

CALUTECH INC

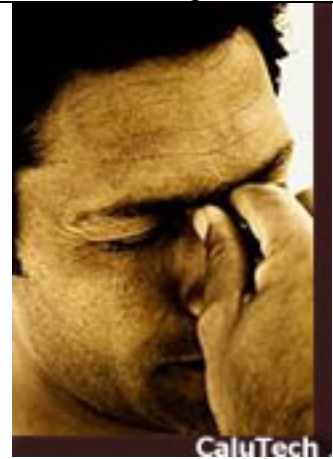
Environmental analysis of indoor air, including causes and suggested solutions

INDOOR AIR POLLUTION

Everyone faces many risks, including various pollutants and toxins in their daily environments. Most people know that outdoor air pollutants such as car exhaust, city smog, factory waste, etc. are toxic. But many people do not realize how dangerous the air inside buildings can be to their health. The EPA (U.S. Environmental Protection Agency) states that the air in even the largest and most industrialized cities is less toxic than air found in typical homes. Many people do not know that indoor air pollutants can be two to five times higher than outdoor air pollution and can sometimes be 100 times higher!

It is estimated the most people spend 90% or more of their time indoors. Because of this, the quality of the indoor air we breathe every day becomes critical. Additionally, those who are indoors for the longest periods are often those who are the most susceptible to the effects of indoor air pollution-including the elderly, the young, and the chronically ill.

Various micro-organisms such as bacteria, viruses, molds, and fungi often become airborne and this is a common cause of illness or allergy. With the threat of biological warfare, the eradication of airborne pathogens becomes even more important.



CAUSES OF INDOOR AIR POLLUTION

There are many items in a home or office that can be sources of indoor air pollution.

Building materials and furnishings:

- New or damp carpeting.
- Cabinets or furniture made of pressed-wood products.
- Deteriorated asbestos-containing insulation.

Combustion sources:

- Oil, gas, kerosene, coal, wood, tobacco products.

Combustion appliances (vented or unvented):

- Gas ranges and ovens, gas water heaters, furnaces, gas clothes dryers, wood or coal-burning stoves, fireplaces, and space heaters.

CAUSES OF INDOOR AIR POLLUTION (continued)

Products for cleaning and building maintenance:

Air fresheners, glues and adhesives, paints and coating materials.

Products for personal care or hobbies:

Hair spray, woodburning, soldering, welding.

Central heating and cooling systems:

Air ducts and shafts contaminated with mold and fungi.

Outdoor sources:

Radon, pesticides, outdoor air pollution (factories, etc.) and combustion engines such as in lawn mowers or vehicles.



Water vapor can affect air pollution as well. It results in wet surfaces and/or high humidity. This, in turn, promotes the growth of biological toxins such as mold, bacteria, and dust mites.

The amount of pollution a particular source gives off can vary widely, depending upon how old that source is and/or how well it has been maintained. For example, new carpeting can emit high levels of toxic gases while older carpeting has relatively few. A gas stove can give off much more carbon monoxide if it has not been properly adjusted compared to one that has been properly maintained.

Some sources of indoor air pollution release their toxins fairly continuously...these include things like building materials, central heating and cooling systems, air fresheners, etc. Other sources release pollutants erratically-these sources are typically related to activities in the building such as smoking, cooking, the use of solvents in hobbies, redecorating, or cleaning activities; and the use of pesticides and cleaning products. High levels of these toxins can remain in the air long after the source activity has ceased.

BIOLOGICAL CONTAMINANTS

Bacteria, viruses, mold, mildew, animal dander, cat saliva, dust mites, cockroaches and pollen are listed among the types of biological contaminants often present in homes or offices.

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BIOLOGICAL CONTAMINANTS (continued)

Sources of these pollutants are quite diverse:

- Viruses are transmitted by people and animals
- Pollens come from plants
- Pets have saliva and dander
- Bacteria are spread by people, animals, and soil/plant material
- Protein from urine in mice and rats is a potent allergen and can become airborne when dry

When biological contaminants enter the central/forced air heating and cooling systems, these systems become their breeding grounds. Mold, mildew, and other pollutants are then distributed throughout the home or office.

If standing water, water-damaged materials, or wet surfaces are present, they also become breeding grounds for mold, mildew, bacteria, and insects. House dust mites are a strong biological allergen for many people and these breed in damp, warm environments.

How Biological Contaminants Affect Health

Infectious illnesses are often transmitted through the air-diseases such as colds, flu, measles, and chicken pox. Molds and mildews release toxins that can cause disease. Biological contaminants can cause health problems with symptoms such as sneezing, watery eyes, lethargy, fever, digestive problems, coughing, shortness of breath, and dizziness. Those particularly at risk for such problems are the elderly, children, and people with breathing problems, allergies, and lung diseases.



Biological agents can trigger allergic reactions such as allergic rhinitis, asthma, and hypersensitivity pneumonitis. Only after repeated exposure to a biological allergen will an allergic reaction occur. This reaction may happen on the second exposure or after many exposures over time. Because of this, even those who have noticed no reactions at all or only mild reactions might suddenly become very sensitive to particular allergens.

Humidifier fever is an illness associated with exposure to toxins from biological contaminants that breed in large building ventilation systems, as well as home heating and cooling systems and humidifiers.

IMPROVING THE QUALITY OF INDOOR AIR

According to the EPA, there are three basic ways in which the quality of the air we breathe while indoors can be improved: controlling or removing the source, improving the ventilation, & cleaning and purifying the air.

1. Source Control

An effective way to improve indoor air quality is to eliminate individual sources of pollution or to reduce their emissions. Some sources, like those that contain asbestos, can be sealed or enclosed. Other sources, like gas stoves, can be properly maintained and adjusted to decrease the amount of emissions. Source control is often a more cost-effective approach than improving ventilation because increased ventilation increases energy costs. It is difficult to control the source of indoor air pollution, however, when the issue is biological contaminants. That's where CaluTech's UV comes in.



2. Ventilation Improvements



Increasing the amount of outdoor air that comes indoors can decrease the concentrations of indoor air pollutants. Most home heating and cooling systems, including forced air heating systems, do not mechanically bring fresh air into the home. In the absence of such a system, a homeowner's recourse is to open windows or doors, using window or attic fans, or running a window air conditioning unit with the vent open for all options.

Localized fans such as kitchen and bathroom exhaust fans can help by removing air pollution directly from the room where the fan is located.

