s Broom”
- Safety of Odorox® technology
- Independent Reviews
- Safe and Green!
- Oxidation Potentials
- Effectiveness
- The Odorox® Product Line

Estimated completion time: 90 Minutes

Menu

HGI & the Odorox® Brand

Selling Approach

Prepare

Know the Product

Know the Competition

Make the Sale

Recognize Needs & Concerns

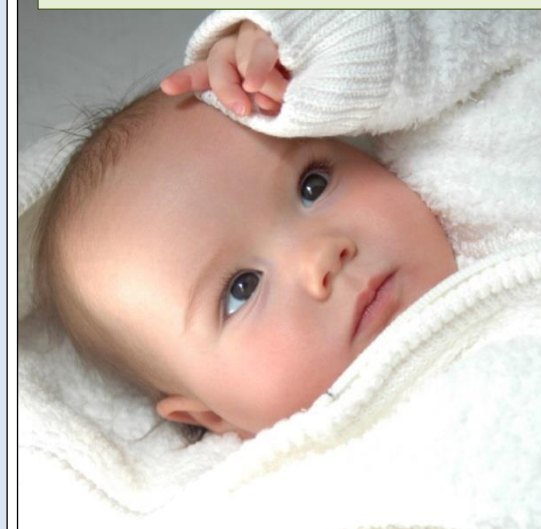
Share Benefits & Features

Follow Up

Identify & Use References

Identify New Opportunities

Course Summary



Key Features and Benefits: Are Hydroxyls Safe?



Are Hydroxyls Safe? Ursula, a mother with an infant son, is concerned about the air quality in her home. While researching products on the internet, Odorox® technology caught her attention. She also found, however, that some other sources claim that hydroxyl can “cause damage to our cells.” Naturally, Ursula was concerned about the safety of hydroxyl generators, so she called her local Odorox® distributor, Janette, for clarification.

Janette explained that there are four different kinds of hydroxyls, and that “biological hydroxyls” are the type that can cause targeted cell damage. She assured Ursula that Odorox® devices generate “atmospheric hydroxyls,” and that they generate the same number that occurs naturally outdoors on a sunny day.

Ursula thanked Janette for her help, and asked *“With so much confusing information out there about hydroxyls, how can I be absolutely sure Odorox® devices are safe for my family?”*



How would you respond to Ursula’s concern?



Throughout this section, you’ll learn how to demonstrate the safe and green power of Odorox® technology. As you read, think about the following questions:

- How else could Janette describe the safety features of hydroxyl technology?
- How could Janette introduce Odorox® products as a green technology to help with concerns of safety?
- What analogies could Janette use to help Ursula visualize how safe hydroxyls really are?

You will have a chance to revisit these questions at the end of the section to check your understanding and see what new information you learned.

Tips

- Always carry copies of the white paper titled *HGI Odorox® System Efficacy* with you so you can walk customers through it, and leave it behind for them to study.

[Click here to review this document](#)

- The four types of hydroxyls are biological, chemical, interstellar, and atmospheric; Odorox® devices generate only atmospheric hydroxyls. Know the differences so you can effectively overcome objections.

Lessons Learned

- Keep informed about the kind of information clients will likely find when doing their own research.
- Be prepared with many ways to illustrate the safety of Odorox® products; clients take this issue seriously, and one explanation may not be sufficient.



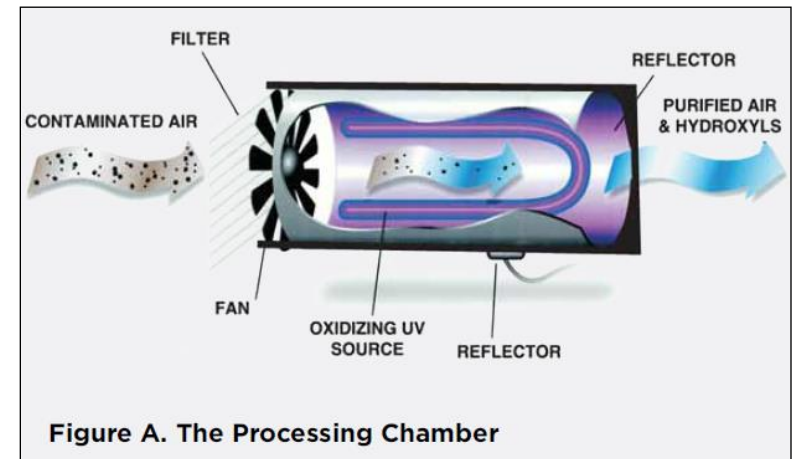
Key Features and Benefits: “Nature’s Broom”

Hydroxyls are “Nature’s Broom”

As mentioned previously, atmospheric hydroxyls are naturally occurring free radicals and often called “Nature’s Broom.” They are common radicals that naturally eliminate odor, mold, and bacteria in nature when the sun’s ultraviolet rays react with water vapor.

Odorox® Technology Attacks Contaminants in a Dual Process

1. The processing chamber decontaminates airflow and produces hydroxyls
2. Hydroxyl radicals exit the chamber to decontaminate air, surfaces, and contents



Click the video link to see Dr. Constance Araps, Chairman of the Scientific Advisory Board, explain the safety of hydroxyls and the Odorox® product line.

Independent Lab Confirms that the Odorox® Boss™ Imitates Nature’s Cleaning Process



An independent study showed that the hydroxyl concentrations created by Odorox® products are equal to those found in nature. Odorox® device hydroxyls react in 22-44 milliseconds, and break down contaminants.

Visualizing Nature’s Hydroxyl Count

Odorox® hydroxyl generators ensure that the indoor atmospheric hydroxyl concentration matches the naturally-occurring outdoor levels at four parts per trillion (ppt). That’s essentially one drop of water in five Olympic-size swimming pools!

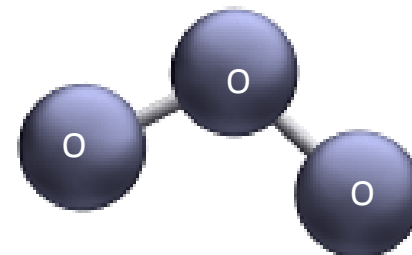


Key Features and Benefits: Safety of Odorox®

Odorox® Products Maintain Safe and Natural Ozone (O₃) Levels

As occurs in nature, machines that produce useful levels of atmospheric hydroxyl use UV energy and ozone. In nature, O₃ levels average 20-60 ppb, 100 ppb common, or 0.0000044%. Because it is a toxic gas, OSHA requires indoor levels to remain < 100 ppb/8 hours. HGI ensures safe and natural levels by:

- Using customized UV optics that maximize O₃ destruction
- Optimizing system design to minimize O₃ formation
- Providing integrated process controls that automatically maintain oxidant levels on larger systems
- Providing machine recommendations based on room space and size



Odorox® Toxicology Study Proves Safety of Hydroxyl Technology

HGI Industris commissioned a study to determine the safety of atmospheric hydroxyls as this relates to life cycles of mammals. Compative Biosciences conducted a rigorous Good Laboratory Practices (GLP) 13-week toxicity study of Odorox® hydroxyl generators in the industry'/worlds' first study of its kind. The test animals were exposed to roughly twice the outdoor average levels of atmospheric hydroxyls. The FDA requires each device type to generate its own toxicology data, the study tested only HGI's Odorox® systems and the results cannot be applied to other claimed hydroxyl generators.

The study's subjects (40 test rats and 20 control rats) were monitored for a wide range of behavioral, toxicological, and gross and cellular pathological risks. Researchers focused on the eyes, sinuses, mucosa, lungs, and nervous system in assessing the effects, and found:

- No morbidity or mortality
- That treated animals showed no adverse effects
- No gross or histopathology (tissue) or cytological (cell) differences
- That the Odorox® device treated animals were more social, active, and responsive

In short, the technology was proven safe.

Click the video link to see Dr. Constance Araps provide more information on the toxicology study and the technology validated.



Key Features and Benefits: Independent Reviews

Regulators Verify Safety of Atmospheric Hydroxyl Technology

Research published by regulatory organizations supports independent findings regarding the safety of atmospheric hydroxyl technology.



The U.S. Food and Drug Administration (FDA) confirm that atmospheric hydroxyl devices are safe based on prevalence in nature.



The Environmental Protection Agency (EPA), Center for Disease Control and Prevention (CDC), and the National Institute of Environmental Health Sciences (NIH) have published no data indicating that atmospheric hydroxyl devices are unsafe, nor do they require clinical studies.



The National Institute of Environmental Health Sciences confirms that there is “no hard science or research indicating that hydroxyl radical generation is harmful to humans.” This claim “applies to both atmospheric and man-made generation.” *NIEHS Office of Communications and Public Liaison, Colleen Chandler, 2010*

Lovelace Respiratory
Research Institute



Scientific Validation of Odorox® Technology

Odorox® technology produces hydroxyls and creates a cascade effect ... to effectively eliminate most chemicals.

Hydroxyls are all around us in the outside air and are completely safe to humans. Odorox® technology is safe.

- Leading toxicology research center, Comparative Biosciences



COMPARATIVE BIOSCIENCES INC.



Odorox® technology reduces pollutants in indoor air.

- Columbia Analytical Services

Odorox® technology kills bacteria, virus, and mold (fungi) in the air and on surfaces.

- ATS Labs



Key Features and Benefits: Safe and Green!

Odorox® Products Are Truly Green Technology at Work®

Unlike using ozone, foggers, and harsh chemicals, Odorox® hydroxyl generators can be operated in occupied areas because they are safe for people, animals, plants, rubber, plastic, vinyl, electronics, and other sensitive materials.



Certification - Safe Operation

All Odorox® hydroxyl generators are ETL certified for safety and quality assurance by the world's largest independent certification partner, Intertek.



