EnviroKlenz™

Personal Environmental Protection For Everyone

Process Guarantee
&
Technical Information

Timilon Technology Acquisitions LLC
12557 New Brittany Blvd., #31-2
Fort Myers, FL 33907 U.S.A.
Phone: 239.330.9650

The EnviroKlenz® Process Guarantee

The EnviroKlenz® Process is the scientifically and field proven choice for the safe, rapid, convenient, and cost-effective restoration of indoor spaces from fragrances and other toxic vapors.

The EnviroKlenz core chemistry (the "Product") irreversibly captures and neutralizes a broad range of indoor air pollutants. EnviroKlenz works by *'destructive adsorption.'* As EnviroKlenz comes in contact with chemical pollutants in circulating air or on surfaces of materials, the Product's chemistry 1) irreversibly attaches to and reacts with the pollutants, and 2) destroys/neutralizes the pollutant. The irreversible result is a benign, environmentally safe byproduct and elimination of the unpleasant and potentially dangerous pollutant(s).

To be effective, the Product must:

(i) come into contact with the chemical pollutants in the air or on surface(s) within the enclosed residential, commercial, or mobile space,
(ii) at an air flow rate, contact time, treatment schedule, temperature, humidity, and/or concentration, as prescribed for the specific application, and
(iii) be deployed by personnel who are fully familiar with the instructions for use and in accordance with instructions detailed in the EnviroKlenz User Guide and/or instruction sheet, and other Product labeling.

IMPORTANT: Failure to properly treat all circulating air and/or surfaces may result in recurrence of pollutants. Care must be taken to identify and eliminate the source(s) to avoid recurrence.

EnviroKlenz has been tested and proven effective against a broad spectrum of hazardous chemicals and VOC's. Timilon warrants that when used as directed, EnviroKlenz will irreversibly adsorb and/or destroy the following chemical compounds:

Table: Partial list of common compounds that can be successfully removed/neutralized by Timilon's EnviroKlenz technology platform

Acids	Phosphorus/Sulfur Compounds	Organic Compounds
Hydrochloric Acid	2-Chloroethyl ethyl sulfide	Acetaldehyde
Hydrofluoric Acid	Dimethyl methyl phosphonate	Acetone
Nitric Acid	Paraoxon	p-Cresol
Phosphoric Acid	Parathion	Diesel
Sulfuric Acid	Methyl Mercaptan	Denatured Ethanol
Caustic/Acidic Gasses	**Industrial Solvents/Refrigerants**	Ethylene Oxide
Anhydrous Ammonia	Acetonitrile	4-Vinylpyridine
Chlorine	Chloroacetyl Chloride	Methanol
Hydrogen Chloride	Acetyl Chloride	Toluene
Nitrogen Dioxide	*This technical summary report contains additional information on some of these compounds and applicable reaction mechanisms. If you are in need of more information on a particular compound please contact us.	
Sulfur Dioxide		
Hydrogen Sulfide		

HUMAN HEALTH AND SAFETY: EnviroKlenz is produced from earth minerals that are generally regarded as safe and often used in wall paints (titanium oxide), as food additives (magnesium oxide), in medicinal and baby products (zinc oxide), in toothpaste (titanium dioxide), and in sunscreens and popular cosmetics (titanium dioxide and zinc oxide). Timilon has utilized independent certified laboratories (U.S. Army Public Health Command and MPI Research) to conduct evaluations of the EnviroKlenz core chemistry for health and safety risks following U.S. Environmental Protection Agency protocols. Toxicity testing included acute and chronic oral toxicity, dermal toxicity, skin irritation, skin sensitization, eye irritation, and inhalation. The EnviroKlenz chemistry has been determined to be non-toxic (dermal LD50 [rabbit] was >5g/kg and oral LD50 [rabbit] was >2g/kg). Inhalation testing has shown the chemistry to be non-toxic. The chemistry is environmentally safe, non-corrosive, and non-flammable. For detailed health and safety information, please refer to the Safety Data Sheet for the specific application or product.

DISPOSAL: EnviroKlenz and the captured byproducts meet Federal guidelines and requirements for disposal in a landfill or sanitary sewer. EnviroKlenz liquid and powder residue should be disposed in accordance to local, state, and federal regulations.

Timilon warrants that, for a period of one year from the date of purchase, the Product will be free of manufacturing defects. Timilon, at its option, will repair or replace the Product or any component of the Product found to have manufacturing defects during the warranty period. If the Product is no longer available, replacement may be made with a similar Product of equal or greater value. This warranty is non-transferable and is valid from the date of the original purchase. Proof-of-purchase is required to obtain warranty. This warranty does not cover consequential damages and/or damages resulting from negligent use or misuse of the Product by failure to store, transport, maintain, and/or use the Product in accordance with the label directions. Only Product purchased directly from Timilon or from an authorized representative of Timilon is warranted.

Timilon makes no other guarantee or warranty, express or implied, including any warranty of merchantability or fitness for any particular purpose, and all other warranties are hereby expressly excluded. Timilon shall have no liability for special, incidental, or consequential damages resulting or arising from a breach of the guarantee herein or from the use of EnviroKlenz.