Office buildings can pose special challenges. In the past, most buildings had windows that opened and airing out a stuffy room was commonplace. Differences between indoor and outdoor air pressure also helped ventilation by the movement of air through leaks in the building.

IMPROVING THE QUALITY OF INDOOR AIR (continued)

Today, most new office buildings have no operable windows, buildings are sealed tightly, and mechanical systems are the only way to exchange indoor air for the relatively cleaner outdoor air. Ventilation rates, or the rate at which outdoor air is supplied to a particular building, is specified by the building code. If these mechanical ventilation systems are poorly designed, operated, or maintained, the systems themselves can add to indoor air pollution levels. Sometimes in an effort to save energy costs, ventilation systems do not bring in proper amounts of fresh outdoor air. Air supply and return vents in particular rooms can be blocked or poorly placed so that the fresher outdoor air does not reach the people in the building.

The ventilation systems themselves can be a source of pollution by spreading biological contaminants that have been breeding in cooling towers, humidifiers, dehumidifiers, air conditioners, or the ductwork. Lastly, outdoor air intake vents may be placed in areas that bring in air that has been contaminated with vehicle exhaust, dumpster fumes, boiler emissions, or air vented from restrooms. In the event of biological warfare, these intake vents may be in areas accessible to the public and thus, susceptible to pathogens being placed in the intake vents. High output UV systems can destroy many of these bio-terrorism agents like Anthrax or Small Pox.

How the building is used can also contribute to indoor air pollution if it is not properly ventilated. Buildings that house multiple uses or businesses such as restaurants, print shops, dry cleaning stores, etc. have various emissions that may be circulated back into offices in the same building if proper precautions aren't taken.

3. Air Cleaners

Many types and sizes of air cleaners are available on the market, from relatively inexpensive table-top models to expensive and sophisticated whole building systems. Some air cleaning systems are quite effective at particle removal, while others (particularly table-top & tower models) are much less effective. Air cleaners are generally not designed to eliminate gaseous particles or living organisms. With UV-C germicidal light and Snapcat photocatalytic oxidation technology gases and living organisms can be destroyed for good.

Many companies tout "ozone generators" as the best thing for indoor air pollution. This is not the best way to purify indoor air. Next we'll take a close look at this technology, and show some references from various health departments nationwide regarding this type of air cleaning technology...

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Ozone Generators That Are Sold as Air Cleaners

Ozone generators intentionally produce the gas ozone and these machines are sold as air cleaners. According to the EPA, the vendors of ozone generators often make claims that encourage people to believe that these machines are always safe and effective in controlling indoor air pollution. For nearly 100 years health professionals have disagreed with these statements. Some manufacturers of ozone generators even claim that the federal government has approved these machines for use in occupied spaces. The EPA reports that NO federal agency has approved ozone generators for use in occupied spaces and indeed, ozone can actually cause health problems at high concentrations. Many state health departments recommend these not be used, ever.



The air we breathe is comprised of mainly oxygen and nitrogen. Two atoms of oxygen comprise the basic oxygen molecule that is the oxygen we breathe (O_2). A high voltage discharge (such as a thunderstorm) can create ozone by breaking apart the O_2 oxygen atoms. These extremely reactive oxygen atoms recombine in groups of three and the result is ozone (O_3) or trivalent oxygen, (also called "activated oxygen"). This third oxygen atom can detach from the O_3 molecule and attach itself to other molecules, such as pollution, thus altering its chemical composition. This property is the basis of the claims made by the manufacturers of ozone generators.

The EPA uses the phrase "good up high-bad nearby" to describe ozone. This phrase makes the distinction between ozone in the upper atmosphere ("stratospheric ozone") which helps filter out damaging radiation from the sun, and ozone in the lower atmosphere (in the air we breathe, 'ozone action day') which is harmful to the respiratory system. This harmful ozone can be produced via an interaction of sunlight with various chemicals in the environment such as emissions by vehicles and industrial plants.

Available scientific evidence shows that ozone has little ability to remove indoor air pollutants at concentrations that do not exceed public health standards. Some manufacturers or vendors of ozone generators claim that ozone will make almost every chemical pollutant harmless by producing a chemical reaction that leaves only carbon dioxide, oxygen and water. This claim is misleading to the public.

Scientific research shows that for chemicals commonly found indoors, the reaction with ozone may take months or years.

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OZONE GENERATORS (continued)

If ozone does not readily react with a chemical, irritating by-products are often the result. Ozone does not remove particles from the air such as dust and pollen. These particles are common causes of allergies. Some ozone machines include an “ion generator” or “ionizer” in the unit. An ionizer or ionic air purifier disperses negatively charged ions which attach to particles in the air. These particles then attach to surfaces such as walls or furniture. Scientific experiments have shown that ionizers are less effective in removing pollen, fungal spores, tobacco smoke, or dust particles than other methods of air cleaning such as high efficiency particle filters or ultraviolet light sterilization.

Evidence shows that at concentrations that do not exceed public health standards, ozone is not effective at removing many odor-causing chemicals. Evidence also shows that at concentrations that do not exceed public health standards, ozone does not effectively remove viruses, bacteria, mold, or other biological contaminants.

Some studies suggest that low levels of ozone may inhibit the growth of some biological pollutants and reduce their airborne concentrations. Ozone concentrations, however, would have to be 5 - 10 times higher than public health standards recommend to decontaminate the air sufficiently to prevent the regeneration of the biological contaminants once the ozone is removed.

Even high concentrations seem to have no effect on biological pollutants implanted in porous materials like ceiling tiles or duct lining. Simply put, the ozone produced by ozone generators may inhibit the growth of biological contaminants while the ozone is present, but it is quite unlikely to completely decontaminate the air unless concentrations are high enough to become a health concern to people and pets.

What's worse is that the ozone generators available produce varying and unreliable levels of ozone, even when used according to manufacturer instructions. Various factors can also influence the level of ozone produced in a room, including the size of a room, the setting of the machine, whether doors to the room are open or closed, and whether the ventilation system is turned on or off. Even if these machines are used in unoccupied spaces, when ozone is produced in high concentrations, damage can be caused to plants, rubber, electrical wire coatings, and fabrics and artwork containing susceptible dyes and pigments.

-- continued next page (references by state & federal authorities) --

WHAT THE GOVERNMENT THINKS ABOUT OZONE AIR CLEANERS

A list of reference material regarding their advice to consumers...