Green

Odorox® technology is “green” because it harnesses the same wave energy as the sun and does not use chemicals. It merely uses UV energy and humidity to create atmospheric hydroxyls to provide a cleaning mechanism at the same rate as is produced in nature.



Click the video to hear Ralph Kubitzki, Director of Research & Communications, explain more about how Odorox® device safety was verified.



Click on the video to see a clip on YouTube with ABC News about Odorox® Green Technology at Work® in the community



Key Features and Benefits: Knowledge Check



Are Atmospheric Hydroxyls Safe? Knowledge Check:

Recap: Think back to the situation with Ursula. She's concerned about her home's air quality, and certainly doesn't want to use a product that will make things worse instead of better. She found some unsettling information in doing her own research and wants to know, *"With so much confusing information out there about hydroxyls, how can I be absolutely sure Odorox® is safe for my family?"*



Now that you have learned about the safe and green power of Odorox® technology, would you add or change

how you would respond to Ursula about the following questions:

- How else could Janette describe the safety features of hydroxyl technology?
- How could Janette introduce Odorox® products as a green technology to help with concerns of safety?
- What analogies could Janette use to help Ursula visualize how safe hydroxyls really are?



Review key terms and topics you could include in your response

Section Knowledge Check:



Answer the following questions:

1. Which type of hydroxyls are generated by Odorox® devices?
2. How does the Odorox® system compare to nature's system for eliminating odor, mold, and bacteria?
3. Odorox® devices create a greater quantity of hydroxyls than what naturally occurs in order to better decontaminate indoor spaces.



Answers:



Key Features and Benefits: Safety Summary

What We Have Learned

Odorox® Devices Imitate “Nature’s Broom”

Atmospheric hydroxyls, or “Nature’s Broom,” are common radicals that naturally eliminate odors, mold, and bacteria in nature when the sun’s ultraviolet rays react with water vapor. Odorox® Hydroxyl Generators imitate this natural process exactly.

Studies Confirm that Odorox® Devices are Safe and Green

Independent studies, regulatory organizations, news media, and HGI Industries’ own research all confirm that these systems are safe and green. Familiarize yourself with this evidence and be sure you can explain it clearly and confidently to customers and point them to legitimate sources of information.

How It Applies

To Your Business

Odorox® device users need to be comfortable with the technology they use. Now that you understand how Odorox® imitates natural methods to decontaminate the air, you can clarify any confusion clients may have about the products and show them just how safe and effective these devices are.

In the Real World

Ursula wanted an effective way to purify the air in her home, but she did not want it to harm her son. With a lot of different products and claims, it was easy for Ursula to be confused. Because Janette knew which consumer products Ursula had researched, Janette could explain the differences to Ursula. Janette calmed Ursula’s worries by explaining that Odorox® technology only produces the type of hydroxyl that decontaminates natural outdoor air. This means that Ursula could now protect her son from air pollution without worrying about negative side-effects.



Key Features and Benefits: Hawaiian Resort



Hawaiian Resort: Kelvin operates an Odorox® storefront in Hawaii. Guy, the facilities manager at a resort across the street, visited him with a list of challenges he hoped to resolve: burnt popcorn odors, garbage bin odors, cigarette and cigar smoke. Kelvin recommended the Boss™ and Boss XL3™ devices for the popcorn and smoke odor in the rooms, and suggested the HAC06™ for the fence line garbage odors. He estimated how long each job should take, and assured Guy of the device's effectiveness.

Guy was intrigued, but asked, *"Do these products just perfume over the smell? Sometimes we have guests dealing with things like Multiple Chemical Sensitivities (MCS), and the last thing we want is to introduce a bunch of new chemicals into the resort."*



How would you respond to Guy's question?



Throughout this section, you'll learn how to demonstrate the effectiveness of Odorox® technology. As you read, think about the following questions:

- How does Odorox® destroy odors?
- What does it mean to say that Odorox® devices are "effective" neutralizers?
- Why do we choose to use the word 'neutralize' as opposed to 'destroy' or 'eliminate'?
- How can you be sure to recommend the most effective device for a job?

You will have a chance to revisit these questions at the end of the section to check your understanding and see what new information you learned.

Tips

- Experiment with Odorox® products so you can confidently choose the most effective device for any given challenge.
- Odorox® technology deals so effectively with discarded food that, once it's eliminated the odors, even cockroaches, flies and other pests cannot locate the food.

Lessons Learned

- Kelvin recommended the Boss™ and Boss XL3™ for the popcorn and smoke odors in rooms because, even though these are small spaces, the odors are potent and need the optimal number of hydroxyls the Boss™ products provide. (Review the Recommended Square Footage Guidelines)
- Learn how versatile each Odorox® product can be. Kelvin could have felt overwhelmed by the variety and scope of Guy's challenges, but, because he knows his products, he was able to handle them calmly and effectively.



Key Features and Benefits: Oxidation Potentials

Atmospheric Hydroxyls are Safe but Powerful Neutralizers

The neutralizing power of Odorox® device hydroxyls rests in their molecular makeup. Hydroxyls have optimal oxidizing potential, meaning they lose electrons easily. It is this process that neutralizes odors, and as you can see in the table, hydroxyls are second on the list in terms of potential. This means they can neutralize any chemical beneath it on the scale.

Oxidizing Agent	Electrochemical Oxidation Potential, (EOP)V	EOP Relative to Chlorine
Fluorine	3.06	2.25
Hydroxyl Radical	2.80	2.05
Oxygen (Atomic)	2.42	1.78
Ozone	2.08	1.52
Hydrogen Peroxide	1.78	1.30
Hypochlorite	1.49	1.10
Chlorine	1.36	1.00
Chlorine Dioxide	1.27	0.93
Oxygen (Molecular)	1.23	0.90

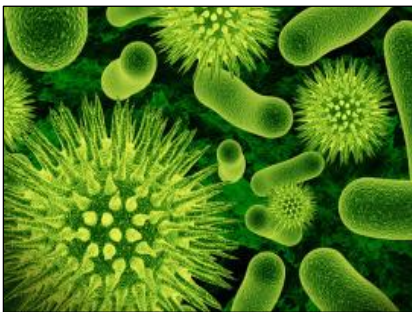


Click on the video to learn more from Ralph Kubitzki, Director of Research & Communications, about hydroxyl's oxidation potential.

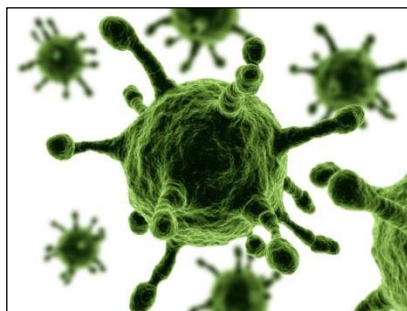


Key Features and Benefits: Effectiveness

Atmospheric Hydroxyls are the Most Effective Neutralizers of...



Bacteria



Virus



Mold



Odors



VOCs



Allergens





Hydroxyls Seek and Destroy

- Odorox® devices don't simply cover up odors.
- Once the hydroxyls are created, they are sent to seek and neutralize odor molecules, bacteria, virus, mold, allergens, VOCs, and other chemicals by bonding with their structure and 'cleaving' or 'decomposing' them down to their elemental components using Bond Dissociation Energy (BDE).
- Once this occurs and the odor structures are taken "out of phase," the odors cannot reassemble. Odorox® BDE is able to neutralize these odors, and restore the normal outdoor bio-oxygen levels right in the target room.

Key Features and Benefits: Effectiveness

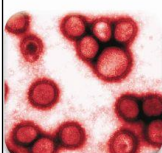


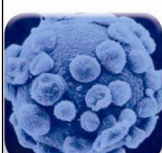
Odorox® Device Efficiency is Verified by Independent Lab Results

HGI's patented technology is 99% effective in eliminating the most dangerous bacteria and pathogens. Review the detailed findings in the tables below.

	Test Organism	Carrier Type	Exposure Time	Percent Reduction	Log ₁₀ Reduction
	Aspergillus niger (ATCC 16404)	Stainless Steel	48 hrs	>99.9%	3.5
			72 hrs	>99.99%	4.4
			96 hrs	>99.99%	>4.4
		Cotton Fabric	48 hrs	97.0%	1.52
			72 hrs	98.5%	1.81
96 hrs	99.6%		2.37		
	Staphylococcus aureus (ATCC 6538)	Stainless Steel	4 hrs	93.9%	1.211
			8 hrs	>99.8%	2.841
			12 hrs	>99.999%	>5.1
		Cotton Fabric	4 hrs	>99.9%	>3.5
			8 hrs	>99.9%	>3.5
			12 hrs	>99.9%	>3.5
	Escherichia coli (ATCC 11229)	Stainless Steel	4 hrs	>99.99%	>4.2
			8 hrs	>99.99%	>4.2
			12 hrs	>99.99%	>4.2
		Cotton Fabric	4 hrs	>99.9%	>3.4
			8 hrs	>99.9%	>3.4
			12 hrs	>99.9%	>3.4
	Pseudomonas aeruginosa (ATCC 15442)	Stainless Steel	4 hrs	>99.999%	>5.1
			8 hrs	>99.999%	>5.1
			12 hrs	>99.999%	>5.1
		Cotton Fabric	4 hrs	>99.9%	>3.5
			8 hrs	>99.9%	>3.5
			12 hrs	>99.9%	>3.5
Antiviral and Antimicrobial efficacy of ODOROX Mobile Disinfection Unit (M.D.U.) Hydroxyl Generator					



Click the video link to see Ralph Kubitzki explain more about the independent lab testing.

