BIOZONE Air Purification 陽光空氣淨化

Introduction – Polluted Air & Effects

Look around. What are you breathing? What are you touching? What bacteria, SARS, H1N1, or possibly even a new type of undiscovered virus might you be allowing into your body this very moment? **Our quality of air is becoming worse every day.** Anything from a common cold to a heart attack could have been caused by something we inhaled.

Contaminating our environment are three major factors:
1) Micro-organisms (ie. bacteria, viruses, etc.)
2) Volatile organic compounds (ie. formaldehyde, benzene, etc.) and odors
3) Particulates (ie. dust, pollen, etc.)

Prolonged exposure to these have long been scientifically proven to be harmful to our health, so what can we do?

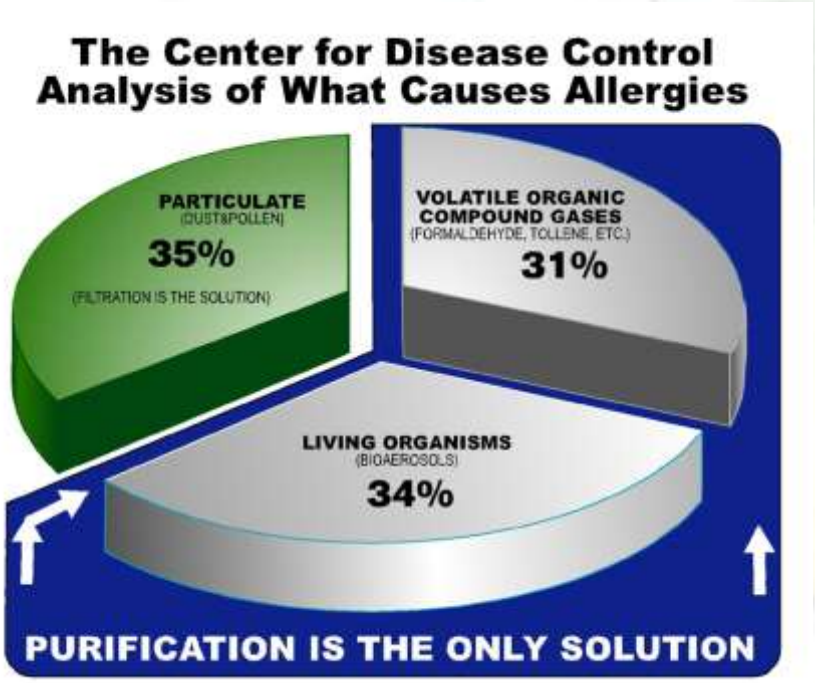
環境問題

我們四周的空氣質素日益下降，空氣污染問題愈來愈嚴重。根據科學界研究所得，人體如長期暴露於污染的空氣中，呼吸系統及免疫力系統將受極大壓力，因而產生健康問題。

我們置身於現代化的大都會，任何地方的空氣均佈滿有害物質，但為了要面對無力改善室外空氣的事實，我們只可以盡量逗留在較為潔淨的室內空間，這亦是市場上對空氣清新機的需求越來越大的原因。

空氣污染的四大源頭

1. 微生物 - 細菌及病毒
2. 可揮發性的有機物質、甲醛、苯等
3. 懸浮粒子
4. 異味、臭味



We offer you a simple solution: **The air purifier.**

We can not stop every pollution source on the planet, but we can purify the air around us and in our homes to keep ourselves, and our loved ones safe.

如果您有上述的情況出現，則表示您的室內空氣環境需要治理了。

// Company Profile //

BIOZONE Scientific International Inc. designs and manufactures air purifiers to help eliminate dangerous impurities in the environment. Our headquarters are located in greater Helsinki, Finland. Other offices can be found in Orlando, Florida, USA, Hong Kong, and Beijing, China. BIOZONE solutions for commercial applications are available world-wide.

BIOZONE offers the world solutions to exterminating bacteria, viruses, mold spores, algae, VOC, and odors in the air and on surfaces - even in the most demanding environments. Our air purifiers are designed and proven to solve contamination problems in a variety of applications to suit our client's needs.