US NUCLEAR REGULATORY COMMISSION

"Even when ozone is present in low levels, inhaling it triggers a variety of health problems including chest pains, coughing, nausea, throat irritation, and congestion. It also can worsen bronchitis, heart disease, emphysema, and asthma, and reduce lung capacity"
<http://www.policyalmanac.org/environment/archive/ozone.shtml>

ENVIRONMENTAL PROTECTION AGENCY / EPA

"Scientific evidence shows that at concentrations that do not exceed public health standards ozone has little potential to remove indoor air pollutants"
http://www.epa.gov/iaq/pubs/images/ozone_generator.pdf

AMERICAN LUNG ASSOCIATION

"It can have damaging health effects, especially for persons with asthma and other lung diseases, children and the elderly. It is produced directly by ozone generators and indirectly by ion generators and some other electronic air cleaners. The American Lung Association suggests that ozone generators not be used."

NATIONAL INSTITUTE FOR ENVIRONMENTAL HEALTH

"no federal agency approves, much less recommends, ozone generators for use in occupied spaces."
<http://www.niehs.nih.gov/oc/factsheets/ozone/airfresh.htm>

STATE OF CALIFORNIA HEALTH DEPARTMENT

"People should avoid using indoor air cleaning devices that produce ozone, sometimes referred to by marketers as activated oxygen," said Jim Stratton, M.D., M.P.H., State Health Officer."

"Although ozone generating machines are promoted as air cleaners, independent studies have shown that the machines do not effectively destroy microbes, remove odor sources or reduce indoor pollutants sufficiently to provide any health benefits. The Federal Trade Commission has recently taken action against some manufacturers of ozone generating machines for making unsupported claims about the ability of the machines to clean air." (matter of fact, the FTC fined Alpine/Ecoquest 1.5 million dollars for making false claims)

www.applications.dhs.ca.gov/pressreleases/store/pressreleases/27-97.html

STATE OF MINNESOTA HEALTH DEPARTMENT

"Some air cleaners are designed to produce ozone which is a strong oxidizing agent and a known irritant of the lungs and respiratory system. Studies have shown that ozone, even at high concentrations, is not effective at killing airborne mold or surface mold contamination. Health experts, including the Minnesota Department of Health, do not recommend the use of ozone to address mold or any other indoor air problems."
<http://www.health.state.mn.us/divs/eh/indoorair/mold/>

THE GOVERNMENT & OTHERS ON OZONE (continued)

NATIONAL NETWORK FOR HEALTH

"Ozone is a molecule composed of three oxygen atoms. It is a highly reactive chemical that is sometimes used to clear pollution in unoccupied buildings. It is also a strong lung irritant. People with asthma can be especially sensitive to ozone, and it can bring on attacks"

<http://www.nnh.org/products/AirCleaners.htm>

STATE OF NORTH CAROLINA HEALTH DEPARTMENT

"The North Carolina Department of Environmental, Health, and Natural Resources recommends that this type of cleaner NOT be used. Ozone can have adverse health effects."

<http://www.ces.ncsu.edu/depts/fcs/housing/pubs/fcs3606.html>

STATE OF VERMONT DEPARTMENT OF HEALTH

"Although some manufacturers of air cleaning equipment have claimed that ozone generators can decrease volatile organic compounds (VOCs) in the air, research has shown that such devices may, in fact, increase some types of VOCs."

<http://www.healthyvermonters.info/hp/airquality/ozone.shtml#four>

STATE OF WISCONSIN HEALTH DEPARTMENT

"Air cleaners employing electrostatic precipitation or ion generation may produce ozone, a gas that can irritate the lungs. Production of ozone may be particularly high if the air cleaning system has been improperly installed or maintained. The Department of Health and Family Services (DHFS) does not recommend using air cleaning machines that operate by producing ozone."

<http://www.dhfs.state.wi.us/eh/Air/fs/AirCleaner.htm>

STATE OF MISSISSIPPI HEALTH DEPARTMENT

"Some air cleaners are designed to produce ozone. Ozone is a strong oxidizing agent used as a disinfectant in water and sometimes to eliminate odors. However, ozone is a known lung irritant. Symptoms associated with exposure include cough, chest pain, and eye, nose, and throat irritation. Ozone generators have been shown to generate indoor levels above the safe limit. Furthermore, it has been demonstrated that ozone is not effective in controlling molds and fungi, even at high concentrations far above safe health levels. Also, ozone may damage materials in the home. For these reasons, the Mississippi Department of Health strongly recommends that you do not use an ozone air cleaner in any occupied residential space."

http://www.msdh.state.ms.us/msdhsite/_static/43,323,223.html

THE GOVERNMENT & OTHERS ON OZONE (continued)

STATE OF ARIZONA HEALTH DEPARTMENT

"ozone is not effective in controlling molds and fungi, even at high concentrations far above safe health levels. Also, ozone may damage materials in the home. For these reasons, the Arizona Department of Health Services strongly recommends that you do not use an ozone air cleaner in any occupied residential space."

http://www.azdhs.gov/phs/oe/invsurv/air_qual/moldcleanup.htm

NBC T.V. INVESTIGATION

"They generate ozone, which can be especially irritating to people with asthma and other lung problems -- the same people who often buy these products to improve their health. Ozone is the most harmful component of smog."

<http://www.nbc11.com/health/3678379/detail.html>

OSHA (US GOVERNMENT)

"Sources: Copy machines, electrostatic air cleaners, electrical arcing, smog.

Acute health effects: Eye, respiratory tract, mucous membrane irritation; aggravation of chronic respiratory diseases."

http://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_2.html

Next we'll take a deep look into the technology we at CaluTech, Inc. work with everyday. We constantly improve on our products year after year, adding the latest advancements in air purification and sterilization. First we'll give you a summary of our company and how we operate, manufacture, and record information.

We operate under regulations set by the FDA because we are an FDA registered medical device manufacturer, under the United States Department of Health. The FDA conducts in-house audits at our facility to ensure quality and reliability of our products to our customers. We have achieved certification to U.S. and Canadian standards for electrical safety and are OSHA compliant for business buyers. CaluTech operates under the strict guidelines of ISO 13485:2003 to ensure top notch quality.

We also do custom manufacturing from UV surface sterilizers to metal boxes. Calutech offers all items to consumers worldwide. Calutech has distributors in Taiwan, China, Hong Kong, Thailand, Australia, Central America, South America, Canada, and Europe. Our products are used worldwide, even by the United Nations in New York, who chose us after reviewing many competitors, finding the best value in our products. Enough about us, let's get to the UV light, and how this all works.