	Test Organism	Carrier Type	Exposure Time	Percent Reduction	Log ₁₀ Reduction
	Influenza A virus (ATCC VR-544)	Glass	3 hrs	99.98%	3.7
			6 hrs	>99.997%	>4.5
		Cotton Fabric	3 hrs	99.9994%	5.25
			6 hrs	>99.9997%	>5.5
	Listeria monocytogenes (ATCC 19111)	Stainless Steel	4 hrs	94.7%	1.27
		Cotton Fabric	4 hrs	98.6%	1.87
	Clostridium difficile (ATCC 700792)	Stainless Steel	48 hrs	>99.8%	>2.8
		Cotton Fabric	48 hrs	>99.2%	>1.7
	PRRS Porcine Respiratory & Reproductive Syndrome virus	Glass	3 hrs	49.9%	.30
			6 hrs	97.9%	1.68
Independent study was performed following Standard Operating Procedures (SOPs) and internal quality systems					



Key Features and Benefits: Effectiveness Knowledge Check



Hawaiian Resort Knowledge Check:

Recap: Think back to the situation with Guy. He dropped into an Odorox® product storefront with a variety of needs. When Kelvin assured Guy that he could help and explained a course of action, Guy wanted to know how the system would work, asking: *"Do these products just perfume over the smell? Sometimes we have guests dealing with things like Multiple Chemical Sensitivities (MCS), and the last thing we want is to introduce a bunch of new chemicals into the resort."*

? Now that you have learned how Odorox® devices effectively do their job, would you add to or change your response?

☒ Review key terms and topics you could include in your response

Section Knowledge Check:

? Answer the following questions:

1. What does Odorox® product Bond Dissociation Energy (BDE) do?
2. Odorox® devices wouldn't be a good system for someone with Multiple Chemical Sensitivities (MCS).
3. Which of the following things do Odorox® devices neutralize?

☒ Answers:



Key Features and Benefits: Effectiveness Summary

What We Have Learned

Odorox® Generators are Powerful and Effective Neutralizers

The neutralizing power of Odorox® hydroxyls rests in their molecular makeup. Hydroxyls have a superior oxidizing potential, meaning they lose electrons easily. This means they can neutralize any chemical beneath it on the EOP scale below.

Oxidizing Agent	Electrochemical Oxidation Potential, (EOP)V	EOP Relative to Chlorine
Fluorine	3.06	2.25
Hydroxyl Radical	2.80	2.05
Oxygen (Atomic)	2.42	1.78
Ozone	2.08	1.52
Hydrogen Peroxide	1.78	1.30
Hypochlorite	1.49	1.10
Chlorine	1.36	1.00
Chlorine Dioxide	1.27	0.93
Oxygen (Molecular)	1.23	0.90

By utilizing the natural oxidation potential of hydroxyls, Odorox® devices have sufficient BDE to effectively neutralize: bacteria, virus, mold, odors, VOC's, and allergens.

How it Applies

To your business

To be successful you have to be able to show the effectiveness of not only the Odorox® product line but demonstrate the effectiveness of hydroxyls. Providing information and facts builds credibility and establishes a firm foundation to present solutions.



In the real world

Kelvin recommended the Boss™ and Boss XL3™ for the popcorn and smoke odors in rooms because, even though these are small spaces, the odors are potent and need the optimal number of hydroxyls

the Boss™ products produce. It is important that you learn to critically think about the situations and the solution. Every situation will be a little bit different so learn to be flexible and as knowledgeable about the technology and equipment as possible.



Odorox® Product Line: So Many Devices



Training: Steven joined the Odorox® device training class at the last minute. Everything is new and he is trying to wrap his head around the whole experience. Steven spots the display rack that shows the Odorox® device Contact Sheets. Contact Sheets explain products and their usages. They include color photographs, mechanical, and application details. Steven notes that 12 units are in current production and 11 have contact sheets.

Steven wonders why HGI offers so many Odorox® devices when competitors usually have one or two different devices.

He asks the instructor, *“Why are there so many devices to choose from?”*

? How would you respond to Steven? Why does HGI offer so many different devices Odorox® devices?

Q Throughout this section, you’ll learn about “Making the Sale” by knowing the details about each Odorox® product offering. As you read, think about the following questions:

- What is the need for multiple devices with different processing configurations?
- Why would various Odorox® product models be produced?

You will have a chance to revisit these questions at the end of the section to check your understanding and see what new information you have learned.

Tips

- Learn the information on the Odorox® product Contact Sheets.
- Training classes help you learn product information and become a more effective distributor.

Lessons learned

- HGI has designed a number of different products to work in a wide variety of industries and uses. The technology has been applied in slightly different ways so that the applicable machine will work on the intended task and the unit will be a size and structure to fit the environment.
- Experts know their equipment. If you are not sure of which piece of equipment to bring to the jobsite, stop and ask someone who does know. An under powered piece of equipment will not work well and will take far too long to complete the task at hand.
- Odorox® devices are not one size fits all. When you become familiar and proficient with the complete line of products, you become an expert.



Odorox® Product Line: The Specifications

Choosing an Odorox® Device

HGI offers a wide variety of Odorox® hydroxyl generators to complete the task at hand. Devices should be selected for a job based on the treatment area and contamination level.



Treatment Area

Odorox® units can decontaminate residential and commercial areas ranging from 50 to 6000 sq. ft.

Contamination Level

Odorox® devices are designed to handle three levels of contamination: light, moderate, and heavy.

Light Contamination Level

- Residential/commercial light off-gassing (carpet, paint, furniture)
- Light cooking odor

Moderate Contamination Level

- Residential with medium odor sources (pets, cooking, nicotine)
- Commercial off-gassing (carpet, paint furniture)
- Body odor
- Perfumes

Heavy Contamination Level

- Fire and smoke
- Flood
- Nicotine
- Grey/black water
- Decomposition
- Mold
- Sewage
- Chemical spills/off-gassing
- Garbage
- Barns/livestock



The SanX™ Unit



Recommended Use Guidelines

Maximum Treatment Area (sq. ft.): 300

Minimum Treatment Area by Contamination Level (sq. ft.)

- Light: 75
- Moderate: 50
- Heavy: Not designed for heavy contaminants

These numbers are based on areas with 9 ft ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.

Overview

The Odorox® SanX™ unit is the right choice for light commercial or residential use. The SanX™ unit is finely tuned to treat bacteria, virus, and chemicals commonly associated with Sick Building Syndrome.

The SanX™ unit is ideal for eliminating bacteria, virus, and chemical off-gassing typically found in smaller public spaces within enclosed buildings. It is the perfect choice for long term care facility usage, commercial offices/cubicles, and residential homes or apartments. Because of its compact size and light weight, the SanX™ unit can travel with you for use in your hotel or in your vehicle.

This unit is designed to decontaminate up to a 300 sq-ft. space. It is equipped with a variable speed fan control and a washable filtration medium. The variable speed built in fan is adjustable from approximately 100 to 400 CFM

Specifications

Dimensions (w, l, h): 12" x 5" x 20" / (304.8mm x 127mm x 508mm)

Weight: 10.5 lbs. (4.8 kg)

Power: 120V @ 0.8 amps

Control: Speed control

Meter: N/A

Mobility: Handle / stand brackets

Finish: Black or beige powder coat

Noise Level: <55 dBA

Number of Optics: 1

Air inlet / Outlet: Louvered panel

Fans & Rating: One 210 CFM

Filters: One, 5" x 9"x 0.25" (127mm x 228.6mm x 6.4mm), washable

Certification: ETL Canada/US - CSA & UL standards



The SlimLine™ Unit



Overview

The Odorox® Slimline™ unit is the right choice for medical, clinical, institutional, light commercial, or residential use. This unit is finely tuned to treat bacteria, virus, and chemicals commonly associated with Sick Building Syndrome.

The Slimline™ unit is ideal for eliminating bacteria, virus, and chemical off-gassing typically found in public spaces within enclosed buildings. It is the perfect choice for medical offices, long term care facility usage, commercial offices, and residential homes or apartments. It neutralizes bacteria and virus.

The unit is designed to decontaminate up to a 1500 sq.-ft. space. It is equipped with a variable speed fan control and a washable filtration medium. The variable speed built in fan is adjustable from approximately 100 to 500 CFM and operates using only 1.4 amps.

Recommended Use Guidelines

Maximum Treatment Area (sq. ft.): 1500

Minimum Treatment Area by Contamination Level (sq. ft.)

- Light: 200
- Moderate: 125
- Heavy: Not designed for heavy contaminants

These numbers are based on areas with 9 ft. ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.

Specifications

Dimensions (w, l, h): 18" x 5" x 24" / (457.2mm x 127mm x 609.6mm)

Weight: 16.5 lbs. (7.5 kg)

Power: 120V @ 1.4 amps

Control: Speed control

Meter: N/A

Mobility: Handle / stand brackets

Finish: Black or beige powder coat

Noise Level: <55 dBA

Number of Optics: 1

Air inlet / Outlet: Louvered panel

Fans & Rating: One 500 CFM

Filters: One, 5" x 12.5" x 0.25" (127mm x 317.5mm x 6.4mm), washable

Certification: ETL Canada/US - CSA & UL standards



The IDU™ Unit



Overview

The IDU™ (Induct Unit) is used to neutralize odors, bacteria, virus, VOC's, off-gassing, and mold contamination. Comes in three models IDU™, IDU™ X, IDU™ S.

It is ideal for medical, clinical, institutional, veterinary, hospitality, or residential use. It is equipped with a selector switch for 1 or 2 hydroxyl generating optics. The unit is designed for continuous operation. It is excellent for the chemically sensitive or medically compromised individual.

It is designed to be permanently installed into an HVAC system.

Specifications

Dimensions (w, l, h): 11.75" x 14.5" x 15.5" / (304.8mm x 368.3mm x 387.2mm)

Weight: 13.12 lbs. (5.96 kg)

Power: 120V @ 0.8 amps

Control: 2 position selector switch for 1 or 2 optics

Meter: Shows number of operating hours

Number of Optics: 2

Certification: ETL Canada/US - CSA & UL standards

Recommended Use Guidelines

Maximum Treatment Area (sq. ft.) IDU™: 2000

IDU™ X: 2750

IDU™ S: 3500

Minimum Treatment Area by Contamination Level (sq. ft.)