// 公司簡介 //

BIOZONE Scientific International Inc. 陽光環科國際有限公司 - 從事空氣淨化設計及生產。 總公司設於芬蘭的赫爾辛基，并設有辦事處在美國的奧蘭多、佛羅里達、英國及中國之香港和深圳，經銷商網絡更是遍布世界各地。

BIOZONE 採用先進的空氣淨化技術，為政府機構、物業管理公司、醫療、工業、娛樂、交通、商業、教育、公共場所、商務樓宇、房地產、家居等提供專業化的空氣淨化產品；為大型的運輸系統、垃圾收集站、餐飲業、食品加工業、食品儲運業等提供專業的食品淨化解決方案。BIOZONE 多年致力於環境污染技術的開發，鑽研，使我們的產品得到了各個領域的認可和使用。

BIOZONE Technology

Why use BIOZONE's air purifiers? What is so efficient about them? Are there any side effects? How does it work? For answers to these questions, the following is a detailed explanation of our technology.

BIOZONE 技術簡介

這部份是解釋陽光淨化的空氣淨化技術及在淨化器內的重要物理和化學作用。 淨化器發揮 5 種主要淨化功能，這些功能的強度可因系列產品的不同應用要求而調較。

Integration of 5 Purification Technologies

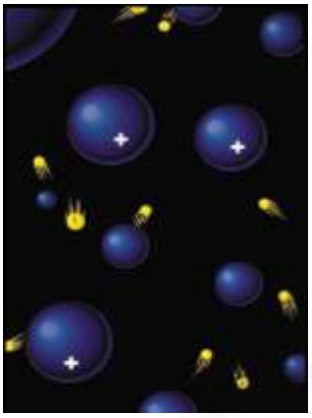
- **Photo Plasma**
- **Photo Catalytic Oxidation (PCO)**
- **Deep UV Germicidal Light**
- **Negative Ion**
- **Ozone O_3**

For many years these technologies have been marketed separately, each with its own advantages and disadvantages. We have developed a method to integrate all five, allowing them to cover each other's flaws. Such has been accomplished due to the application of what we call "PhotoPlasma".

綜合 5 大技術

- 光等離子
- 光催化
- 深層紫外光
- 負離子
- 臭氧 O3

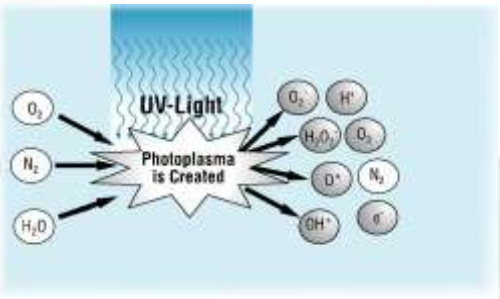
PhotoPlasma



Dissociation of oxygen (O_2) and water vapor (H_2O) into O^+, O^-, and ionized O_2 and O_3 (Ozone) by exposure to UV C light. The collection of these is termed “Plasma”. It is a gas that contains ions and electrons, fully ionized (conversion atoms / molecules into ions) by UV light (wavelength less than 280 nm, or 280 nanometers).
PhotoPlasma is the core of BioZone’s purification technology. It acts as a **catalyst** for a combination of chemical reactions. By converting oxygen and water molecules, it creates different types of highly reactive species (ie. OH hydroxyl radicals or O_3 ozone) **necessary to initiate the reactions of the other four technologies.**

*PhotoPlasma is highly reactive and will break the bonds of organic compounds sometimes 180x faster than UV light or even 2000x faster than Ozone alone.

光等離子



光等離子是由紫外光所產生含離子和游離電子的氣體（波長低於 280 nm）。 在淨化器中的紫外光及其離子簇把氧氣 (O_2) 和水 (H_2O) 的分子分解成臭氧 (O_3)、氫氧根 (hydroxyl)、游離的氧原子、超氧離子及其它的氧化體。這些分子都是十分活躍，且會分解氣流中的有害雜質成為惰性的化合物，如二氧化碳 (CO_2) 和水 (H_2O)。紫外光產生的離子簇把氣流中的粒子變成氧化體，在離開淨化器後繼續攻擊碰到的有害物質。

整體的光離子簇是十分活躍的，在一些情況下，它破壞有機物體組織的速度比紫外光快 180 倍，且比單是臭氧快 2000 倍。這是因為離子簇製造出一個更劇烈的環境來處理及消除那些有害物質的化學及催化作用。

The PhotoPlasma Purification Process

1. Micro-Organisms such as Bacteria, Virus, Fungi, Mold and Algae

- Plasma is the safest and most effective medium for purification, possessing a antimicrobial capacity of 100 to 2,000 times faster than ozone (O_3) and chlorine. BIOZONE products were effective in sterilizing micro-organisms within its effective area according to the results of most laboratory tests.
- Free radicals within the Plasma can neutralize those generated by electrical appliances (televisions, computers, etc.), decreasing their effect on people’s skin during use.