SOME HISTORY ON ULTRAVIOLET LIGHT USE IN AIR & WATER

Ultraviolet purification was in existence before World War II, actually as early as 1909, but very little was ever known by the general public. In virtually every water treatment plant exists UV light for purification of water and today air purifiers utilizing ultraviolet light have become readily available. UV is very effective in destroying bacteria when it comes to indoor air purification, but the problem is effectiveness. Although UV can destroy bacteria in the air, it was found to be effective only when the air stood still. Passing air did not receive enough exposure time to the ultraviolet light to have much effect on the destruction of bacteria, mold, and virus DNA. Many had the idea of using stand alone in room purifiers to filter the air, but these air purifiers only filter the air they "catch" with their intake fans which doesn't seem very effective when you consider the entire area of a room with air circulating throughout the structure from room to room on a constant basis, especially when the ventilation ducts were running. So how do you purify the indoor air when the air moves rapidly on an almost constant basis?

This is achieved by creating more UV microwatts for disinfection than necessary, enabling the air sterilizer to destroy an average 98% of a bacteria DNA while the indoor air is in motion. It is known to be as much as 99.9% effective. CaluTech took notice of bacterial destruction through passing air when running extremely high microwatts of UV energy and achieved the successful depletion of the air pathogens. Lowering the amount of UV microwatts showed an enormous reduction in effectiveness. Because our unit over compensates for the amount of UV energy needed to destroy bacteria in still air it has proven very effective in bacterial DNA destruction for passing air. With this in mind, the unit has been designed solely for use in a ventilation duct, allowing purification of the entire home or office.

ULTRAVIOLET FILTERS

INTRODUCTION TO ULTRAVIOLET LIGHT & AIR STERILIZATION

The sun generates ultraviolet rays-these rays are nature's air purifier. When sunlight passes through a prism it is broken into its component colors, thus giving it the colors of a rainbow. Each color, in turn, has its own wavelengths. Ultraviolet light has four specific wavelengths that have particular applications:

UV-A is the source of suntanned skin-with its relatively longer wavelength, can penetrate the atmosphere. Applications include tanning beds and treatment of skin diseases.

UV-B is in the middle wavelength of the ultraviolet spectrum and has been used to treat skin diseases, principally.



ULTRAVIOLET FILTERS (continued)

Shortwave UV Energy is primarily used as a sterilizer and can be generated by specially designed UV lamps.

UV-C, or shortwave ultraviolet radiation, is used to destroy bacteria and other biological contaminants in the air, in liquids, food, or on surfaces.

Ultraviolet Light and Microorganisms

Ultraviolet rays with this UV-C wavelength will destroy pathogens such as viruses, bacteria, mold, and mildew. This component of sunlight is the main reason that microorganisms die in outdoor air. The UV-C rays break through the outer membrane of microbes like yeast, mold, bacteria, viruses, or algae. When the radiation reaches the DNA of the microbe, it causes modifications. The DNA then transmits incorrect codes and this causes the death of the microbe.

Our ultraviolet germicidal lamps provide a much more powerful and concentrated effect of ultraviolet energy than can be found naturally. Such lamps sanitize air that is passed directly in their path to destroy pathogens that come in contact with the UV rays. Musty, moldy type odors can be eradicated, along with tuberculosis, cold and flu viruses, smallpox, anthrax, and other airborne diseases. This system is particularly beneficial to those suffering from allergies-common allergens are molds, mildews, and fungi. These microbes would be destroyed, helping to improve your health on day one.

Ultraviolet germicidal irradiation has been studied since the early 1900's and has been used to destroy the same microbes that cause indoor air pollution. For many years, the medical industry has used UV light to sanitize rooms and equipment. The Centers for Disease Control recommend UV-C lamps for their germicidal effect.

Our 'Blue' series uv air sterilizers provide high output UV energy-enough to eradicate most any pathogen, including cold virus, flu, smallpox, anthrax, molds, e coli, Legionnaires Disease, salmonella, staph, tuberculosis and many more.

The CaluTech air purifiers are a superior UV air purifier.

The UV lamps are so efficient that once all air in the building has passed this system an average 98% of microorganisms are destroyed. And the cycle continues...namely, when all the air in the building is cleaned a second time, 98% of the remaining microorganisms are destroyed (this is 98% of the 2% that were remaining from the first time). And so it continues...

WHO CAN USE CALUTECH AIR PURIFICATION PRODUCTS?

Right now, any home or building with forced air heating and/or cooling can utilize our system. Anyone with rudimentary home improvement skills can install this system in their house or condominium in about 15 minutes. To do this, 2 holes are made in the ductwork of your ventilation system using our stick-on template and a hole saw. The unit is slid into the holes and screws hold it in place. Alternatively, a heating and air conditioning company can do the installation for you.

Maintenance is minimal. The UV lamps should be kept clean to ensure their maximum effectiveness. This is easily accomplished by regular changing of the air filter which should be done anyway. The UV lamps should ideally be replaced every 12 months for maximum effectiveness. They can, however, be used for up to three years with less efficiency, but this is not recommended.



Replacement UV lamps are available from CaluTech or your local distributor. UV lamps are included with each UV system.

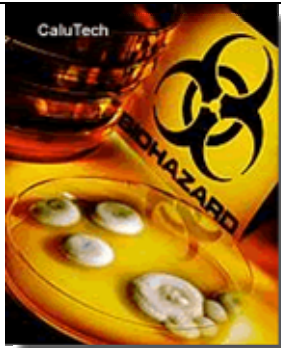
Larger buildings can easily be retrofitted with these units as well. Thus, any building with a forced air system can enjoy pathogen-free and allergen-free air. Even better, with CaluTech's new U.S. Patent Pending "Snapcat" add-on you can even destroy volatile organic compounds. The next page will explain more about our latest technology, Heterogeneous Photo-catalytic Air Oxidation...(we call it 'Snapcat')





Snapcat, what it is, and what it does...

Now you can have germicidal protection, and air oxidation, all in one, without the dangers of ozone and it's environmentally friendly.



Heterogeneous photocatalytic oxidation eliminates concentrations of organic contaminants from gaseous effluents by converting them to safe substances such as water vapor or carbon dioxide. Our air purifier with germicidal protection and Snapcat™ photocatalytic oxidation removes odors, pet dander, viruses, mold, bacteria, and other airborne pathogens. Eliminates VOCs (Volatile Organic Compounds). Irradiates the furnace - air conditioning coils and makes them like new again, increasing air flow and efficiency. Reducing electrical consumption. Helps clean and sanitize air ducts and kill mold while eliminating odors throughout the entire structure.