Overview

The EPA conducted a 17-year study and found that women working in their homes had a 55% greater risk of dying from cancer than those who worked in an office, due to the use of ordinary household cleaners. Some of the products found in American homes have chemical ingredients that are potentially harmful. Look under the kitchen sink, in the bathroom, the garage, and the basement for examples. There you will find oven cleaners, paint removers, bug killers, solvents, drain cleaners, and more. These products are potentially harmful to people and to the environment.

Timilon's products and technology offer the ability to chemically dismantle a wide range of undesirable chemical compounds. Fragrances, tobacco smoke, volatile organic compounds (VOC) and pesticides are all comprised of a wide range of chemicals.

EnviroKlenz products have been specifically designed for effectiveness towards toxic or volatile compounds commonly found in homes impacting our personal environmental spaces.

About EnviroKlenz

The creation of EnviroKlenz was inspired by our Customers with Multiple Chemical Sensitivities. We have been honored to be able to work closely with them and learn from their experience and feedback. Through their recommendations we were able to introduce a product line that is both effective and safe for everyone—especially those with illnesses triggered by environmental exposures.

We have worked vigorously and diligently to test our products with MCS influencers and support groups to provide "Personal Environmental Protection for Everyone." We look forward to continuing our work with those affected by Multiple Chemical Sensitivities, to provide resources and products that will help overcome the challenges of living in our toxic world.

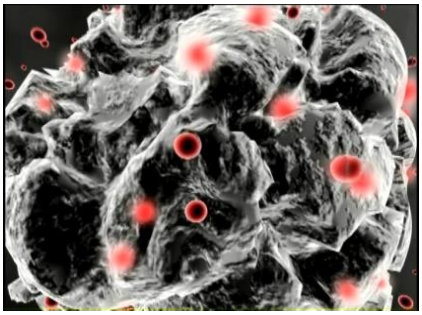
The EnviroKlenz program is a process that addresses odors and chemical contamination in air space, surfaces, and on contents through a variety of products to collectively create a clean air environment.

Each EnviroKlenz product is made from various combinations of our proprietary metal oxides powders. These powders include our Magnesium Oxide (MgO), Zinc Oxide (ZnO), and Titanium Dioxide (TiO2) materials. We combine our materials to achieve the right balance of active components to suit the desired application.

In this technical documentation, we will highlight some of the key mechanism and technical points behind EnviroKlenz's capabilities…

EnviroKlenz Technical Information

The EnviroKlenz technology destroys many chemicals by a combination of both physical and chemisorption mechanisms. The advanced high surface area chemistry of the EnviroKlenz neutralizing agent, in combination with high chemical neutralizing reactivity, and a disciplined process, provides superior chemical neutralization and odor elimination. The technology is based on the use of safe earth minerals.



The unique and advanced manufacturing approaches greatly enhance the beneficial neutralizing properties of the earth minerals and retains their inherent safety characteristics. When EnviroKlenz compounds come into contact with harmful chemicals and vapors, the earth minerals' receptors capture the bad chemical initiating the neutralization process. The manufacturing techniques are designed to facilitate, enhance, and add to that process. EnviroKlenz's earth minerals more efficiently capture and destroy the harmful chemical.

EnviroKlenz has increased surface area, unique morphology, high chemical reactivity, and extreme porosity, all contributing to the enhanced absorption and neutralizing characteristics. EnviroKlenz has the ability to not only contain, but to also chemically break down a wide variety of chemical compounds.

For a product to be effective at minimizing triggers for individuals afflicted with MCS, a broad range of chemistries would need to be able to be reduced and/or neutralized ***while simultaneously not introducing any new chemical triggers***. This is why the active components that comprise EnviroKlenz products were selected from those that are not only effective, but have been proven safe through oral, pulmonary, ocular, and dermal toxicology testing conducted by leading independent certified laboratories.

Fragrances

Fragrance is a term used to describe a mixture of chemicals often composed of essential oils, chemicals with a strong aroma, and solvents that together produce a "pleasant" scent to the general population. In order to achieve a particular scent, a variety of different ingredients from natural and synthetic sources may be used. Some common chemical classes used include, but are not limited to: esters, terpenes, aromatic, amines, alcohols, aldehydes, ketones, and thiols. For individuals with MCS, many chemicals and substances with strong scents are the most common triggers for their symptoms and can include: perfumes, cleaning agents, pesticides, cigarette smoke, among many others.

EnviroKlenz's broad capabilities and efficacy towards MCS triggers can be demonstrated against commonly encountered chemicals and chemical classes associated with fragrances, indoor air quality issues, and pollutants. For the comparison, EnviroKlenz technology and a commonly used absorbent were challenged against a variety target chemical compounds that broadly encompass different types of chemical structures and fragrance profiles. The challenge compounds were: cadaverine (a toxic diamine), isovaleric acid (organic fatty acid that can be present in essential oils), acetaldehyde (a common VOC, indoor air contaminant, and component of cigarette smoke), ethyl mercaptan (a powerful sulfur-containing pollutant), and ammonia (a commercial cleaning product and caustic volatile material).