2. Minute Particles such as Dust, Pollen and Smoke Particles

- Within the plasma, particles become either positively or negatively charged through ionization or dissociation. When these are blown out from the chamber, those charged particles will attach to particles in the air.
- As attachment continues, an accumulation of particles will form, eventually becoming heavy enough to fall to the ground or on curtains and walls where they are out of the air we breathe.
- Charges occur even towards minute particles of sizes 0.001 micron.

光等離子淨化技術 、淨化過程

1. *微生物如細菌、病毒*

- 紫外光光能將空氣中的純氧 O_2 以及水氣 H_2O 中的氧元素分開、產生 O+,O-, 極化的 O_2, O_3 (臭氧) 而形成一個氧族群的電漿 (Plasma)。
- Plasma 為最有效及安全的殺菌技術，比臭氧 O_3 以及氯的殺菌能力高 100 至 2000 倍，淨化機排放出的 Plasma 能有效率地清除有效範圍內空氣中的微生物。
- Plasma 中的自由基亦能與家庭電器如電腦、電視啓動時產生的電子游離基中和、減少游離基對人體皮膚的傷害。

2. *浮粒子如塵埃、花粉、煙微粒*

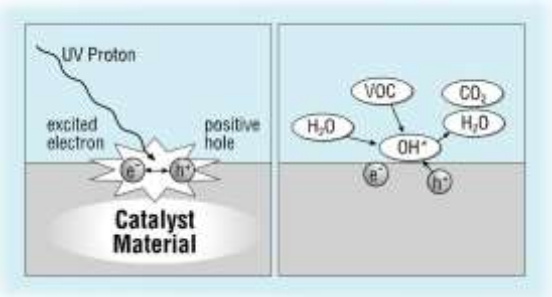
- 紫外光光能製造 Plasma 時將電子、分子、以及原子拆散、充電 (Charge)、極化 (Ionize)、各帶正極或負極 Plasma 被輸出後、這些極化的電子、分子以及原子等將與空氣微粒相互吸引，再次充電。
- Plasma 與空氣結合後，因其重量增加，故與相互吸引的空氣懸浮粒子墜於地面或依附在其他物質表面 (如牆身)，達到淨化空氣的效果。

Plasma 對微粒細小至 0.001 micron 亦能產生充電作用，並將之從空氣中移走。

PhotoCatalytic Oxidation (PCO)

PhotoCatalytic Oxidation (PCO) is the creation of hydroxyl radicals and super-oxide ions on a metallic surface using UV light. These highly reactive products will break down harmful chemical compounds in the air, converting them to harmless carbon dioxide and water, leaving behind freshened air.

在光催化過程中，紫外光的光子能量，經過某種塗層或金屬的表面（如氧化鈦或鋁）所產生的催化作用，將化學及化合物消除，尤其是把揮發性有機化合物 (VOC) 消滅。受激發的電子在催化物的表層留下正極的洞穴，令水蒸氣份子變成高氧化度的氫氧根 (hydroxyl)， 氫氧根 (hydroxyl) 分解黏附在表面的有害分子和化學物質而產生淨化作用。光催化本身不產生有害物質。

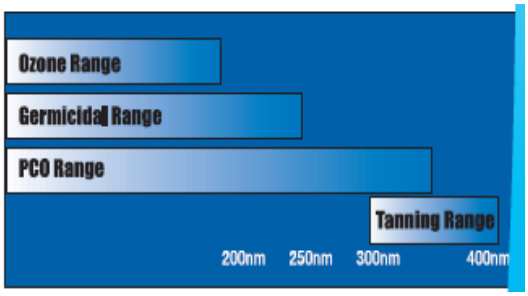


As a UV Photon hits the metallic surface, it gives an outer shell electron enough energy to free itself so that an electron hole is created. The energy resulting is transferred to a water molecule on the surface, creating a hydroxyl radical that can break down organic compounds.