If you already own a CaluTech UV air system you can easily add the Snapcat™ snap-on strips to your existing UV lamps, or add Snapcat™ at your next lamp change. Snapcat™ is a Patent Pending product which allows a simple, yet effective way to utilize photocatalytic oxidation technology in your home. The photocatalytic strips are different than some UV air purifier models made by others, which use a simple piece of titanium metal in the attempt to produce a catalyst oxidation process. Titanium Dioxide, or Titania (chemical name ti02) is a product not produced by nature and not made from titanium metal.

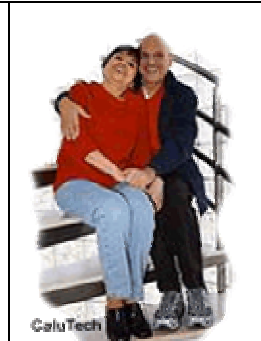


Titanium dioxide is extracted mainly from rutile beach sand and when it is used in the Snapcat™ process it becomes a powerful oxidizer which reacts with UV light below 385nm. The Snapcat™ strips are manufactured and coated with a very pure titanium dioxide which is baked on the Snapcat™ strip. This coating lasts for 5 years, or more. Adding Snapcat™ technology to CaluTech's UV air purification gives you a superior method for air purification. UV-C germicidal light produced by the CaluTech product line eliminates viruses, mold, bacteria and other living airborne pathogens by modifying the living organism's DNA, preventing them from reproducing, and causing the organisms to die. Adding Snapcat™ strips to our UV air purifiers causes a reaction between the UV light and the strips. This reaction is called Heterogeneous Photocatalysis, or quite simply 'photocatalytic Oxidation' / PCO Technology. The PCO process generates hydroxyl radicals which are among the most powerful oxidizers.

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SNAPCAT (continued)

Like UV-C light these oxidizers destroy microorganisms in the air, but the advantage is the ability for these oxidizers to reach living organisms in places where the UV-C light cannot reach. In addition, because titanium dioxide is a semiconductor it absorbs UV light and breaks down volatile organic compounds (VOCs) such as odors and gases like carbon monoxide or nitrous oxide. These gases are converted by the photocatalytic process into carbon dioxide and water, rendering them completely harmless. All you have left is pure clean air! Breathe clean again, breathe crisp clean air.



Germicidal protection combined with Snapcat™ equals superior air purification. A cost effective solution to indoor air problems. Snapcat™ can be added to your new or existing CaluTech UV air purifier in seconds! Fits all CaluTech air purifiers. Snapcat is a U.S. Patent Pending technology owned by CaluTech.

See the back of this booklet for more information on Snapcat technology and just how much you can improve the indoor air with this simple add-on.

notes



We guarantee our most popular germicidal air duct system for 10 years, and it has been manufactured to last 20. Furnace or just air conditioning, it works great. The owner of CaluTech has this very unit (CaluTech Blue) in his own home, originally designed, manufactured, and installed years ago to help his son suffering from asthma conditions. Eventually the unit was mass produced and the company began making more units to satisfy different situations and installation requirements, all the way to the latest invention in January of 2005, the CaluTech Blueray super high output UV light air purifier system. A lot of people wanted our product but had no air ducts so we made something powerful that they could use, the Hurricane. It's not a 'silent' system but it works hard & fast. Even the United Nations chose CaluTech after to supply their facility. We don't run infomercials with fake actors and crowds praising the product (like those ionic air purifiers with no real scientific evidence that they even help people), It's all word of mouth and the Internet. Our products move out the door faster than we can make them because they really work. Everything we use is bought from US companies only, and 100% of our manufacturing is also in the USA. We use real steel, not plastic, for durability. We use only UL Listed / CSA components for safety & reliability, and we conduct tests on an ongoing basis to ensure our product is the best, and it's built to last for years. Our most popular UV air purifier models are certified to US and Canadian standards, meet OSHA compliance, are manufactured under the strict ISO 13485:2003 (similar to 9002) and the United States Code of Federal Regulations for medical devices. Our manufacturing, quality control, complaint resolution and more is monitored by the FDA through in-house audits. We are registered with the U.S. Department of Health as a medical device manufacturer of ultraviolet air equipment.

What's the difference?

Not all UV lamps are created equally. There is a vast array of differences within lamps used for this type of application. A recent report by the Environmental Protection Agency, (EPA), rated the ultraviolet lamp as being superior in the use of air purification. See the Pennsylvania State University study for more information on ultraviolet air purifiers and how effective they are when properly manufactured. The CaluTech UV air purifier offers enough UVC light to kill most any common biological contaminant. We offer custom units as well. We have manufactured units using as many as 20 UV-C lamps. We don't mark-up and we don't overcharge..

Other air purifiers and air cleaner systems similar to ours are not nearly as effective. Don't fall for the imitations when it comes to air purification. This product is the real deal, and it utilizes dual high powered UV lamps. If the UV product you purchase doesn't say CaluTech, it's not a CaluTech, plain and simple.

CONTACT YOUR LOCAL DISTRIBUTOR TODAY TO FIND OUT HOW YOU CAN BENEFIT FROM OUR POWERFUL PRODUCTS. ATTACHED ARE SOME ITEMS WITH ADDITIONAL INFORMATION ABOUT THE TECHNOLOGY AND AN EXAMPLE OF THE PRODUCT WE MANUFACTURE, AS WELL AS CUSTOMER FEEDBACK RECEIVED. THANK YOU FOR TAKING THE TIME TO READ THROUGH OUR INFORMATIONAL BOOKLET, AND HERE'S TO YOUR HEALTH!

- THE STAFF AT CALUTECH, INC.

WHAT OUR CUSTOMERS THINK

- **RECEIVED DECEMBER 19, 2001**

I love the DIY you send with the unit, a real time saver! A big A++ on the UV air purifier construction. This thing is heavy duty, thanks!

John Songer, Ft. Lauderdale, Florida

- **RECEIVED MARCH 2, 2002**

It has been over a month since we purchased our CaluTech Blue Air UV air purifier from CaluTech. We are very satisfied with it. So far our skin allergies have been reduced significantly. My wife has suffered from A-topic dermatitis on her hands for over two years. Topical ointments and pregnisone (not prednisone) were a large part of her life. Now with the new CaluTech Blue Air UV air purifier she hasn't had to take anything for nearly a month. We are in the middle of flu, cold and stomach bug season. Typically when one child would get sick they would all get sick. Now with our new CaluTech air purifier we have experienced less sickness. This has been one of the best investments we have made in our 11 years of marriage.