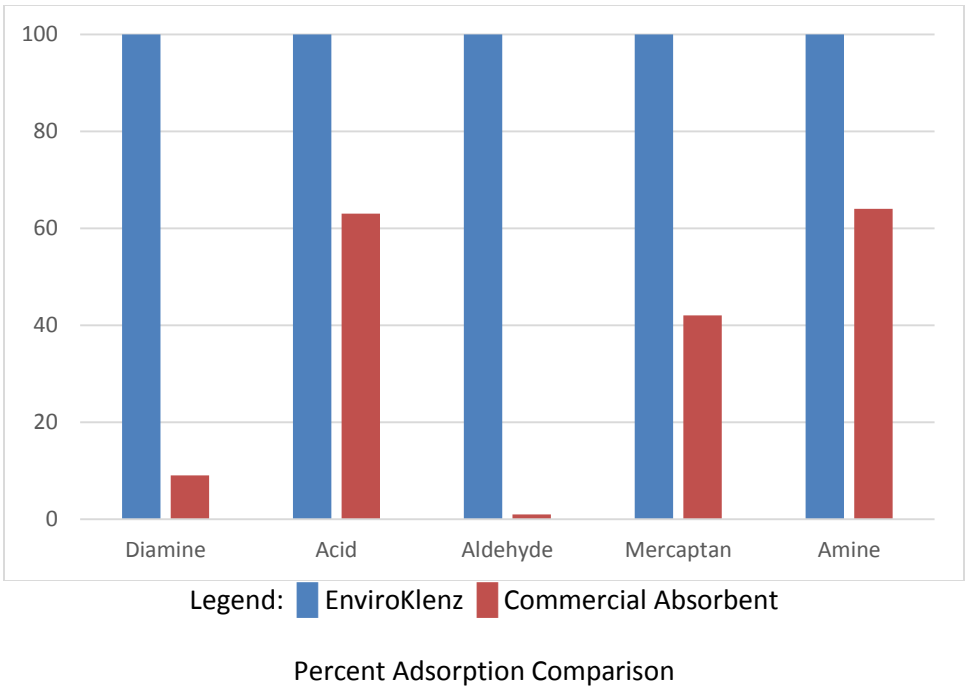


Figure: Percent chemical pollutant removed by EnviroKlenz technology

Diamine Challenge: When challenged against cadaverine (a diamine), EnviroKlenz was highly effective in reducing the concentration of this pollutant in the headspace as demonstrated by the greater than 99.9% removed result. The commercial product was not effective against diamine.

Acid Challenge: The isovaleric acid, was easily removed by EnviroKlenz. Greater than 99% of the GC-MS detectable chemical was eliminated from the system. The commercial product showed some success against this compound due to the basic pH of compounds, but it was not as effective EnviroKlenz.

Aldehyde Challenge: When EnviroKlenz was challenged against acetaldehyde, a major toxic component of tobacco smoke and indoor pollutant, it removed greater than 99.9 % of the chemical from the headspace. The commercial product had no effect against acetaldehyde (less than 1%).

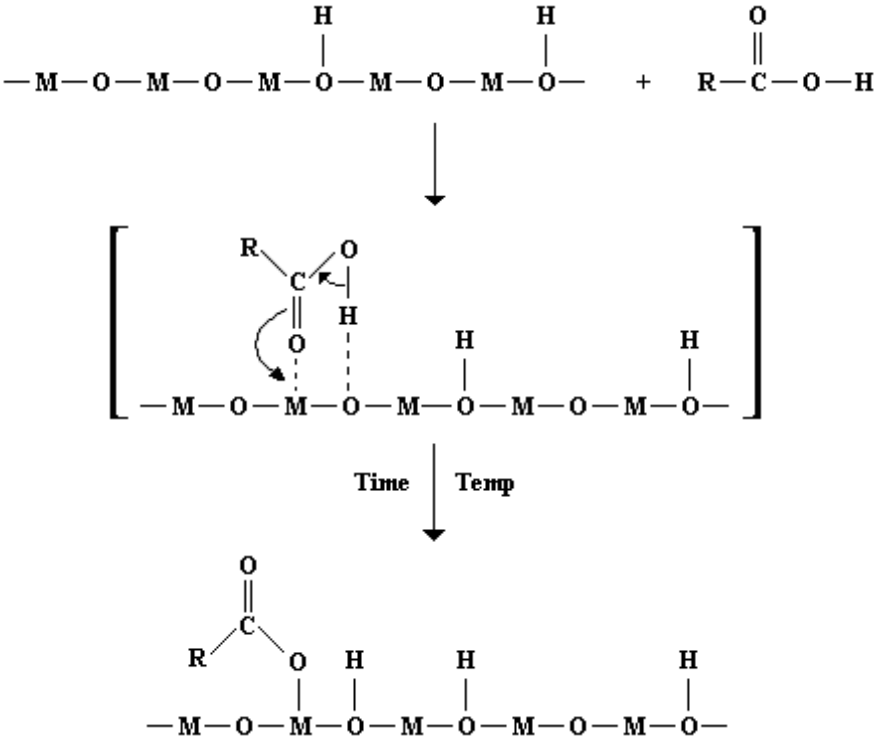
Mercaptan Challenge: Ethyl mercaptan, the sulfur-containing pollutant, was readily neutralized (99.9+%) by EnviroKlenz. EnviroKlenz was over twice as effective as the commercial absorber (43%).

Amine Challenge: Both products had efficacy against ammonia, however the commercial product did not exhibit the broad capabilities against all the other chemical classes like EnviroKlenz.