一個紫外光子擊中材料，帶空白比波長是較少，電子空穴被創造。這能量轉移到在表面的一個水分子，創造羥基可能打破有機化合物。

Deep UV Germicidal Light

In addition to helping create plasma, ultraviolet light with a wavelength of 254 nm and 185 nm can also be used to sterilize (kill) micro-organisms on its own. Almost all indoor contaminants are organic, such as volatile organic compounds, particulates such as dander, hair, dust, mite feces, and biological contaminants such as bacteria, viruses, and fungi. BIOZONE's lamps use a specially formulated glass that generates germicidal light as deep UV light passes through. This newly generated light can break apart electron bonds in harmful organic molecules.



深頻紫外光

紫外光在波長 254 nm 及 185 nm 可作消毒及消滅微生物用途 。 利用特殊波長的紫外光 (ultraviolet light) 所營造之光量子 (photons) ，具消毒殺菌功能，強度足夠有效地破壞有機污染物質之結構。大部份室內污染物為有機物，例如有毒的易揮發有機物、皮屑塵埃、毛髮,蟲蛆排泄物.....等和生化污染物如細菌、病毒、霉菌。我們特別設計的深頻紫外光燈，能破壞這些有害的有機分子及其電子鍵。

Negative Ions

Ions are electrically charged atomistic particles, namely atoms and molecules that have gained or lost electrons. A negative ion is one with an excess of electrons (negative charge) compared to the ion's protons (positive charge), hence a negative charge for the overall ion. These negative ions may break down harmful chemicals and decrease their concentration in the air, but its main effects are biological.

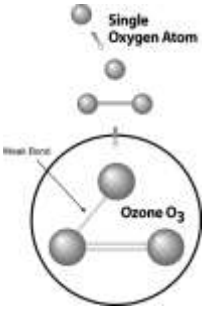
Negative ions are created inside BIOZONE's air purification devices, but will be blown out into the air to collide with airborne chemical compounds and micro-organisms. An aggressive negative ion will give up its charge (electron) to the polluting particle (positively charged) it meets, creating a new negatively charged particle. This process will repeat until enough particles have been accumulated and the mass of particles is heavy enough to fall out of the air we breathe.

負離子

離子是由一個或數個正負極平衡的原子組成,其中有喪失或增加了微粒分子中的電子。離子在天空中通過減少有害的化學製品的物質時可能產生有害的化合物作出反應，然而負離子的反應是生物效應，這是負離子和微生物之間的互動本質。

BIOZONE 所產生的負離子與化學化合物和微生物一起在空氣中漂浮互動碰撞，激進的負離子將釋放它的電荷給污染物，從而產生一種新的負電荷微粒繼續吸住正電荷微粒，直到這些微粒的重量可以落在我們呼吸的空氣之外，使空氣恢復清新。

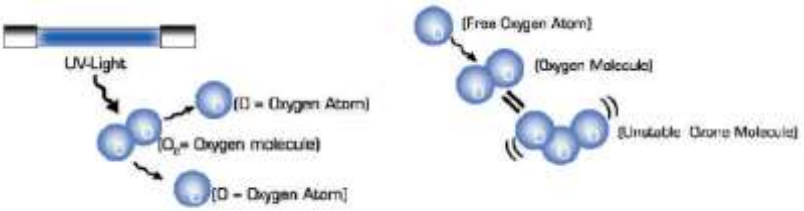
Ozone O_3 – (Ozone Generators)



Produced at altitudes and ground level in natural oxygen and UV-light reaction cycles, ozone (O_3) is a very reactive gaseous compound found in the atmosphere. The gas's abilities as a bactericide, vermicide, fungicide, and deodorizer are well accepted by the scientific community. **Ozone generators** were developed and have been used for over a hundred years for purification and sanitation purposes.

While ozone is indeed a very reactive oxidizing agent, it can still safely but effectively remove harmful substances such as VOC's in low to moderate concentrations.