Thank you, thank you, thank you!

Sincerely, Rich & Barb, Bethany, Rebecca, Leah & Sarah

This family lives in Cayuga, New York

- **RECEIVED MARCH 8, 2002**

Dear Calutech company, I installed your uv air purifier after seeing uv on tv and I have to say, it's impressive. My little boy has suffered from severe asthmatic conditions since he was born. He is 6 years old, and I'm happy to say he's breathing better. You've done more for my son than doctors have for the past 5 years. After 6 days hospitalization at 7 months old, after nebulizer treatments every hour at home, after vacerinin inhalers, after lots of prescriptions like Albuterol syrup and steroid syrup, my son can sleep without coughing all night. You guys should be on Oprah.

My many thanks to you for an excellent product. If you ever need a referral, you have my full permission to use my endorsement. I've never felt so solid about a product before. This is true American machinery!

Yours in God, Ashley Henderson

(Mrs. Henderson lives in the Midwest region of the United States)

CUSTOMER FEEDBACK, CONTINUED

- RECEIVED AUGUST 6, 2002

I am a banker and not a mechanic, carpenter or electrician. The installation of the UV purification system took me about 10 minutes. Very straight forward instructions, and the supplied template and drilling bits made the installation a "no-brainer", even for a novice like me. I had to run romex wire to a plug and that took about another 10 minutes.

I woke up this morning (5:30am-Central time...check the time on this email for proof) feeling charged and rested with my sinuses clear and no congestion for the first time in months. I have had recurring sinus infections which have cause me to take continuing antibiotics.

With these apparent results overnight, the unit should pay for itself with the reduction of Doctor Bills and prescriptions in a matter of months!

You may use my emails as testimonials, because it is truth.

Guy Yancey

San Angelo, Texas (Guy's email was time stamped 4:51 AM)

- RECEIVED AUGUST 21, 2002

Just got home with our newborn boy (the main reason for purchasing your product) and was happy to see that the CaluTech Blue was on my door step, but the really surprising thing was that you also included the drill bits required for completing the installation.

After just having a new child I would not have really had enough time to get the tools together and get it installed so quickly. It is not very often that a customer gets Everything they need without asking for it.

Thanks for making my purchase even easier.

Looking forward to a healthier home and family.

Ed Kikendall Jr. - Indianapolis, Indiana

- RECEIVED JANUARY 14, 2003

I purchased your unit. I received it today...this thing is a little honey. Last year was my worst year for allergies and it started early and is still going. I was afraid I was going to become a bubble boy. I took every prescription allergy med my specialist prescribed. I even bought on of your CaluTech Blue UV systems. It helped a lot. Then last December I bought one of your small wall units. I could not believe the difference it made in our guest bathroom. Everybody I know could use one of these units.

The best customer you could have

Jim Wheeler, Dwight, Illinois

CUSTOMER FEEDBACK, CONTINUED

- **RECEIVED FEBRUARY 16, 2003**

Just want to let you know you have a wonderful product. I ordered another one for my other unit. I love it. I hope it works for our better health.

Theodore Awad, Towson, Maryland

- **RECEIVED MAY 26, 2003**

Thanks for working with us and getting the air purifiers expedited to our FAA facility. Federal Aviation Administration, California

- **RECEIVED NOVEMBER 24, 2003**

First things first - Happy Turkey Day Calutech! - We have received our Calutech Blue air purifier and installed it last night. What in the world is this thing doing? We feel fantastic today, is this coincidence? I'm a heavy smoker and so is the wife so we always snore snore snore and wake up every morning with this weird drip in our throats, hard to explain unless you smoke a lot. Anyway, today we wake up and both of us, almost at the same time, looked at each other and said "hey, I can breathe easier". We both noticed a change in the air and we both felt very rested this morning. This is really weird, I've never heard of such a product that changes your feelings. Is this possible or am I just going crazy?.

Tom & Brenda Anderson, Brooklyn, New York

Mr. Anderson wrote back again 3 days later, said he still feels fantastic. Well, we don't know if it was the Calutech Blue or not, but happy to hear you're so energetic!

- **RECEIVED DECEMBER 9, 2003**

The CaluTech Blue is a very nice air purifier. We would like to order another one. Coral Surgery Center, Miami, Florida

This medical center purchased 3 UV air purifiers for their medical clinic. After they received them they called us back and bought another one.

- **RECEIVED JANUARY 10, 2004**

Hi and thanks, The shipment arrived Wednesday and everything was packed well. Thank you for the shipment notifications. The Calutech Blue installs easily. Your directions were very good and simple, and the unit is A very solid piece of equipment.

Robert Zaki, Dearborn, Michigan

- **RECEIVED JANUARY 13, 2004**

We bought the Calutech Blue to install in a customer's home. This woman has had bad allergies and nasal problems for a long time. She told us the next morning her sinuses were clear. I couldn't believe it worked that fast. You can depend on us buying a lot more Calutech Blue air purifiers.

Bourque Mechanical, Delmar, New York

CUSTOMER FEEDBACK, CONTINUED

- RECEIVED JANUARY 13, 2004

The Calutech Blue is a really great product. I told all my friends and have 5 more customers for you.

Havis Waldrop, Shreveport, Louisiana

- RECEIVED MARCH 26, 2004

We installed the CaluTech Blue last weekend, and I have to tell you that I myself have not had any sinus problems since. I'm always congested, have been for years, but not anymore. Thank you!

Hawthorne Press, Spring Grove, Illinois

- RECEIVED SEPTEMBER 1, 2004

Dear Calutech,

My Daughter suffered constant allergy symptoms since birth. My wife, son and I suffered flu like symptoms - ear & nose infections, sore throats, and headaches year round. Not until the beginning of this year, May 2004, did we realize the cause of our health problems.

For the last 14 years, rain had been seeping into the walls of my Daughter's room. This year strong winds and heavy rains caused roof leakage and rain damage into the attic and walls of the house. We had major black mold present making the house inhabitable.