- Light: 300
- Moderate: 200
- Heavy: Not designed for heavy contaminants

These numbers are based on areas with 9 ft. ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.



The MDU™ Unit



Recommended Use Guidelines

Maximum Treatment Area (sq. ft.): 1800

Minimum Treatment Area by Contamination Level (sq. ft.)

- Light: 150
- Moderate: 100
- Heavy: Not designed for heavy contaminants

These numbers are based on areas with 9 ft. ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.



Overview

The MDU™ (Mobile Disinfection Unit) is the right choice for medical, clinical, institutional, veterinary, or hospitality use.

The MDU™ is finely tuned to treat odors associated with bacterial, viral, and mold contamination.

It is designed to decontaminate up to a 2000 sq. ft. space. It is equipped with a selector switch for 1 or 2 Odorox® hydroxyl generating optics, variable speed fan control, hour meter, and a washable filter.

The variable speed built-in fan is adjustable from approximately 250 to 630 CFM and operates using only 1.9 amps. The Odorox® MDU™ is the perfect unit to operate continuously to neutralize and disinfect your environment.

NOTE: This device was used to test all microorganisms at ATS Laboratories.



Specifications

Dimensions (w, l, h): 12.1" x 18.5" x 25" / (307mm x 470mm x 635mm)

Weight: 36 lbs. (16.3 kg)

Power: 120V @ 1.9 amps

Control: Speed control/ selector switch

Meter: 1/10 quartz hour meter

Mobility: Handle / rubber feet (optional wheeled cart)

Finish: Hammertone blue powder coat

Noise Level: <55 dBA

Number of Optics: 2

Air inlet / Outlet: Louvered panel / 6" (152.4mm) rectangle

Fans & Rating: One 630 CFM

Filters: One, 9" x 18" x 1" (228.6mm x 457.2mm x 25.4mm), washable

Certification: ETL Canada/US - CSA & UL standards



The Oasis™ Unit



Overview

The Odorox® Oasis™ unit is the right choice for residential applications. The Oasis™ unit is designed so that it can be permanently installed onto an HVAC System.

This unit is finely tuned to treat residential odors as well as bacterial, viral, and mold contamination. It is equipped with one Odorox® hydroxyl generating optic and a washable filter. It has a built-in fan that is adjustable from approximately 250 to 630 CFM, and it operates using only 1.4 amps.

It is an ideal unit to continuously neutralize musty smells, cooking odors, light cigarette smoke, pet odors, and decontaminate biological pathogens as it can operate 24 hours a day, 7 days a week. It is excellent for the chemically sensitive or medically compromised individuals.

Recommended Use Guidelines

Maximum Treatment Area (sq. ft.): 2150

Minimum Treatment Area by Contamination Level (sq. ft.)

- Light: 300
- Moderate: 200
- Heavy: Not designed for heavy contaminants

These numbers are based on areas with 9 ft ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.

Specifications

Dimensions (w, l, h): 12.1" x 18.5" x 25" / (307mm x 470mm x 635mm)

Weight: 35 lbs. (16 Kg)

Power: 120V @ 1.4 amps

Control: Speed Control / Selector Switch

Meter: 1/10 quartz hour meter

Mobility: HVAC / in-duct

Finish: Gray powder coat

Noise Level: < 55 dBA

Number of Optics: 1

Air inlet / Outlet: 6" (152.4mm) round / 6" (152.4mm) round

Fans & Rating: One 630 CFM

Filters: One, 9" x 18"x 1" (228.6mm x 457.2mm x 25.4mm), washable

Certification: ETL Canada/US - CSA & UL standards



The Boss™ Unit



Recommended Use Guidelines

Maximum Treatment Area (sq. ft.): 2000

Minimum Treatment Area by Contamination Level (sq. ft.)

- Light: 450
- Moderate: 300
- Heavy: 225

These numbers are based on areas with 9 ft. ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.

Overview

The Odorox® Boss™ unit is the right choice for the professional fire and water damage restoration contractor. It can deodorize and decontaminate up to 2000 sq. ft.

This unit is designed for heavy concentration processing and operates using only 1.9 amps. The Boss™ unit is equipped with a selector switch for 1 or 2 Odorox® hydroxyl generating optics and a washable filter.

The built-in fan is adjustable from approximately 250 to 630 cfm which makes this unit very versatile. Turn the fan to low to deodorize small areas such as cars, RVs, boats, bedrooms or offices. This setting is also ideal for tenting damaged contents on-site. Turn the fan to high and you have the ability to treat larger areas such as basements, homes, and businesses. Select a lower fan speed to maximize hydroxyl production within a smaller space.

Specifications

Dimensions (w, l, h): 12.1" x 18.5" x 25" / (307mm x 470mm x 635mm)

Weight: 35 lbs. (16 Kg)

Power: 120V @ 1.9 amps

Control: Speed control/ selector switch

Meter: 1/10 quartz hour meter

Mobility: Handle / rubber feet (optional wheeled cart)

Finish: Bronze powder coat

Noise Level: <55 dBA

Number of Optics: 2

Air inlet / Outlet: Louvered panel / 6" (152.4mm) rectangle

Fans & Rating: One 630 CFM

Filter: One, 9" x 18"x 1" (228.6mm x 457.2mm x 25.4mm), washable

Certification: ETL Canada/US - CSA & UL standards



The Boss XL3™ Unit



Overview

The Odorox® Boss XL3™ unit is the right choice for large area odor control resulting from fires, flooding, sewer backup, contamination, toxic odors, and chemical spills. This unit is designed for use with your existing air mover (air mover is NOT included).

The Boss XL3™ unit will provide an optimal concentration of Odorox® device hydroxyls to treat large areas affected by fire, smoke, flood, nicotine, grey/black water, decomposition, mold, sewage, chemical spills/off gassing, and any other odor problem you may encounter.

This unit allows you to decontaminate and deodorize while you dry because it joins directly to your existing air movers. It is equipped with a selector switch for 2 or 3 Odorox® hydroxyl generating optics and operates using only 1.6 amps.

Recommended Use Guidelines

Maximum Treatment Area (sq. ft.): 3000

Minimum Treatment Area by Contamination Level (sq. ft.)

- Light: 675
- Moderate: 450
- Heavy: 330

These numbers are based on areas with 9 ft. ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.

Specifications

Dimensions (w, l, h): 11.12" x 20.25" x 20.25"
(282.4mm x 514.4mm x 514.5mm)

Weight: 25 lbs. (11.4 kg)

Power: 120V @ 1.0 amps

Control: Selector switch & pressure switch which activates from positive air flow

Meter: 1/10 quartz hour meter

Mobility: Handle / rubber feet

Finish: Bronze powder coat

Noise Level: N/A

Number of Optics: 3

Air inlet / Outlet: Louvered panel/ 7"
(117.8mm) spout

Fans & Rating: N/A

Filters: One, 9.75" x 10.68" x 0.50" (247.7mm x 271.3mm x 12.7mm)

Certification: ETL Canada/US - CSA & UL standards



The Decon Scrubber™ Unit



Overview

The Odorox® Decon Scrubber™ unit is the right choice for particle capture and decontamination of large volumes of pollutants from the air and surfaces.

This unit is finely tuned to eliminate odors and particulate associated with bacterial, viral, and mold contamination. It is designed for capture of large amounts of smoke, ash, animal dander, and pollen. The unit will also neutralize odors caused by burnt plastics, organic matter, and chemicals.

It is wheeled for mobility and works well in medium to large commercial facilities like hospitals, clinics, schools, offices, prisons, manufacturing, and agricultural facilities. It is ideal for disaster restoration firms.

This unit is engineered and designed with an optional HEPA filtration system.

Recommended Use Guidelines

Maximum Treatment Area (sq. ft.) Decon Scrubber™: 2000

Maximum Treatment Area (sq. ft.) DeconXL™: 3000

Minimum Treatment Area by Contamination Level (sq. ft.)

Decon Scrubber™

- Light: 225
- Moderate: 150
- Heavy: 100

These numbers are based on areas with 9 ft. ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.

Specifications

Dimensions (w, l, h): 28" x 27" x 45" (with wheels & handles) (711mm x 686mm x 1143mm)

Weight: 132 lbs, (60 Kg)

Power: 120V @ 12 Amps

Control: Variable speed/ selector switches

Meter: 1/10 quartz hour meter

Mobility: Wheeled

Finish: Hammer tone blue powder coat

Noise Level: <60 dBA

Number of Optics: 3

Air inlet / Outlet: Louvered panel

Fans & Rating: One 1690 CFM

Filters: (2) 21.875" x 15.875" x 2" High Cap (MERV 8), (1) 21.125" x 21.875" x 4" High Cap (MERV 13), optional HEPA 4" block

Certification: ETL Canada/US - CSA & UL standards



The HRC06™ Unit



Overview

The Odorox® HRC06™ (Hydroxyl Room Curtain) unit is used to neutralize odors, bacteria, virus, VOC's, off-gassing, and mold contamination.

It is ideal for commercial, agricultural, institutional, hazmat, veterinary, or hospitality use. It is equipped with switch selectable 3 or 6 Odorox® hydroxyl generating optics. The unit is designed for continuous operation to blanket your odor source.



Specifications

Dimensions (w, l, h): 15.18" x 44.38" X 28.03"
/ (386 mm x 1128 mm x 712 mm)

Weight: 138 lbs. (62.7 kg)

Power: 120 VAC 60Hz @ 8 amps (max)

Controls: Switch selectable 3 or 6 optics

Meters: Indicates operating hours

Number of Optics: 6

Fan Control: 1512 CFM, 4000 FPM (max)
w/36" nozzle

Fan Noise Levels: Sound level @ 10 feet (3M)
from the unit: 60 dB(A)

Certification: ETL Canada/US - CSA & UL
standards



Recommended Use Guidelines

Maximum Treatment Area (sq. ft.): 6000

Minimum Treatment Area by Contamination Level (sq. ft.)