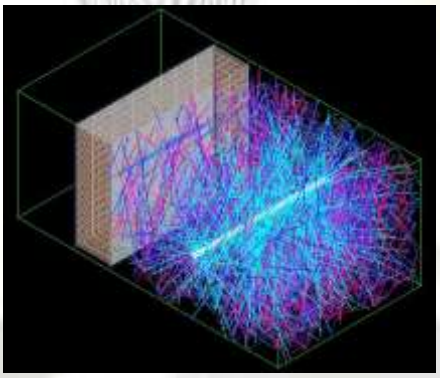
BIOZONE's air purifiers emit ozone levels that will saturate to less than 0.05ppm in the room size they are designed for. Rest assured that these production rates are **well below the internationally recognized Indoor Air Quality limits.**



臭氧 - 活性氧

活性氧也稱之為臭氧, 是一種可在大氣層中找到的反應性強氣體。它可以在強烈陽光照射大氣層時產生、在大氣的高層及地面都可以找到。臭氧被科學鑑定為一種殺菌劑，能于短時間內將空氣中的浮游細菌消滅，並能中和、分解毒氣，去除惡臭。因此可用于淨化空氣、飲用水和殺菌方面。大量的臭氧被認為有害，甚麼是大量或可接受的量度，則由不同的國際組織訂下標準。無論如何，BIOZONE 的產品都符合每種應用的標準。

BIOZONE's Purifying Process



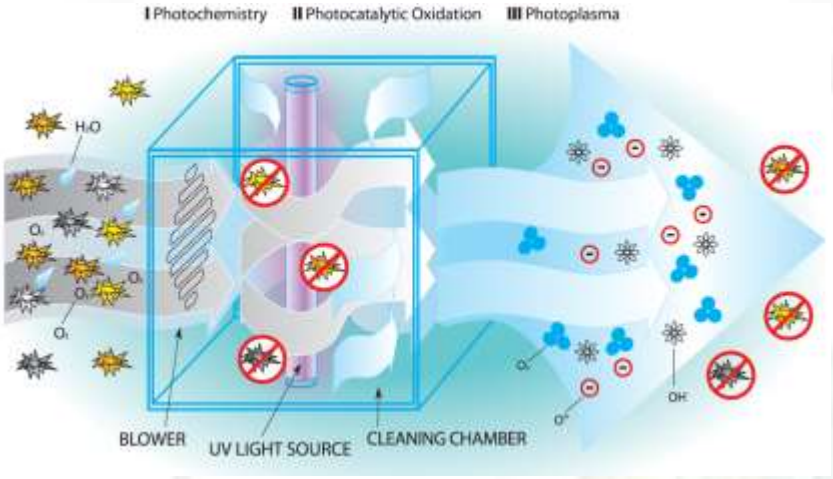
BIOZONE removes contaminants from the air and surfaces by combining two very powerful purifying technologies - Photoplasma and Photochemistry. These methodologies have been well studied and documented by the scientific community, the synergy of their interaction producing a unique and superlative way of clearing the air and surfaces of contaminants.

Photochemistry is chemical change in material caused by exposure to light energy. For disinfection purposes such as eliminating contaminating organic compounds, use of photons in the ultraviolet spectral range is typically required. Almost all indoor contaminants are organic: Toxic volatile organic compounds (VOC), dust particles such as dander, hair, dust mite feces, etc., or bacteria, viruses, and fungi. Ultraviolet light that has a wavelength within the 100-280 nm range has enough energy to break down the electron bonds of such organic molecules.

獨有之淨化過程

BIOZONE 淨化技術不同於目前市場上常見的紫外光消毒或臭氧/負離子技術。BIOZONE 科技獨有之淨化過程，結合兩項有力的 PhotoChemistry (光化學) 和 PhotoPlasma (光等離子) 淨化技術，除去空氣和表面的污染物 。 光化學和光等離子之相互作用能產生獨特和卓越的淨化方法論，已為科學組織研證存檔。

PhotoChemistry (光化學) 是物質曝露於光能下所產生之化學變化或改變。過程通常需要利用特殊波長的紫外光 (ultraviolet light) 所營造之光量子 (photons) 。在此波長的紫外光具消毒殺菌的功能下，足夠強度的紫外光能有效破壞有機污染物質之結構。大部份室內污染物為有機物， 例如有毒的易揮發有機物，皮屑塵埃，毛髮，蟲蛆排泄物，..等和生化污染物如細菌，病毒，黴菌。Photochemistry (光化學) 能破壞這些有害的有機分子。在 100-280 納米波長範圍的紫外光強度，甚至能破壞有機分子的電子鍵。



BioZone's Purifying Process 陽光淨化技術淨化過程圖

BIOZONE consists of a Two Tiered Purification Mechanism

1. Direct Purification at the Purification Chamber .

UVC light turns air that enters the purification chamber into "Cold Plasma;" so called because of the low level of energy added compared to the creation of other types of plasma (ie. those found in lightning, etc.) Any micro-organisms and VOC's present are broken down during this change.