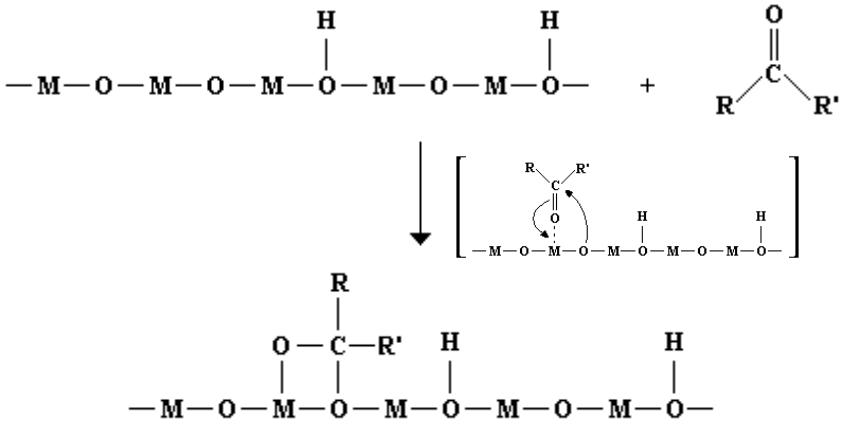
The EnviroKlenz technology utilizes a variety of physical and chemical mechanisms to capture and destroy chemical pollutants. The primary method of capture is physical through the interaction of the high surface area EnviroKlenz metal oxides with the chemical. The EnviroKlenz active components have numerous surface sites to attract and, based on chemistries, ultimately react with chemical pollutant. The various mechanisms of reaction are illustrated below, but one key aspect that is common among them is the reaction byproducts are surface bound to the metal oxide surface.

Let's explore some of these mechanisms…

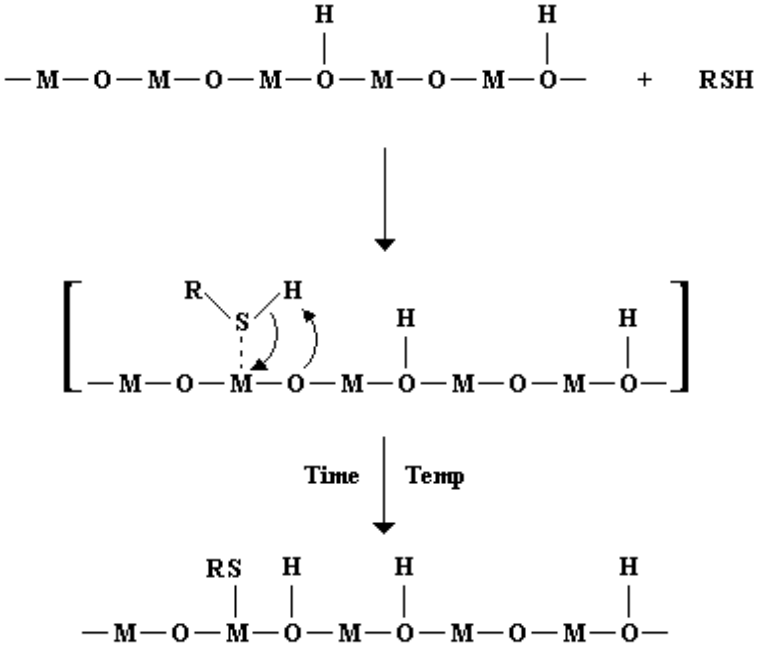
Organic Acids: The metal oxides of EnviroKlenz treat organic acids such as acetic, isovaleric, and propionic acids by acid-base reactions in which the Lewis acid sites of metal ions bind the carboxylate moieties.



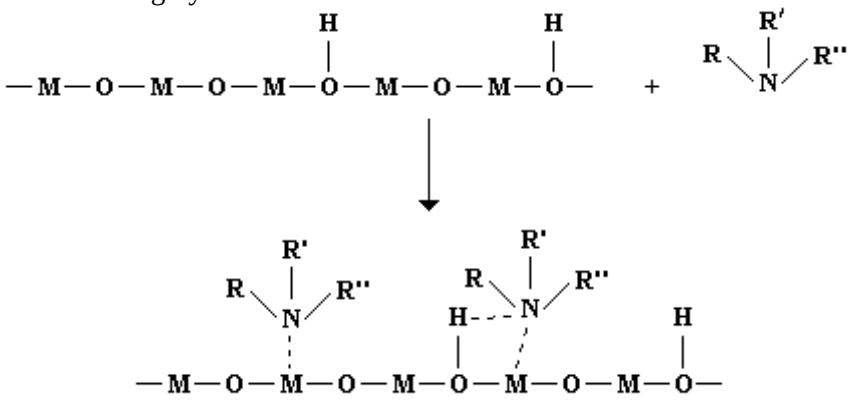
Aldehydes & Ketones: Carbonyl compounds such as formaldehyde and acetaldehyde are adsorbed by means of nucleophilic attack of basic oxide ions on carbonyl carbon atoms, concomitant with the nucleophilic attack of carbonyl oxygen atoms binding to Lewis acidic metal ions.



Thiols: Sulfhydryl compounds such as methanethiol, ethanethiol, and hydrogen sulfide are neutralized through the attraction of the sulfur atom, a Lewis base, for the Lewis acidic metal ions, together with deprotonation of the sulfhydryl group by oxide anions.