- Light: 1250
- Moderate: 910
- Heavy: 700

These numbers are based on areas with 9 ft. ceiling height and normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.



The MVP14™ Unit



Overview

The MVP™ series units are capable of rapidly breaking down massive amounts and type of Volatile Organic Compounds (VOC's) while simultaneously neutralizing a long list of biological pathogens.

The MVP14™ unit is designed for heavy duty air processing operations such as pig and chicken farms, food processing, paper mills, waste water treatment facilities, trash transfer sites, rendering plants, etc.



Specifications

Dimensions (w, l, h): 36" x 44" x 19"
(914.1mm x 1117.6mm x 482.6mm)

(Optional motor and light shield)

Weight: 140 lbs. (63.6 kg)

Power: 120V 60Hz @ 16 amps

Control: Speed control / selector switch

PLC / touchscreen control

Meter: 1/10 quartz hour meter

Finish: Marine grade aluminum exterior

Number of Optics: 14

Air inlet / Outlet: 14" (355.6mm) round / 14"
(355.6mm) round

Fans & Rating: Optional 1400 CFM

Filter: Optional

Oxidants: OH (Hydroxyls) and Trace O3
(residual/ non-accumulative)

Certification: ETL Canada/US - CSA & UL
standards



The MVP48™ Unit



Overview

The MVP™ series units are capable of rapidly breaking down massive amounts and type of Volatile Organic Compounds (VOC's) while simultaneously neutralizing a long list of biological pathogens.

The MVP48™ unit is designed for heavy duty air processing in large operations such as pig and chicken farms, food processing, paper mills, waste water treatment facilities, trash transfer sites, rendering plants, etc.

Specifications

Dimensions (w, l, h): 39" x 31" x 84.5"
(990.6mm x 787.4mm x 2146.3mm)

Weight: 455 lbs. (206.8 kg)

Power: 120/240V 60Hz @ 20 amps

Control: PLC / touchscreen control, auto mode w/ V.O.C. sensor

Finish: Marine grade aluminum exterior

Number of Optics: 48

Fans & Rating: One 5000 CFM

Airflow: Depends on install

Filter: Optional

Oxidants: OH (Hydroxyls) and Trace O3
(residual/ non-accumulative)

Certification: ETL Canada/US - CSA & UL standards



Odorox® Product Line: Knowledge Check



So Many Devices Knowledge Check:

Recap: Think back to the situation with Steven. He was new to the Odorox® product training class and was amazed at all the different devices HGI has to offer.

He asked the instructor, *“Why are there so many devices to choose from?”*

- ☐ With the information you just learned about each product, would you add or change how you would respond to Steven? Why are there so many different Odorox® products?

- ☒ Review key terms and topics you could include in your response.

Section Knowledge Check:

- ☐ Answer the following questions:

1. What model would you place in a 300 sq. ft. hotel room that was full of burnt popcorn smell?
2. The maximum and minimum treatment areas are based off of a _____ ceiling height.
3. The Odorox® _____ series is designed for heavy duty air processing operations.

- ☒ Answers:



Odorox® Product Line: In the Field

Now that you have learned about each Odorox® device, practice using your knowledge learned with the following scenario.



Long-term Care Facility: After finishing a training course, Julie accompanies Martin into the field. Martin has been asked to assess several hot spots in a local long-term care facility. The facility administrator directs Martin and Julie to a resident room that needs to be prepped for the next resident. Unfortunately, a colostomy bag was dropped in the room. The physical matter was cleaned up but the intense odors are still quite evident and must be dealt with before the new arrival is admitted. They look over the product contact sheets.

Martin asks Julie which Odorox® unit she thinks would be most appropriate for the situation.

? How would you respond to Martin? Which Odorox® device meets the needs of this situation?

✓ Answers:

Tips

- Always carry the Odorox® Contact Sheets with you and use them.
- Don't always go with the least expensive solution. Choose the device that meets the needs of the situation.

Lessons learned

- Smaller devices would not have made a difference with these types of odors. The administrator would have lost confidence in the product. Remember, the administrator had a strict timeline.
- Anything less than the correct device will not get the job done in the allotted time.



Odorox® Product Line: Summary

Recommended Use Guidelines

Odorox® Models	Number of Optics	Recommended Maximum Treatment Area ¹ (sq. ft.)	Recommended Minimum Treatment Area ^{1, 5} by Contamination Level (sq. ft.)		
			Light ²	Moderate ³	Heavy ⁴
SanX™	1	300	75	50	N/A ⁶
SlimLine™	1	1500	200	125	N/A ⁶
IDU™	2	2000	300	200	N/A ⁶
IDU™ X	2	2750	450	300	N/A ⁶
IDU™ S	2	3500	600	400	250
MDU™	2	1800	150	100	N/A ⁶
Oasis™	1	2150	300	200	N/A ⁶
Boss™	2	2000	450	300	225
Boss XL3™	3	3000	675	450	330
Decon Scrubber™	3	2000	225	150	100
Decon XL Scrubber™	3	3000	675	450	330
HRC06™ (3 Optics on)	6	3000	650	475	350
HRC06™ (6 Optics on)	6	6000	1250	910	700
MVP14™	14	Small facilities			
MVP48™	48	Large facilities			

Notes

1. Based on 9 ft. ceiling height
2. Residential/commercial light off-gassing (carpet, paint, furniture), light cooking odor, etc.
3. Residential with medium odor sources (pets, cooking, nicotine), commercial off-gassing (carpet, paint, furniture), body odor, perfumes, etc.
4. Fire and smoke, flood, nicotine, grey/black water, decomposition, mold, sewage, chemical spills/off-gassing, garbage, barns/livestock, etc.
5. Based on normal air exchanges and/or ventilation (i.e. 4 or 5 times per hour). Conditions with limited air exchanges or ventilation will require further caution.
6. Not designed for heavy contaminants



Make the Sale: Summary

Over the past two sections, you have learned the ins and outs of making the sale. You have learned how to recognize needs and concerns as well as how to overcome objections, and you have learned specific details about each device in the Odorox® product line.

Questions Answered

- Where the technology will work
- How the technology meets challenges faced by various industries
- Which Odorox® products are appropriate for various situations
- Which odors do Odorox® devices eliminate
- Recommended use guidelines for Odorox® devices

What You Learned

- Air and surface contamination costs businesses billions of dollars each year.
- Odorox® technology provides solutions to residential, commercial, industrial, hospitality, agricultural, medical, and disaster restoration verticals.
 - Odorox® devices can be used in occupied areas
 - More effective than filters, chemical, masking agents, and ozone
 - Ideal for eradicating unpleasant odors, VOC's, chemical fumes, and gases
 - Kills bacteria, virus, and mold
 - Low operating and maintenance costs
- Studies confirm that Odorox® systems are safe and green. Odorox® devices imitate "Nature's Broom."
- Odorox® hydroxyl generators are powerful, safe and effective neutralizers. The devices have sufficient BDE to eliminate bacteria, viruses, mold, odors, VOC's, and allergens.
- The technology's effectiveness depends on correct implementation. Experiment with the products to discover all of their potential uses.
- Use the product cover sheets to select the appropriate Odorox® device. The right device will depend on the contamination area and contamination level: light, moderate, or heavy.

Coming Up Next

Now that you have made the sale, it is time for you to learn how to follow up. In the next two sections, you will learn how to connect with your customers and discover new sales opportunities.



Build Relationships and Use References: Introduction

Follow Up by Building Relationships and Using References

After making a sale or even proposing a solution, it is critical to build relationships and use references to show proof of concept and find new opportunities. By identifying needs in your community and actively seeking consumers yourself, not only will you get more jobs, but your jobs may end up being much more rewarding.

This section will take you through three challenges which will help you see how other Odorox® dealers and salespeople have found and met the needs of members of their communities. You can help yourself become a better sales person by learning from other's successes and mistakes.

Purpose

After completing this section, you should be able to answer questions regarding:

- How Odorox® has worked in various situations
- How to build relationships

Content

In this section, you will learn about:

- Various Odorox® device dealers' experiences including:
 - Tallowmasters Rendering Facility
 - Ron's Big House of Books
 - LeBraun's Condominiums

Estimated Completion Time: 24 Min

Menu

HGI & the Odorox Brand

Selling Approach

Prepare

Know the Product

Know the Competition

Make the Sale

Recognize Needs & Concerns

Share Benefits & Features

Follow Up

Identify & Use References

Identify New Opportunities

Course Summary



Building Relationships and Using References

Tallowmasters Rendering Facility



The Challenge

Tallowmasters is a rendering facility in Miami, FL that accepts all 'past date' protein items from stores and restaurants, tailings and cast-off items from fish cleaning facilities, and used oil products from nearby restaurants. Odors from the waste were exacerbated by having 150,000-200,000 pounds of it sitting in open-air bins while waiting to be processed. Resultant odors drew the attention of flies, rats, other pests, and irate neighbors. Odor fines were levied at \$25,000 per day.

In addition to the stench, processing created an oil vapor envelope that encased the odors, making them far more difficult to address. The oil vapor was so thick that it created oil stalactites on ceilings and the electrical conduits. The current practice to remediate the odors was to apply chemicals to the exiting air-stream; this action reduced facility odors by only 30-35% at best, costs could be as high as \$100,000 per month; these measures did not address the oil vapor envelope.



Click the video to see Mark's experience at a rendering plant.

The Solution

HGI® found out about Tallowmasters through the media. They contacted the facility and worked with them for over a year to learn their business concerns. The operators wanted to know that the technology would work in cold and heat, in dry season and monsoon season. HGI® agreed to study the long-term effects of the Odorox® system under all these conditions. In July 2008, several MVP™ series technology devices were installed within the facility.