2. Broadcasting of Cold Plasma to Perform Purification

Cold plasma blown out from the chamber will actively seek out and chemically react with any impurities (VOC's, micro-organisms, etc.), purifying the surrounding air. It is not necessary for every particle of air in the effective serving area to pass through the purification chamber.

分兩層次進行空氣淨化的設計

1. ***淨化中樞直接淨化***

當染污空氣被風扇抽入淨化中樞，中樞內的紫外線光能大量生產光等離子體，光等離子體將 VOC (可揮發性有機物質) ，細菌、病毒等微生物的蛋白質進行分解，使空氣淨化。

2. ***傳播 Photo Plasma 進行淨化***

被淨化中樞處理後的空氣仍然處於光等離子體狀態，當光等離子體被送出淨化中樞後，亦會與四周的空氣產生化學作用，分解 VOC 及殺滅懸浮微生物。

Advantages of BIOZONE's Purification Technology

A BIOZONE air purifier operates on 12V DC, making it one of the safest, most efficient and economical devices on the market. Total costs per month add up to only roughly $10 HK! Along with a lightweight, portable design, the purifier is easy to install or demolish, and requires little maintenance.

BIOZONE developed PhotoPlasma with PhotoChemistry. In doing so, we have developed a much faster method to rapidly eliminate indoor bacteria, viruses, fungi, fungi enzymes, VOC's and unpleasant odors.

BIOZONE purification technology is a kind of initiative technology. Not only does PhotoPlasma ***actively seek out*** contaminants in the air outside the purifier, but also on surfaces or cracks and crevices of the entire surrounding area (effective area). Pollutants are then broken down and converted to harmless carbon dioxide and water, unlike traditional methods of accumulating impurities (filtration) and creating **secondary pollution**.

BIOZONE air purifiers can remove pollutant particles as small as **0.001 microns.** The combination of ultraviolet light and plasma has been reported to be extremely potent in removing contaminants from surfaces.

Estimated time required to remove biological contaminants from surfaces.

- ozone (made by corona discharge): **10 hours**
- UV light at the high bactericidal range of 253.7 nm: **1 hour**
- Corona discharge ozone and ultraviolet light combined: **1.5 minutes**
- Broader, more energetic ultraviolet bandwidth with resulting plasma: **20 seconds**

陽光淨化技術的優勢

BIOZONE 使用 12 伏低壓直流電源，是最**安全**的電壓裝置耗電量低。採用輕巧化設計，產品體積小、重量輕，便於安裝和拆卸，無需改變現有建築空間和設備。使用期長，不需更換配件而且由專人維護。 **節能方便 -** 雖 24 小時連續使用，仍僅約每 4 天耗電 1 度。在中央空調管道中幾乎不產生任何風阻，不產生任何的能量損耗。

BIOZONE 運用光化學技術，產生的光等離子體能迅速殺滅室內細菌、病毒、真菌及各種酶菌；祛除室內煙味等不良氣味；清除室內甲醛、笨、氨氣、揮發性有機物等有害化學氣體。

BIOZONE 淨化技術是一種 **主動淨化** 空氣的先進技術，當空氣進入到淨化室，其獨有的陽光淨化技術可以產生大量的光等離子體，這種含有光等離子體對各種細菌、病毒、黴菌等微生物進行淨化處理，而淨化後的空氣，含有純淨光等離子的空氣被吹入室內飄散到室內的每一個角落，對室內污染空氣進行第二次淨化處理，**主動捕捉** 並殺滅空氣中和物體表面的各種細菌、病毒、黴菌等微生物，清除各種空氣污染物。對污染空氣進行主動的淨化。解決及改變了傳統空氣淨化技術方式時對空氣進行被動處理時所出現的問題，如速度慢、容易出現衛生死角等弊端，極大提高了治理污染空氣的速度。

BIOZONE 光等離子體可以摧毀幾乎所有的有機污染物；同時產生的負離子可以消除空氣中的微粒 **(沉降小至 0.001 微米的可吸入顆粒物)** 和異味。光等離子體在淨化空氣的過程中被迅速還原成二氧化碳和水，沒有任何的化學殘留物質，**不產生二次污染**，對人體和環境無害。BIOZONE 淨化技術已被證明是最有效的消除空氣中和物體表面污染的方法。讓我們用一組測試結果進行比較，當用電暈放電所產生的臭氧來清除表面的生物污染時，大概需要 **10 小時**。用紫外光照射時則需要 **1** 小時 便可達到同樣的清除效果。如果將電暈放電和紫外光照射同時使用時，需要 **1 分半鐘** 便可達到同樣的清除效果。當採用 BIOZONE 淨化技術所產生的光等離子體時，則僅需要 **20 秒** 便可清除同樣的表面。

Comparison

Current Market's Filtration Methods : HEPA, UV, Negative Ion and Ozone etc.