Upon learning of Calutech, we contacted you for a CaluTech Blue Air UV air purifier, notifying you of our extreme situation. The Calutech Blue arrived, installation that evening was made easy by the template and to my amazement even drill bits were supplied. By the next day, we were able to occupy the house without any of the symptoms we previously had suffered. Renovations were undertaken to rid the house of the mold, and the Calutech Blue continues to provide a healthy environment. ALL health officials, and heating/cooling companies should be made aware of Calutech and its Air UV purifiers. A proactive approach would eliminate needless suffering by many people.

Our deepest gratitude to Calutech,

M. Camara

Vixenvale Kennels

Ontario Canada

- RECEIVED SEPTEMBER 8, 2004

I love the unit. Easy to install and looks very well made.

J. LeMaster, General Electric Consumer & Industrial

This testimonial was received by a CaluTech dealer in Iowa.

CUSTOMER FEEDBACK, CONTINUED

- **RECEIVED SEPTEMBER 12, 2004**

Installation (CaluTech Blue) was a piece of cake & took only 15 minutes.
Frank McMullin, Aston, Pennsylvania

- **RECEIVED SEPTEMBER 14, 2004**

Hello guys. I wanted to give you an update on the Hurricane as you requested. There are a number of things I have noticed since turning it on and running it for 24 hours on high and since then on high during the day and lower at night. But first, our home is about 2700 square feet and is 2 story. So, to run it on high I pull it into the foyer so that it has access to upstairs. The first thing I noticed is that it removes any odors within a couple of hours – from food that has been cooked, etc. That really amazed me. After a week, I noticed that my asthma had improved to the point that I no longer needed my inhaler in the house. I have 3 meds for asthma – the inhaler, a powder that is in a discus, and a pill. I have stopped taking the pill and have only used the powder and inhaler a couple of times this week. That in itself is amazing because we are in the worst allergy/asthma part of the year aside from the spring. In addition, the care you guys give to your customers is top notch. I cannot use enough superlatives to describe how attentive you are to us. Somehow those who are considering one of your systems should know this. There truly are no more honest or trustworthy people out there than you. I appreciate that as much as the machine. Needless to say, I am quite impressed! Feel free to use any of this you would like to. I love this machine and already see great benefits.
Dr. Gordon Sudduth, Houston, Texas

- **RECEIVED SEPTEMBER 15, 2004**

Your (CaluTech) Blue UV air purifier is built like a tank. I'm glad to see something manufactured like it's 1950, all that tough U.S. Steel. Very nice!
Hank McMaster, Phoenix, Arizona
Sent in by a customer who bought from a dealer in Scottsdale, Arizona

- **RECEIVED SEPTEMBER 22, 2004**

I installed it (CaluTech Blue) yesterday with no problems at all, I was very impressed with the packaging first of all, I was concerned about the bulbs in the mail but they were so well protected it would have taken a hell of a lot to damage them in transit. I was also impressed with the overall quality of the base unit, heavy, well constructed. I did a lot of comparing and yours has the best warranty I found, the brightest lamps single and combined by far, and the cost for replacement bulbs is very reasonable compared to others. I don't know if it is just coincidence but ever since we closed up the house at night my son who has allergies has been stuffed up and I usually wake with a headache here and there. Well letting the fan run on circulation all day I noticed last night my son didn't need his nose spray for the first time in a long time, and I woke with no stuffed nose. I have no complaints and am pleased with the primary results after 1 day.... that thanks for a great product.
Bill Rycraft, Bolingbrook, Illinois
Sent in by a dealer in Perry, Iowa who sold this unit.

CUSTOMER FEEDBACK, CONTINUED

- RECEIVED OCTOBER 7, 2004

Just wanted to give you a brief update. One will be medical proof and the other does not reach that standard but still true. Yesterday I had my monthly doctor's visit and for the first time since December of 2001, I was not wheezing! Even with the medications I had been wheezing ... now I only take one (instead of 3-4) for asthma and no wheezing. The only difference is using the Hurricane for a full month. It is still the height of allergy/asthma season in the Houston area. The doctor was quite impressed! The 2nd thing – not provable – is that last weekend our senior in college daughter came home with the flu ... and soon on her heels our teacher daughter came home with a stomach virus (she lives on her own). In the past, I would have contracted one of these illnesses – my immune system is shot – but did not get either! I did not even turn the Hurricane up to high power – just let it run on low the entire time. So, I am incredibly impressed! Not just with the machine but with you guys! I still encourage you to place your own story on your site. Knowing how and why you built the Hurricane speaks loudly about who you are and the kind of system you manufacture.

This testimonial was an update from Dr. Gordon Sudduth in Texas. He left a testimonial earlier above on the CaluTech Hurricane.

- RECEIVED OCTOBER 25, 2004

What a difference in the air!! This is a product everyone should own!.

This testimonial was received by a CaluTech dealer in Iowa.

- RECEIVED NOVEMBER 9, 2004

Hi, I wanted to send you an email real quick to express my amazement. In September I installed a Blue UV air purifier for a lady who bought from you. I am an HVAC contractor in Texas. The woman asked us to put in this light unit and we actually suggested it was a joke, that there's no way UV light will clean the air or do anything. How wrong I was! Two weeks after the install we came back to check a burning smell the woman reported and thought it was your unit. Ends up one of the air filters we installed ripped and fell onto the hot side of the burners. Anyway, while we were inspecting I noticed the coil condensers were shiny like new, where just a couple weeks ago they were full of sludge & mold. Even the air ducts looked clean, I actually asked her if she had them cleaned but she didn't. I am quite impressed and would be interested in becoming a distributor of your products, plus I'm ordering one for myself after I send this email. Technology is amazing these days!

Steve Henzel, San Antonio, Texas

CUSTOMER FEEDBACK, CONTINUED

- **RECEIVED NOVEMBER 26TH, 2004**

I am a healthcare inspector/architect and I have recommended your unit (CaluTech Blue) to many friends and clients here in south Florida...mold is a big problem down here as you might know.

Richard Londono, Adaag Consulting, Miami, Florida

- **RECEIVED DECEMBER 2ND, 2004**

I purchased an Oreck air purifier two weeks ago and it didn't work like they said it would, and then I found out my daughter in law bought your CaluTech Blue. When I walked into the house I noticed right away that something was different, I could just tell the air was not the same. My son has Asthma and he said he has been much better since they put in your air purifier. I would like one for my home too!

Alicia Coward, Pennsauken, New Jersey

- **RECEIVED DECEMBER 3RD, 2004**

To confirm your inquiry about the purchase, the UV air purifier systems you supplied to our building are working just fine. Thank you for checking.