The Results

Odorox® technology kept proteins from spoiling so plant operations could now be streamlined. The facility operated more efficiently due to reduced costs for cleaning and maintenance, which were no longer thwarted by the 'oil fog.' As oil vapor was neutralized by the Odorox® device effect, the respiratory and ocular issues it caused ceased and oil stalactites eventually evaporated. Odor violation fees ceased and the lawyer that was kept on retainer to defend the facility against the city was no longer needed. Flies and pests vanished and the cats that were used as 'mousers' were sold.

Tips

- Offer the solution that works best for your client's business needs and concerns.
- Use case studies and successful solutions to highlight how the solution you are offering worked for other client's with the same business needs and concerns.

Lessons Learned

- Build relationships by taking the time to understand the client's business needs and concerns.
- Not all results will be obvious or known prior to implementing the system.



Building Relationships and Using References: Knowledge Check

☐ ? How can I use the Tallowmasters' case study to help me in my business model?

☒ Review some examples of ways Tallowmaster's could help you in your business model

Think about the following questions:

- Do you think it was worth the time and effort to pursue Tallowmasters for a full year?
- How could you use this extreme situation and case study to show hydroxyl effectiveness in a smaller situation?
- What steps can you do to help you get out of your comfort zone and take on large challenges such as Tallowmasters?

☐ ? Answer the following questions:

1. A business model helps us _____ our sales strategy.
2. We know all the benefits of using the Odorox® system.

☒ Answers:



Building Relationships and Using References

Ron's Big House of Books



The Challenge

An electrical fire broke out at Ron's Big House of Books. Fortunately there was no direct physical harm to his massive inventory, but the odor permeated the warehouse and all the books had absorbed the smoke odor. Ron had five days to clear up the odor before an enormous crowd was expected for a book signing and meet-and-greet with a very prestigious author. Ron also worried about the customer service repercussions of this business interruption even though insurance would pay \$30,000 per day for lost sales.

The Solution

Horace, an Odorox® dealer located across the street from Ron's warehouse, noticed the fire engines and dropped by to see if Odorox® products might be able to lend a hand. Horace put pertinent documents together to leave with the appropriate people in the warehouse. Horace, was met at the door by the store manager, and was immediately taken to meet Ron. Horace reviewed several case histories for both the store manager and Ron. The case histories included the Miami Costco Fire. Ron was familiar with the multinational insurance company involved, and called them to verify the information; the head claims manager confirmed the successful results. Ron gave Horace two days to get rid of the odor in the warehouse. Horace arranged to rent one MVP48™ which was delivered several hours later. Horace also installed two MVP14™ units, two BossXL3™ devices, and 20 air movers. Within 45minutes the air quality in the building started to change. The MVP48™, delivered at 8:30pm, was running by 9:02. The effect was almost immediate; it took care of the bulk of the warehouse while the other Odorox® devices covered dead air spots. Horace stayed the night and readjusted the air movement so that all the units created a continuous, circular air movement, which accelerated the hydroxyl effect.

The Results

At 9:05am the next morning, Ron walked in and was impressed, as was all the returning staff. They were able to open at 10:00am, as usual. Ron had staff start putting up the decorations for the book signing. He was able to have his event, which was a large boost in sales for his flagship store. Because Horace was able to save Ron's entire inventory, the insurance company wrote Horace a check for 5% of the total value of the goods saved, plus costs he incurred in deodorizing the warehouse.

Tips

- Use case studies and successful solutions to highlight how the solution you are offering worked for other client's with the same or similar business needs and concerns.

Lessons Learned

- Be prepared for emergencies and unexpected opportunities for offering solutions.
- Selling solutions can be time intensive and require long, unorthodox hours.



Relationships and References Knowledge Check

? What did you learn from Horace's and Ron's interaction?

☒ Review key terms and topics you could include in your response

Think about the following questions:

- How did Horace know that it would be important to bring relevant information to the first meeting?
- How did Horace know that smoke odors could be effectively handled by the Odorox® devices?
- What do you think helped contribute to Horace's success?

? Answer the following questions:

1. Examples and sales aids _____ our business model.
2. All applications require the same number of units.
3. Other sources of income may include _____ from insurance companies for saving inventory in warehouses.

 **Answers:**



Building Relationships and Using References



LeBraun's Condominiums

The Challenge

LeBraun owns a large string of condominiums on the southern Atlantic and Gulf Coasts. He wanted to remove odors from a recently vacated unit using green technology. If it worked, he would recommend his building manager use the technology in all his condominiums. He talked to Daniel, the local Odorox® dealer,

about using his Odorox® technology; Daniel accompanied LeBraun to the unit, which had a strong odor of cat urine, even though the condominiums are supposed to be pet-free. They determined that the odors were emanating from a bedroom in the unit. Daniel was told that replacing the carpet was not an option and that he had five days to get rid of the odor completely.

The Solution

Daniel decided that because the bedroom with the cat odor was only 200 sq. ft., he would use either the SanX™ or the SlimLine™. He wasn't sure which unit to place, so Daniel placed the SlimLine™ unit in the condominium that night. Over the next few days, Daniel got preoccupied and forgot about the SlimLine™. When he remembered it four days later, he went back to the condominium to see how well the SlimLine™ did. When he opened the door, he was genuinely shocked to find that the cat odor was still there. Panicked, and with only 12 hours to rid the room of the odor, Daniel rushed to the store, got a Boss™ unit, and then rushed it back to the condominium. Thinking that it would remediate the odor, he shut the running Boss™ unit inside the bedroom and removed the SlimLine™ unit.



The Results

Both LeBraun and Daniel arrived at the condo at the same time on Monday morning. As they entered together, both noticed a reduction in the odor, but because the odor was not eliminated, Daniel was not able to make a sale for units or services and lost out on referrals to other condominium owners and building managers.

Tips

- Actively seek potential clients; don't wait for them to find you.
- Treat each customer as if they were your most important client. They are.

Lessons Learned

- Be conscientious about following up with Odorox® units that have been placed, even on the 'easy' jobs.
- Have a working knowledge of what each unit is capable of and the applications for which it is most appropriate.



Relationships and References Knowledge Check

☐ What did you learn from Daniel's misfortune?

☒ Review key terms and topics you could include in your response

Think about the following questions:

- What was Daniel's biggest mistake?
- How would you do things differently than Daniel to get the sale?
- Why didn't the SlimLine™ unit work?

☐ Answer the following questions:

1. _____ is when you contact a customer that you haven't met before.
2. Sometimes clients on small jobs can refer us to prospective clients for large jobs.
3. Having poor client service on a job every once in a while won't hurt my business.

☒ Answers:



Relationships and References Module Knowledge Check

☐ **What are some good ways to build client relationships?**

☒ **Review key terms and topics you could include in your response**

Think about the following questions:

- How important is it to know the capabilities of each unit?
- How do you determine a client's business needs and concerns?
- Why can't you meet every business need cost effectively?

☐ **Answer the following questions:**

1. Using sales aids with case studies that the technology works.
2. Sometimes there are unforeseen benefits of using Odorox® technology.
3. Even small jobs have the potential of creating larger ones.
4. Taking the time to determine a customer's business needs and concerns is an example of

☒ **Answers:**



Summary: Relationships and References

What we have learned

Providing Excellent Client Services

- Treat each person as if they are your most important client. Even 'small' jobs have the potential for creating large income streams.
- Spend time building relationships with clients.
- Take time to follow up with the equipment and the client to make sure business needs and concerns are being met.
- Use sales aids, case studies, and reports to show the effectiveness of Odorox® technology so that clients are confident in the solution.
- Know the capabilities and limitations of the equipment so that you can propose the most appropriate and cost-effective solution to meet identified needs.

Determining Client Needs

Explicit

- Safety issues that are known for that market/application
- Observable issues such as odor, pests, and contamination
- Needs that the customer identifies as such, "I need..."
- Needs that other invested parties identify, "The owner says we need..."

Implicit

- Needs that the client talks about, but doesn't explicitly identify, "I worry about..." or "It should be..."
- Needs that may have been identified by others in similar situations
- Client's personal concerns that might not be business-related

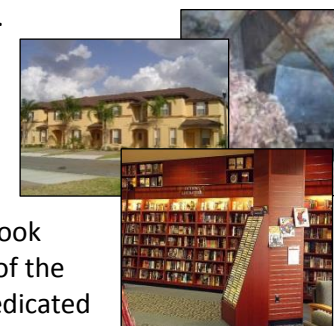
How It Applies

To Your Business

As you gain new clients, take time to understand their business needs. When you understand the challenge, know the capabilities of Odorox® products, and follow up on how the product is working. Clients will appreciate your competence and attention. This will better connect you with your clients and generate more business.

In the Real World

In each scenario a client had a specific need. Tallowmasters needed a way to continually control odors and get rid of oil vapors, without costing the company a lot of money. HGI found out about Tallowmasters challenge and approached the company about finding a solution. HGI took time to study the challenge and the effects of the proposed solution, showing that HGI was dedicated to helping Tallowmasters.



Horace gained Ron's Big House of Books as a client because he provided resources about how Odorox® technology could help Ron's business recover from the fire. Since Ron did not know much about Horace or Odorox®, Horace used a compelling reference to prove Odorox® technology worked. This helped Horace gain Ron's trust. Horace kept that trust by using the right device for Ron's bookstore.

In Daniel's case, not showing that you understand or care about the customer's situation can be detrimental to your business. Because Daniel didn't follow up on how the device was working, LeBraun may think that Odorox® products don't work. If LeBraun talks about his experience, Daniel will lose out on opportunities with other potential clients.