Filtration – Carbon Filter, HEPA Filter, Electronic Filters
High Efficient Particulate Arresting Filters (HEPA) - Uses a tightly constructed material to trap particulates (up to 0.3 micron) but restricts airflow. 90% - 99.7% efficiency of air passing through.

Carbon Filters – Mainly targets unusual odor and harmful chemical substances. Material will become "Saturated" over time so filters must be replaced often (approximately 3-6 months) to maintain functioning.

Electrostatic Filters - Passes air through electrically charged grids, creating a low voltage electrostatic field. Dust particles in the air are charged and attracted to oppositely charged pads within the filter. 10% - 20% efficiency of air passing through.

Ultraviolet Light
Rays destroy viruses, bacteria, and fungi and help breakdown organic compounds.

Negative Ion Generators
Produces negative ions that attach themselves to pollutants, weighing them down and removing them from the air we breathe.

Ozone O_3 Generators
Produces ozone, an oxidizing agent that can neutralize and sterilize most pollutant gases, bacteria, viruses, mold, mildew, etc.

***Note:**
BIOZONE air purifiers are not air filters, but air purifiers that utilize a multitude of air cleaning methods. The purifiers are designed to be effective in reducing indoor air pollutants and odors in residential, commercial, industrial and agricultural settings.

目前空氣淨化技術比較

目前的室內空氣淨化方法主要有：過濾、紫外線消毒、負離子和臭氧等。

過濾淨化法 - 活性碳、過濾網 HEPA、靜電除塵法
過濾網 HEPA - 能將空氣中的塵埃吸到塵網表面，從而清除空氣中之塵埃。部份高效能塵網 HEPA 能清除空氣中細至 0.3 微米之塵埃 (約是頭髮的 1/300 大小)，從而將大過 0.3 微米之細菌隔絕，減低細菌量，但部份 0.3 微米以下之細菌及病毒則可能不能清除，因一般病毒都少於 0.3 微米。同時塵網需要定時更換，否則便會無效。

活性碳 - 主要針對異味及有害化學物質，但當使用一段時間後，其本身物質便會飽和 "Saturated"，功效便會消失，及需進行更換。 一般常用於空氣淨化器 / 空氣清新機的活性碳過濾網之有效使用期約為 3 個月至半年不等。(注意 : 使用地方之異味及有害化學物質之濃度高與低，將直接應響活性碳過濾網之有效使用期間)。

靜電除塵 - 利用電極的異性相吸，同性相斥的原理吸附空氣中的灰塵、顆粒等污染物；對氣味、微生物淨化效果弱，風速高時無法淨化。必須定期清潔電極板，否則顆粒聚集物將會滋生細菌及微生物等。同時安裝較繁瑣，售後維護成本又較高。

紫外線技術
公認的最有效殺菌辦法，波長在 254 納米時殺菌效率最高，技術上必須保證波長的峰值。主要針對物體表面及工具殺菌。但輻射面積小，而且不能在有人的環境下使用。

負離子淨化
負離子是一種帶負電荷的空氣離子，負氧離子可改善肺功能，給人一種相對清新的感覺，但其壽命很短。對污染物它是一籌莫展的。

臭氧淨化法
臭氧目前在室內空氣淨化方面應用比較普遍，對殺菌、除異味有明顯的功效。但是須在無人的環境下使用。因高濃度的臭氧對辦公設備及建築物有一定的腐蝕作用。

BIOZONE 淨化技術：
一種高科技淨化技術。光催化劑在紫外光的輻照下，產生具有强力氧化能力的光等離子，可以直接殺滅細菌並徹底將有機物分解為二氧化碳和水等無害小分子。跟傳統淨化技術相比，它具有淨化徹底、廣泛、高效、節能、安全、方便等特點。

BIOZONE's Purification Technologies

To Eliminate Micro-organisms
Destroy most bacteria, virus, fungi and animal dander.