Amines: Nitrogen compound pollutants, including aliphatics such as cadaverine and putrescine as well as heterocycles such as skatole and indole, react with EnviroKlenz by means of the strong attraction between nitrogen and the highly active metal ions of metal oxides.



Tobacco Smoke

There are at least 40 carcinogens among the more than 3,800 chemicals in tobacco smoke. The chemicals in tobacco smoke include nicotine, ammonia, hydrogen cyanide, acetaldehyde, methyl chloride and pyridine. Many of these toxins are found in higher concentrations in tobacco smoke than in mainstream smoke (the smoke inhaled by smokers). The U.S. Surgeon General and the National Institute of Occupational Safety and Health have found that simply separating smokers and nonsmokers in the workplace or in public places does not adequately protect nonsmokers from these chemical hazards.

The residual odor left from tobacco smoke is evidence that these toxic compounds still persist even after the "smoke" has dissipated. These toxic chemicals settle on walls, drapes, furniture and floors where they still pose the same toxic health threat days or weeks after they were release. Simply masking these odors offers no health benefits to individuals who are exposed to these compounds regularly.

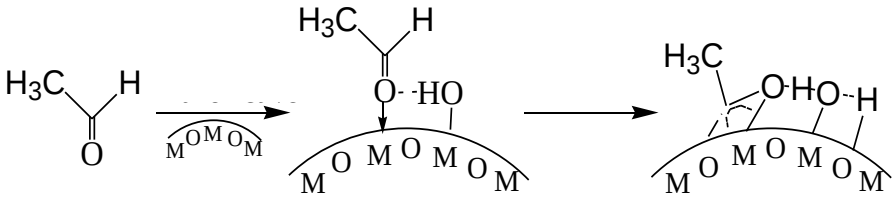
The chemicals listed below are components of tobacco smoke. These chemicals in particular are known to cause serious adverse health conditions for individuals who are exposed to them over a prolonged period of time.

Acetaldehyde	Methyl chloride
Acetone	Nicotine
Ammonia	Nitric oxide
Dimethylamine	Nitrogen dioxide
Hydrogen cyanide	Propionaldehyde
Methylamine	Pyridine

The testing indicated that for all compounds a greater than 90% level of reduction in the original compound after treatment with EnviroKlenz components. Examples of the types of reactions that occur between these toxic compounds and EnviroKlenz materials are listed below:

Acetaldehyde:

Reaction of acetaldehyde with EnviroKlenz sorbents proceeds through the interaction of the carbonyl group with surface sites followed by the aldehydic hydrogen dissociation leading to a multilayer dissociative adsorption. Such interaction increases the sorption capacity of EnviroKlenz materials, increasing the life of the sorbent.



The figure below compares the chemical activity of different forms of EnviroKlenz materials towards destructive adsorption of acetaldehyde. When acetaldehyde is adsorbed from an air stream, rapid adsorption takes place with EnviroKlenz sorbent and almost none with commercial material. Note that activated carbon, a commonly used sorbent, is much less effective, while in just a manner of minutes EnviroKlenz adsorbs over 80% of the chemical from the air stream.

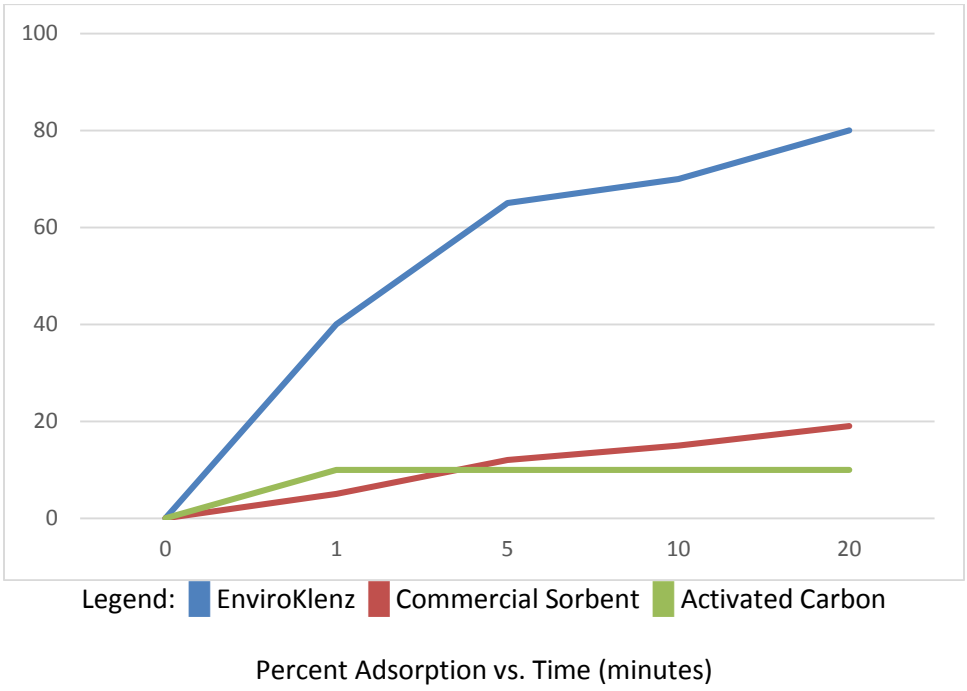


Figure: Adsorption of Acetaldehyde by EnviroKlenz Materials, their commercial counterpart and activated carbon.