Identifying New and Additional Leads: Introduction

Follow Up by Building Relationships and Using References

Our mission is to improve quality of life by naturally and ecologically improving the air quality. To meet this goal, it is important that you discover who can use the Odorox® products to make their lives healthier and more comfortable.

This section will teach you where to look and how to find new and additional opportunities.

Purpose

After completing this section, you should be able to answer questions regarding:

- Where to find your next leads
- Where to look for additional opportunities

Content

In this section, you will learn about:

- Always looking for opportunities to meet a need
- Analyzing your Territory
- Industries where you may find challenges Odorox® technology can solve

Estimated Completion Time: 10 Min

Menu

HGI & the Odorox® Brand

Sales Approach

Prepare

Know the Product

Know the Competition

Make the Sale

Recognize Needs & Concerns

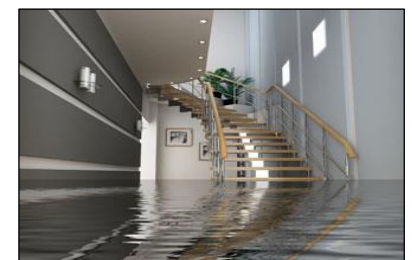
Share Benefits & Features

Follow Up

Identify & Use References

Identify New Opportunities

Course Summary



Identifying New and Additional Leads

Always Look for the Opportunity to Meet a Need

Obviously, none of the information covered here will be of any good if you don't get out and share it with potential clients. It can be easy to overlook opportunities to share, or to feel like you've exhausted your contacts, but there are opportunities everywhere if you constantly look for needs you can meet.



For example, Amy is an Odorox® distributor who recently made a big sale to a prestigious horse stable in her hometown. She could walk away from that sale with her profit, feeling good that she solved someone's need, or she could turn this sale into more opportunities:

- She could ask for referrals to other stables in the area.
- She could ask the vets about other veterinary barn systems that are conducive to pathogens and fungi.
- She could approach those who stable their horses there, as they are likely to have large homes and/or expensive hobbies that could benefit from Odorox® products (e.g., boating, art collection and restoration, etc.,).

There are so many ways to turn one good sale into more. Be sure to look for needs and follow the money.

Analyze Your Territory and the People Who Live There

To make sure you don't miss any opportunities, take a detailed inventory of your sales territory and the people that you know who live there. Reviewing the questions below should help you to get started. Think of answers to the questions for your territory and about how the answers might provide leads.

Sales Territory Analysis

- Is there a substantial agricultural industry?
- Is there a significant body of water that supports commercial interests?
- Are there rail yards?
- Where is the city refuse, and are there residential areas near it?
- Is there a recreational vehicle rental business nearby?

Potential Clients in the Territory

- Do you know any realtors?
- Do you know any property managers?
- Do you know any landlords?
- Do you know anyone in hospitality or food services?

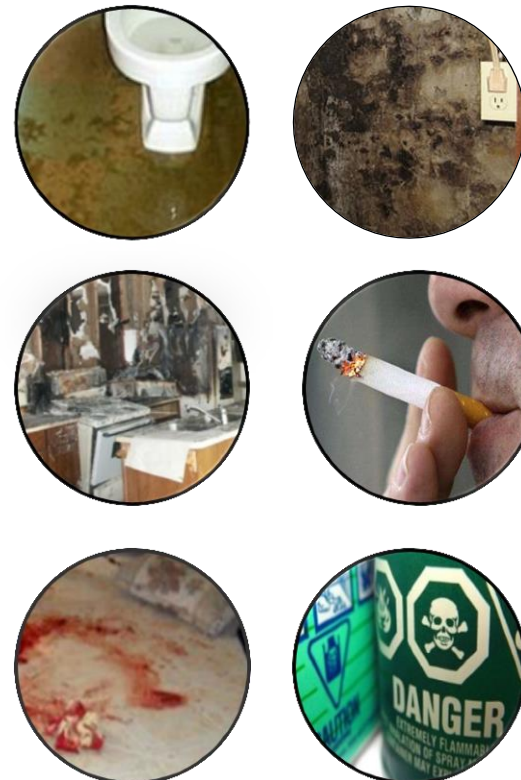


Identifying New and Additional Leads

Where There's an Odor, There's an Odorox® Product Opportunity!

In answering those questions, you should begin to see just how many opportunities are all around you. Take a moment to review the following industries where you might find challenges you and Odorox® products can help solve.

- **Animal** – Animal health products, pet supplies, farms, Humane Society, veterinaries, etc.
- **Care** – Health maintenance organizations (HMOs), beauty spas/nails, child/day care centers, personal care homes, nursing/retirement homes, etc.
- **Food** – Butchers, seafood wholesalers, food storage, mushroom farms, grocers, etc.
- **Hospitality** – Hotels, conference centers, cafeterias, hotel/motel/restaurant suppliers, bars and taverns, etc.
- **HVAC/Air** – Home/commercial/industrial air conditioning suppliers, casinos/gaming, call centers, historical preservation and restoration services, etc.
- **Industrial** – Engineers, biomedical companies, waste water treatments, etc.
- **Medical** – Baby health services, diagnostic laboratories, entomologists, clinics, laboratories, dental offices, etc.
- **Restoration** – Accident/crime scene management, art restoration and conservation, carpet and rug cleaners, catastrophic clean up, environmental and ecological services, etc.
- **Sports** – Golf cart storage area, polo clubs, race tracks, arenas, locker rooms/showers, equipment rooms, gyms, etc.
- **Transport** – Ambulance services, boat builders/manufacturers, boat cleaners, marinas, recreations vehicle rentals, trucking companies, etc.
- **Waste** – Waste management, waste rooms, ozone machines, septic tanks, etc.



Identifying New and Additional Leads: Summary

Where Are Your Next Leads?

Now it's time to get started finding your next leads! Brainstorm a list of potential leads in the box below. If you have trouble getting started, review the questions below the box.

Questions to think about when identifying leads:

What is in your territory?

What is the main, secondary, or tertiary reason that the town grew up right where it did?

What is the advantage to really knowing your territory community?



Summary: Follow-up

What We Have Learned

- Create a business model. Use the Prepare, Make the Sale, and Follow Up sales approach to help you succeed.
- Provide excellent customer service. Build relationships with clients.
- Work at determining client needs.
- Know the capabilities and limitations of the equipment. Select the most appropriate and cost-effective solution to meet the identified need.
- There are many opportunities all around you. Where there's an odor, there's an Odorox® opportunity.
- Look for industries where you may find challenges Odorox® technology can solve. These include animal, healthcare, food processing, hospitality, HVAC/air, industrial, medical, restoration, sports, transport, and waste.
- Analyze your territory for new opportunities and challenges.



How it Applies

To your business

Growing your business requires you to continue to build relationships with your client base. If you provide winning solutions to clients, they may refer you to others in their industry, others in related industries, or be willing to give testimonials on how well the products work, and how those products met their unique needs.

In the real world

You've read several case studies about how distributors were able (or not able) to provide excellent service and winning solutions to clients. Distributors that were willing to spend time with clients were better able to meet their needs.

Horace was able to use an unfortunate incident with a neighbor as an opportunity to build a working relationship that resulted in a winning solution for both Ron and Horace. Being alert for opportunities is a good strategy, but a better strategy is to analyze your territory and actively seek out new opportunities for providing solutions.



Course Summary

Congratulations!

You have completed the Odorox® Product Sales Training Course. You are on your way to becoming a successful Odorox® device distributor. Using the skills and knowledge that you have just acquired will take practice and review of this information. As you find winning solutions to customer challenges, you will become more confident and knowledgeable about your business. Refer to this guide often to help you incorporate the skills and knowledge we have discussed into your business. Keep honing your Prepare, Make the Sale, and Follow Up skills by continuing to learn and apply these principles daily.

HGI and the Odorox® Brand

HGI is committed to the continuous building of, state-of-the-art technology, providing products at the highest level of excellence, setting the industry standard to benefit people and animals globally, and keeping the indoor environment green. Our mission is to improve quality of life by naturally and ecologically improving air quality, neutralizing potentially harmful pathogens such as mold, mildew, bacteria, virus, and neutralizing offensive odors.

Sales Approach

Using the following overview will help you remember what we have covered in this training. Following these three steps will help you build your business, create winning solutions, and succeed as an Odorox® product distributor.

Prepare

- **Know the Product:** You know the science and technology behind Odorox® products.
- **Know the Competition:** You saw how Odorox® technology outshines the competition.

Make the Sale

- **Recognize Needs and Concerns:** You understand how to recognize needs and concerns as well as overcome objections.
- **Share Product Features and Benefits:** You know specific details about each device in the Odorox® product line.

Follow Up

- **Identify and Use a Reference:** You can connect with your clients.
- **Identify New Opportunities:** You know how to find new sales opportunities.





HGI's Odorox® System Efficacy, Chemistry and Safety

Introduction

It has been known since the 1970's that atmospheric hydroxyl radicals (hydroxyls) are continuously produced by the action of the sun's radiated ultra violet light (UV) on oxygen and water vapor in our atmosphere. It was only recently that researchers determined that the hydroxyl concentration during the day was between 500,000 to 2.6 million hydroxyls in each cubic centimeter of ambient outdoor air. Hydroxyls are the main driving force behind the daytime reactions with hydrocarbons in the troposphere and decompose most natural and man-made pollutants including greenhouse gases like methane and ozone. Atmospheric hydroxyls are also proven to kill bacteria, virus, and mold because they are able to penetrate their permeable cell membranes. Atmospheric hydroxyls are a critical component of nature's dynamic ability to provide environments that are free of pathogens and harmful chemicals.^{1, 2}

As our indoor environments have become increasingly closed off from the outdoors, we have come to depend on ventilation systems to maintain safe indoor air. Outdoor hydroxyls are very short-lived, however, and do not survive long enough to cleanse indoor air. Increasingly our homes, work places, indoor recreational and travel environments have chronic, unhealthy levels of Volatile Organic Compounds (VOC's) and pathogens. Indoor air sanitizing systems were developed to address these contaminants.