The United Nations, 2 UN Plaza, New York

- **RECEIVED DECEMBER 14TH, 2004**

It (CaluTech Blue) was a very easy product to install. The instructions were very clear. I had it in 15 min. The kit was also very well packaged. I was a little concered when it came via UPS, since they feel every package is a basketball, but it was well protected on the inside. I have a large dog, so my house has always smelled like dog when I got home. The following day, when I got home, I did not notice the smell (and it was raining to). So it apears to be working well. I was suprised to see the 10 year waranty. If I was you, I would have no doubt about carrying the product.

Tim Motel, Big Bend, Wisconsin

- **RECEIVED DECEMBER 20TH, 2004**

I had horrible sinus infections but as soon as I installed the CaluTech UV air purifier in my air duct they were gone. My grandkids even said they sleep better at my house then they do at home (since your unit was installed!).

Mike Rogers, Leawood, Kansas

- **RECEIVED JANUARY 2005**

I received the unit (CaluTech Blue) a couple of weeks ago, and I am sold on it..

Joseph Oviguan, Mt. Prospect, Illinois.

- **RECEIVED JANUARY 2005**

It (CaluTech Blue) works fine and the air quality is super. We'll likely put one of these in our Phoenix house as well later in the year.

Gerry Madden, West Vancouver, Canada

CUSTOMER FEEDBACK, CONTINUED

- **RECEIVED JANUARY 2005**

If anybody believes in the CaluTech Blue I do! It did a fantastic job with the humidity in my A/C. My coil looks like it just came out of the factory. The unit took out all the musty odor. Showed my doctor, he has air machines all over his office. My son in law has one too. They have two kids. It cleaned theirs up quite a bit and helped them a lot healthwise. William Ritter, Plantation, Florida

- **RECEIVED JANUARY, 2005**

I received my CaluTech Blue. Haven't installed it yet but I'm impressed with it already.. Robert Krall, Erie, Michigan

- **RECEIVED JANUARY 31ST, 2005**

We installed the CaluTech Mini-Blue in our home about a week ago (2,300 Sq. Ft.). The musty odor in our crawl space is gone. The odors in the house are gone. My wife loves it. We cooked steak & onions, the odor was gone in minutes. My wife says the air in our house is like the air outside, very fresh. I'm impressed with your UV air purifier. I'd like to order a CaluTech Blue for my daughter in Chicago. The Drey Household, Tinley Park, Illinois

- **RECEIVED FEBRUARY 4TH, 2005**

I installed the new DSL furnace air purifier last week & I was impressed by the package. You provide simple instructions & I was able to install the unit in less than an hour. I caught an add on TV last night for a new car that is including a UV purifier in the interior air filtration system. It appears the benefits of UV air treatment is catching on. I have already talked to the people at my favorite hardware store, plumbing & heating company, and local gas company (that sells & installs furnaces & air-conditioning) and passed on your web address so they can look into providing your product locally. Kevin Applewick, Montevideo, Minnesota

- **RECEIVED MARCH 23, 2005**

The Mini-Blue is working fantastic in our home. A product everybody needs, we know that now! The Cozzi House, Naperville, Illinois

- **RECEIVED APRIL 12, 2005**

No question here -- just praise. Received your item a number of days ago. Easy to follow instructions for installation. Immediated difference in air quality noted. A wonderful product. The Meekers, Rogers, Arkansas
Received from a CaluTech distributor, Perry, Iowa

CUSTOMER FEEDBACK, CONTINUED

- RECEIVED APRIL 17, 2005

I have been in the HVAC business for over 30 years. My son's HVAC instructor purchased one of your Air Duct UV 2 Lamps (Blue model 9002CB), they are very impressed with your product. The fantastic thing about your system is that it can be self installed, making it more attractive to the consumer.

R. Bryant, Spokane, Washington

- RECEIVED APRIL 20, 2005

Just a note to say thanks so much for all your help. You put together an awesome package. All the tools, instructions, visual aids, parts, etc., you go the extra mile. It is so nice to do business with people like you. I had questions and questions and you answered quick and even offered additional help. It was just a real nice experience. The units went together like a breeze, the large one that I thought I would need professional help was actually the easiest install of all five. We should give honor where honor is due and you all are certainly are doing an outstanding job. Please keep up the good work.

Reggie Knowles, Ocala, Florida

This customer installed a unit in his home, 3 in the church daycare area, and 1 in the church itself. We're happy to hear all went well with the UV air purifier installations.

- RECEIVED JUNE 15, 2005

Thanks for your excellent help. The package arrived yesterday afternoon as scheduled. I installed the unit (Blue model) this morning as you can see from the attachment (photo sent in email). The bracket is perfect and places the bulbs directly under the return air opening in the air handler. All of the pieces were as described on your website and the manual instructions were very clear. It has truly been a pleasure doing business with you. Thanks again.

Glenn Stevens, Cocoa, Florida

This customer requested a custom steel mouting bracket needed to fit his ventilation system so he could use our CaluTech Blue UV system. We supply this type of custom work free of charge for current customers.

- RECEIVED JULY 2, 2005

I received my Calutech Blue yesterday and had it installed in less than half an hour. Very good directions and the template worked excellent.

J Wilcox, Collierville, Tennessee

- RECEIVED JULY 29, 2005

Your UV air purifiers are fantastic. They are phenomenal!

Jerry Madden, Surprise, Arizona

CUSTOMER FEEDBACK, CONTINUED

- RECEIVED AUGUST 12, 2005

I recently purchased the Calutech Mini-Blue. It was very easy to install. We totally believe in it, and since my husband has severe asthma and allergies, we need something desperately! Thanks for your outstanding customer service...it means a lot in this day and age, and I think I can get you lots of business! I have about 5 people who are extremely interested in your product.

Jill Molitor, Mt. Enterprise, Texas

- RECEIVED SEPTEMBER 15, 2005

I just received my Calutech Blue in time to have my new air conditioner and gas furnace installed. The unit appears to be well made and has a terrific warranty to support it. After the new duct work was installed, I installed the unit while the installation team was completing my install. They inquired about it and were very surprised at the quality and specifications for the price. I used your template and drill bits and the installation couldn't have been easier. The unit works great and I am very pleased with my purchase. Thank you again and I guess we'll be speaking in a year when I order my replacement bulbs.

L. Goldman, National Vice President, Sales Channel Development
Comcast Communications - Philadelphia, Pennsylvania