It is important to note that although these are the only chemicals that have been tested for tobacco smoke, based on the types of chemical reactions the formulation is capable of performing, EnviroKlenz will most likely be effective at reducing levels of the additional following compounds:

Acrolein
Acetic acid
Acrylonitrile
Crotonaldehyde
Carboxylic acids
DDT/ Delirin
Dimethylntrosamine
Ethylamine
Formaldehyde
Furfural
Methyl acrylate
Methylpyrazines
Nonvolatile nitrosamines
N-Nitrosamines
Phenols
Pyrrolidine
Stearic acid
Trimethylamine
Vinyl chloride

Pesticides

Pesticides are used in more than 91% of households in the United States. Indoor contamination with pesticides is quite common. One study suggests that 80 percent of most people's exposure to pesticides occurs indoors and that measurable levels of up to a dozen pesticides have been found in the air inside homes. Reasons for this include contaminated soil or dust that floats in or is tracked in from outside, stored pesticide containers, and household surfaces that collect and then release the pesticides.

Of these pesticides it is estimated that over half used are organophorous compounds. All organophosphates (OP) are derived from one of the phosphorus acids, and as a class are generally the most toxic of all pesticides to vertebrates. Because of the similarity of OP chemical structures to "nerve gases," their modes of action are also similar. Their insecticidal qualities were first observed in Germany during World War II in the study of the extremely toxic OP nerve gases sarin, soman, and tabun. Initially, the discovery was made in search of substitutes for nicotine, which was heavily used as an insecticide but in short supply in Germany.

The organophosphates work by inhibiting certain important enzymes of the nervous system, namely cholinesterase. The enzyme is phosphorylated when it becomes attached to the phosphorous moiety of the insecticide, a binding that is irreversible. This inhibition results in the accumulation of acetylcholine at the neuron/neuron and neuron/muscle (neuromuscular) junctions or synapses, causing rapid twitching of voluntary muscles and finally paralysis.

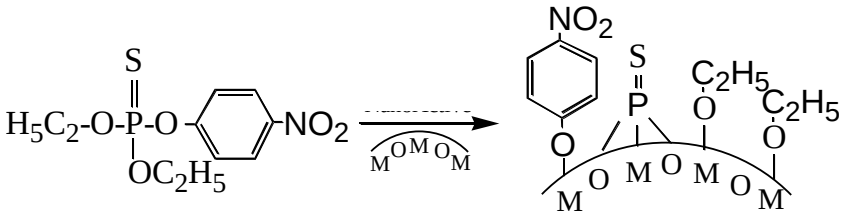
Prolonged exposure to low levels of these pesticides will also cause adverse health impacts for individuals and pets. Children and animals spend a significant portion of time in direct contact with the floor where the highest concentration of pesticides is located within the home. NanoActive sorbents offer the ability to chemically dismantle these toxic compounds and provide a safer indoor environment.

Due to its enhanced chemical reactivity, EnviroKlenz materials have the ability to chemically dismantle a variety of highly toxic compounds. A brief list of common insecticides capable of being neutralized or broken-down due to their chemical composition by EnviroKlenz is as follows:

Acephate
Azinphos-methyl
Bensulide
Cadusafos
Chlorethoxyfos
Chlorpyrifos
Chlorpyrifos methyl
Chlorthiophos
Coumaphos
Dialiflor
Diazinon
Dichlorvos (DDVP)
Dicrotophos
Dimethoate
Dioxathion
Disulfoton
Ethion
Ethoprop
Ethyl parathion
Fenamiphos
Fenitrothion
Fenthion
Fonofos
Isazophos methyl
Isofenphos
Malathion
Methamidophos
Methidathion
Methyl parathion
Mevinphos
Monocrotophos
Naled
Oxydemeton methyl
Parathion
Phorate
Phosalone
Phosmet
Phosphamidon
Phostebupirim
Pirimiphos methyl
Profenofos
Propetamphos
Sulfotepp
Sulprofos
Temephos
Terbufos
Tetrachlorvinphos
Tribufos (DEF)
Trichlorfon

An example of the chemical reactions that occur between EnviroKlenz materials and a typical organophosphate insecticide are outlined below:

Parathion:



Upon exposure of parathion to the EnviroKlenz material ("MOMOM" metal oxide surface), chemical bonds between the phosphorus and oxygen are broken and the fragments are adsorbed on the surface of the EnviroKlenz product.

The figure below presents results of an UV-Vis experiment that demonstrates the superior adsorptive capability of EnviroKlenz materials when compared to a commercial activated carbon, coconut shell carbon, and an ion exchange resin. Note that the EnviroKlenz materials achieved complete adsorption within minutes of exposure to paraoxon (organophosphate) while the carbon and IER samples were significantly less adsorptive and unable to adsorb paraoxon completely even after 20 hours of exposure.