Efficacy

Historically, ozone generators were the first indoor sanitizing devices. Ozone is effective, but it reacts so slowly that high concentrations in the parts-per-million (ppm) range are needed to be effective. At these levels, ozone is toxic to humans and animals and damaging to materials.

When atmospheric hydroxyls were discovered to be nature's principal sanitizing agent, universities, government laboratories and corporations did much research on their chemistry in nature.^{1,2,3,4} Atmospheric hydroxyl radicals are a superior sanitizing agent as they are significantly more reactive than ozone – on the order of a million times more reactive. They effectively kill bacteria, virus and mold on both solid and porous materials and decompose a broader range of VOC's and inorganic gases than any other oxidant – even ozone – without damaging fabrics, latex, leather, rubber, plastic, vinyl, metal and other materials. Because atmospheric hydroxyls are so reactive, they do not linger in the indoor environment. These desirable properties have resulted in a number of commercial devices trying to produce atmospheric hydroxyl radicals to safely re-establish the natural cleansing cycle indoors. The efficacy of these systems has been demonstrated by empirical, chemical and bacteriological data broadly published by academic and commercial entities and verified by HGI internal studies.^{1,2,3,4,5}

Chemistry

There are two basic approaches to generating hydroxyls: the photocatalytic method and the use of multiple wavelength UV. The photocatalytic method radiates UV energy on a surface coated with a semiconducting catalyst like titanium dioxide. This promotes the formation of hydroxyl radicals and superoxide radicals near the catalyst surface where they then react with adsorbed VOC's. The method uses a long wavelength of UV energy so that little to no ozone is formed. Developed for the space shuttle, the approach generates sufficient oxidants to treat small volumes of air with low concentrations of VOC's, but is ineffective in larger volumes of air or with higher concentrations of VOC's. In these applications, the oxidant levels produced are too low to efficiently oxidize the VOC's and the resulting oxidized organic by-products. The result is a buildup of by-products, particularly formaldehyde. Researchers at the Lawrence Berkeley Research Laboratories have reported that the method intrinsically results in formaldehyde levels that are 3-4 times higher than background levels.^{3,4}

The Odorox[®] method utilizes multiple wavelength UV. These more powerful wavelengths of UV energy are produced so that far more effective concentrations of free hydroxyl radicals are generated directly within the reaction chamber. This enables oxidation of VOC's and pathogens with concentrations of reactive oxygen species which can be propagated throughout the treatment space, all of which contribute to air cleansing. HGI commissioned studies at the Lovelace Respiratory Research Institute (LRRI) to independently measure the rate of hydroxyl radical formation by an Odorox[®] Boss[™] system. They verified that the levels of hydroxyls produced were similar to those found in nature and that they reacted with airborne VOC's and other gases like nitric oxide, formaldehyde and ozone. Measured reaction rates are incredibly fast, on the order of 20-50 milliseconds. These studies have been further analyzed and interpreted by a leading industry expert in atmospheric hydroxyl radical chemistry, Dr. David Crosley.⁵

Airborne hydroxyls are the perfect sanitizing agent. They react with a broader range of chemicals and are over one million times faster than ozone, bleach or other sanitizing agents. They react principally by removing a hydrogen atom and forming an organic radical that is subsequently decomposed by continued oxidation. The organic radicals formed set up a complex chain reaction of many radical by-products. These by-products include secondary oxidants like peroxy and oxy radicals that are themselves good sanitizing and deodorizing agents as they are more stable than the original hydroxyl radical and able to penetrate large volumes of air. As in nature, the individual steps grow exponentially in complexity. The net result is that organic compounds are reduced in size and oxidized until they eventually form carbon dioxide, oxygen and water. As long as the system is running, the chain reactions persist.

As in nature, ozone is necessarily produced as a by-product of the UV irradiation process in air. Once formed it is decomposed by a variety of pathways including UV energy decomposition, reaction with VOC's and reaction with hydroxyls. Although hydroxyls will react with most VOC's before ozone can, ozone is an important part of the air cleaning process because of its ability to react with a special type of VOC, a carbon-carbon double bond - called an alkene - to generate hydroxyl radicals throughout the treatment space. Alkenes are produced in nature by general chemical reactions and by plants, animals and humans – which respire parts-per-billion (ppb) levels of an alkene called isoprene. Indoors, alkenes are generated by the out gassing of fabricated wood products, fabric, solvents, cleaning products (such as Pine-Sol[®], a pinene/terpene alcohol based cleaner) etc. and steady state levels in the ppb range are common. When ozone reacts with alkenes

they produce hydroxyl radicals that treat the air and surfaces far removed from the site of hydroxyl generation.

Safety

As a category, the FDA does not regulate or require premarket 510(k) approval for UV irradiation air cleaning devices since they irradiate ambient air and sanitize in a manner similar to that found in nature. The FDA and other regulatory agencies do monitor ozone and the smallest decomposition products from these devices - acetaldehyde and formaldehyde – as an indication of safety.

OSHA requires that indoor ozone levels are below 100 ppb for safe, long-exposure. Typical natural ozone levels range from 20-60 ppb. HGI technology maintains these same natural levels through the use of customized optics, system design optimization, recommended ventilation practices and machine selection for given volumes of treated air. For its larger industrial systems, HGI has integrated real-time interactive process controls so that oxidant levels can be accessed remotely and measured continuously, enabling machine settings to be adjusted automatically to maintain whatever oxidant levels that are required.

Acetaldehyde and formaldehyde build up as larger VOC's are decomposed by hydroxyls. They are the last products produced before complete oxidation to carbon dioxide and water. A device that produces sufficient concentrations of hydroxyl radicals will keep the steady state levels of these terminal oxidation products near background levels as these small VOC's react with hydroxyl radicals more rapidly than larger VOC's. This is what happens in nature. Studies at LRRI and Columbia Analytical Laboratories (Sunnyvale, CA) confirmed that HGI systems produce sufficiently high concentrations of hydroxyls to efficiently decompose ambient VOC's and their by-products so that formaldehyde and acetaldehyde rapidly reached low steady state levels that remained near ambient baseline levels of 10-15 ppb for extended periods.

Toxicology

Researchers such as Weschler and Shields have speculated on the potential health hazards of the oxidation products resulting from use of UV hydroxyl radical air sanitization devices indoors.⁶ At HGI's request, the National Institute of Environmental Health Sciences searched the NIH files, PubMed and the National Library of Medicine and "cannot find any hard science or research indicating that hydroxyl radical generation is harmful to human health. That applies to both atmospheric and man-made generation" (Colleen Chandler, NIEHS Office of Communications and Public Liaison, 08-05-2010). Further, at HGI's request, the CDC, FDA, OSHA and NIH researched their databases and did not find any data indicating that hydroxyls were unsafe. None of these agencies indicated that their approval was required for commercial use. It is not likely that this will change as hydroxyl radical sanitizing systems generate levels of these by-products that match those produced by the sun outdoors.

Although no adverse effect from the use of UV hydroxyl generators have ever been reported, there have been no toxicology studies to verify this. Therefore HGI conducted a comprehensive GLP Toxicity Study with an industry leading clinical contract research company, Comparative Biosciences, Inc. This study involved the use of forty (40) test rats and twenty (20) control rats and was conducted in compliance with the US Food and Drug Administration's Good Laboratory Practices regulations (21 CFR Part 58). Extensive data was collected including behavioral, physiological, neurological, hematology, clinical chemical analysis, neurology, ophthalmology, and

gross histopathology. The study results indicated that the test animals tolerated the exposure well with no abnormal clinical observations. There were no histopathology/cytopathology (cellular level) differences between the control rats and the exposed rats. During analysis, specific attention was paid to the skin, eyes, nasal turbinates, larynx/pharynx, and respiratory system. There were no changes in these organs and they appeared to be within normal limits in both the control and treated animals. Interestingly, it was noted that treated animals appeared to be more alert and social during the day-light hours than untreated animals. Note that these results are applicable only to HGI Odorox[®] systems, which use UV light of a particular bandwidth of wavelengths and custom optics in certain configurations. Other systems that use different optics, catalysts, or incorporate other methods such as adding different oxidizing agents or organic chemicals would need to be separately evaluated as the resulting mixture of by-products would be “unnatural” and could pose health problems.

In conclusion, HGI air/surface sanitizing systems have been proven to match the sun’s power in generating safe levels of hydroxyl radicals and secondary oxidants, including non-accumulating ozone, which together, effectively sanitize small and large indoor spaces.

HGI Scientific Advisory Board Publication

Dr. Connie Araps, Chairman

1. D. E. Heard, “Analytical Techniques for Atmospheric Measurement”, Blackwell Publishing, 2006 – professor at the University of Leeds, UK) and references cited therein.
2. R. Atkinson, “Kinetics and Mechanisms of the Gas-Phase Reactions of the Hydroxyl radicals with Organic Compounds”, Journal of Physical and Chemical Reference Data, Monograph No.1, 1989.
3. J. Rosenthal, “Study of Photocatalytic Oxidation Raises Questions About Formaldehyde as a Byproduct in Indoor Air”, Lawrence Berkeley National Laboratory, December 19, 2008.
4. A. T. Hodgson, D. P. Sullivan and W. J. Fisk, “Evaluation of Ultraviolet Photocatalytic Oxidation for Indoor Air Applications - Conversion of Volatile Organic Compounds at Low PPB Concentrations”, LBNL-58936, 2008.
5. HGI Scientific Advisory Board Report, Dr. C. Araps, Chairman, July 2011.
6. C. Weschler and H. Shields, Environmental Science and Technology, “Production of the Hydroxyl Radical in Indoor Air”, Vol. 30, No. 11, 3250-3258, 1196 and references cited therein.

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