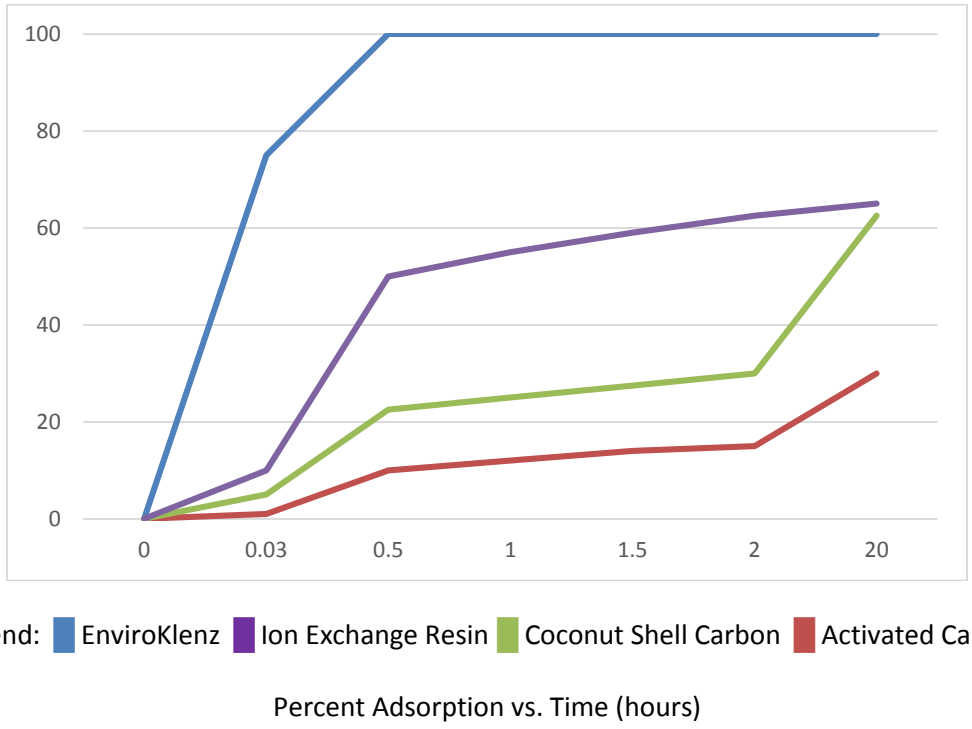


Figure: Removal of paraoxon by EnviroKlenz materials, activated carbons, coconut shell carbon, and ion exchange resins.

Volatile Organic Compounds and Other Toxic Volatile Chemicals

Organic chemicals are widely used as ingredients in a variety of household products. Paints, varnishes, and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing, hobby products and all types of fuels. All of these products can release organic compounds during use, and, to some degree, when they are stored.

The EPA's Total Exposure Assessment Methodology (TEAM) studies found levels of about a dozen common organic pollutants to be 2 to 5 times higher indoors than outside, regardless of whether the homes were located in rural or highly industrial areas. Additional TEAM studies indicate that while people are using products containing organic chemicals, they can expose themselves and others to very high pollutant levels, and elevated concentrations can persist in the air long after the activity is completed.

Volatile organic chemicals (VOC) encompass a wide range of range of compounds. These chemicals range from slightly hazardous organic solvents up to highly toxic and corrosive acids. They can be found in most industrial and household settings, and can pose a serious hazard for a prolonged period of time in an indoor environment. In addition to organic compounds, there are also a wide range of additional toxic volatile compounds which are commonly found in the home.

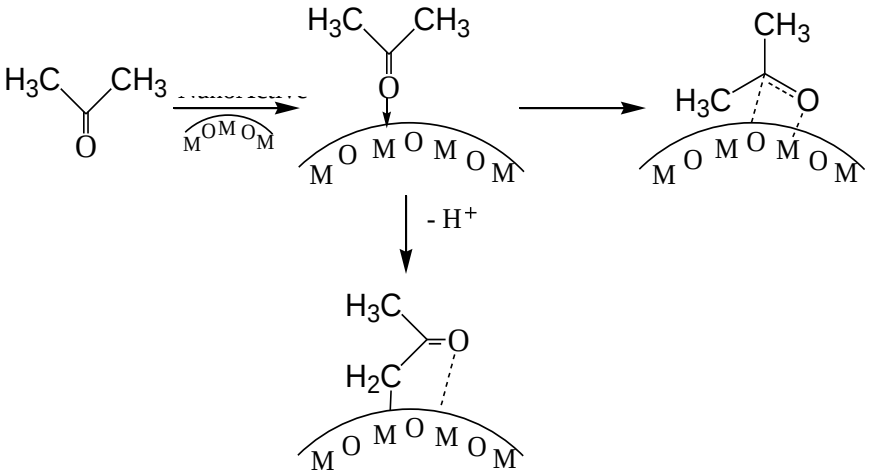
Some common examples of VOCs and other toxic compounds are listed below that EnviroKlenz would be effective at reducing or neutralizing due to chemistry and/or testing:

Acetaldehyde	Nitrous oxide
Acetone	Nitric acid
Ammonia	Nitrobenzene
Ethanolamine	Phenol
Diesel fuel	Phosphoric acid
Formaldehyde	Polyvinyl alcohol
Hydrochloric acid	Sulfuric acid
Hydrofluoric acid	Thiourea
Methanol	Toluene
Methylene chloride	Triethanolamine

EnviroKlenz materials are capable of removing and destroying these compounds from a variety of indoor airspaces, processing streams, storage facilities, also anywhere that these harmful compounds are generated. The method or process used in destruction of these compounds differs depending on the compound in question. Due to the inherit stability of hydrocarbons, EnviroKlenz materials will physically absorb these compounds, however will not chemically modify their structure. EnviroKlenz materials will chemically dismantle the many VOCs.

Acetone:

Reaction of acetone with EnviroKlenz sorbents proceeds through the interaction of the carbonyl group with surface sites that followed by the metal hydrogen dissociation.



Hydrofluoric Acid:

Upon reaction of selected EnviroKlenz materials with any type of acid, the acid is capable of being broken down into safe non-toxic byproducts. As an example sorption/neutralization of hydrofluoric acid is given with the formation of metal fluoride, a benign salt.

$$MO + 2HF \rightarrow MF_2 + H_2O$$

Ammonia:

EnviroKlenz materials are also capable of neutralizing basic compounds such as ammonia, which is commonly used in many household-cleaning agents. It is postulated that sorption occurs through interaction of ammonia with the hydroxyl groups on the surface of sorbent.

Additional Information

Material Safety

Independent certified laboratories were utilized to conduct evaluations of the products for health and safety risks. The active components that comprise the EnviroKlenz products have been proven safe through oral, pulmonary, ocular, and dermal toxicology testing.

The materials were evaluated for toxicity by the USACHPPM (Unites States Army Center for Health Promotion and Preventive Medicine) Directorate of Toxicology, and MPI Research. The tests followed Environmental Protection Agency protocols and included acute oral toxicity, acute dermal toxicity, skin irritation, skin sensitization, eye irritation, and inhalation. The materials were proven to be safe.

Methods of Testing Footnotes

1) FT-IR analysis: Fourier Transform Infrared (FTIR) spectrophotometry is used to identify the appropriate functional group for the compound being tested. By monitoring the presence or absence of infrared absorption bands at a particular wavelength or the spectral changes over a period of time, the concentration of the starting compounds, or byproducts of a reaction can be determined. EnviroKlenz Sorbent is typically exposed to a volatile or gaseous agent in a closed system. The concentration is then monitored in the gas phase and the solid is analyzed to determine functional groups and byproducts.

2) GC/MS analysis: Gas chromatography is utilized to extract reaction byproducts and to quantify remaining starting compound from EnviroKlenz Sorbent. EnviroKlenz Sorbent is exposed to the compound. After a predetermined reaction time has passed, the compound is extracted from the sorbent utilizing a suitable solvent and analyzed to quantify remaining starting material and to determine reaction byproducts.

3) UV-Vis analysis: Ultraviolet spectrometry is utilized to monitor the kinetics of reaction between EnviroKlenz Sorbent and a compound. The compound of interest is placed in a solvent, EnviroKlenz Sorbent is added and the disappearance of the compound is monitored over time.

4) Not every chemical listed in this summary report has been evaluated in practical or experimental tests. Some compounds are evaluated based on shared chemistry and functional groups with like compounds.

Supporting Literature

Additional scientific publications outlining the ability of the materials to chemically dismantle compounds:

1) Li, Y.-X.; Koper, O.; Atteya, M.; and Klabunde, K.J., "Adsorption and Decomposition of Organophosphorus Compounds on Nanoscale Metal Oxide Particles. In Situ GC-MS Studies of Pulsed Microreactions over Magnesium Oxide", Chem. Mater., **4**, 323-330 (1992).

2) Wagner, G.W.; Bartram, P.W.; Koper, O.; Klabunde, K.J.; "Reactions of VX, GD, and HD with Nanoscale MgO," J. Phys. Chem. B., **103**, 3225-3228 (1999).

3) Koper, O.; Lucas, E.; Klabunde, K.J.; "Development of Reactive Topical Skin Protectants Against Sulfur Mustard and Nerve Agents," J. Appl. Toxicology, **19**, S59-S70 (1999).

4) Koper, O; Klabunde, K.J.; "Nanoparticles for the Destructive Sorption of Biological and Chemical Contaminants," U.S. Patent 6, 057, 488; May 2, 2000.

5) Wagner, G.W.; Koper, O.B.; Lucas, E.; Decker, S.; Klabunde, K.J.; "Reactions of VX, GD, and HD with Nanosize CaO: Autocatalytic Dehydrohalogenation of HD," J. Phys. Chem. B, **104**, 5118-5123 (2000).

6) Rajagopalan, S.; Koper, O.; Decker, S.; Klabunde, K. J. "Nanocrystalline Metal Oxides as Destructive Adsorbents for Organophosphorus Compounds at Ambient Temperatures," Chemistry, A European J., 8, 2602-2607 (2002).

7) Koper, O.; Klabunde, K.J.; Martin, L.S.; Knappenberger, K.B.; Hladky, L.L.; Decker, S.P.; "Reactive Nanoparticles As Destructive Adsorbents For Biological And Chemical Contamination," U.S. Patent 6,653,519 B2; November 25, 2003.

8) Khaleel, A.; Lucas, E.; Pates, S.; Koper, O.B.; Klabunde, K.J.; "Nanocrystals as Adsorbents for Chemical Agents and Air Pollutants," DOD Book Publication

9) Khaleel, A.; Kapoor, P.; Klabunde, K.J.; "Nanocrystalline Metal Oxides as New Adsorbents for Air Purification," Nanostructured Materials, 11, 459-468 (1999).

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