To Remove Minute Particles
Remove dust, ash, pollen and tiny cellulose particles.

To Remove Unpleasant Odors
Remove unpleasant smells of chemicals, animals and pets, tobacco, cooking and garbage.

To Neutralize Chemical Gas
Neutralize volatile organic compounds (VOC) such as formaldehyde, benzene, pesticides, vaporized, hydro-carbonates, and toxic gases spread by painting.

陽光淨化技術的作用

清除空氣中的微生物污染物
殺滅和摧毀空氣中、物體表面的細菌、病毒、黴毒、黴菌，同時也去除空氣中的死皮屑、花粉等所引起疾病的來源，減少疾病在空氣中的傳播。

沉降空氣中的粒子
沉降空氣中的灰塵、煤塵、煙霧、纖維雜質等各種可吸入懸浮顆粒物。

消除異味
有效除去化學物品、動物、煙草、油煙、烹調和垃圾中散發的異味，同時又能達到除臭的效果。

中和化學氣體
中和從揮發性有機物、甲醛、苯、殺蟲劑、霧狀碳氫化合物、油漆中散發的有害氣體，同時又可避免因吸入有害氣體而引致的身體不適的發生。

Applications

- Elevators
- Washrooms
- Public Areas
- Conference Rooms
- Basements
- Smoking Areas
- Beauty Salons
- Pet Shops
- Restaurants
- Hospitals
- Senior homes
- Schools
- Supermarkets
- Playgrounds
- Cooler/Chiller
- Fitness Centers
- Changing Rooms
- Casino
- KTV
- Paint Factories
- Refuse Collection Centers
- Subway
- Etc.

適用場所

升降機、辦公室、會議室、電腦室、地下室、吸煙區、臥室、商店、美容院、餐廳、咖啡館、速食店、茶藝館、醫院、診所、療養院、學校、學習班、附托兒所的百貨公司、飯店、超級市場、遊樂場、冷藏庫、購物中心、麻將間、公共廁所、KTV、寵物店、健身室等。

Validations 測試報告

Finland	Tervisekaitseinspektsioon Health Protection Inspectorate Mikrobioloogia Kesklabor Central Laboratory of Microbiology
France	The National Scientific Research Centre Clean Concepts Measurements
Ireland	Dublin University
USA	USDA－Vallid Labs US FDA－Tri-Tech Analytical Lab Department of Biology，Penn State University Environmental Industries International, Inc.
Australia	Engineered Environments (IEQ) Pty Ltd Healthy Buildings International Pty Ltd.
Korea	Korea Apparel Testing & Research Institute
Singapore	Pure Science International Pte Ltd

China	軍事醫學科學院微生物流行病研究所 中國疾病預防控制中心環境與健康相關產品安全所 國家環境分析測試中心 中國室內裝飾協會室內環境監測中心 廣東省疾病預防控制中心 國家質量監督檢驗檢疫總局深圳計量檢定站 國家空調設備質量監督檢驗中心
Hong Kong	LAWN Environmental Protection Ltd. SGS 香港標準及檢定中心 Polytechnic University

Tested by	Description	Duration	% Reduction
The National Scientific Research Centre - France	H5N1 / H1N1	0.44 seconds	99.9998%
VTT Technical Research Centre - Finland	VOCs Toluene Xylene Butly Acetate	 18 – 24 hrs. 18 – 24 hrs. 18 – 24 hrs.	 45% 63% 46%
Vallid Labs – USDA Certified Lab - USA	Bacteria Yeast and Mold – Surface Bacteria - Surface	1 pass 3 hours 3 hours	99% 99.4% 96%
Tri-Tech Analytical Laboratories (FDA Certified Laboratory) - USA	Listeria monocytogenes – Surface 3 logs 5 logs E. Coli 0157 – Surface 4 logs 5 logs E. coli, Salmonella, Listeria - Surface	 1 minute 2 minutes 1 minute 2 minutes 24 hours	 99.9% 99.999% 99.99% 99.999% 100%
Penn State University Biology Department - USA	E. Coli – Surface	3 hours	100%
Korea Apparel Testing & Research Institute - Korea	Surface Bacteria Staphylococcus Aureus ATCC 6538 E. Coli ATCC 25922 Klebsiella Pneumoniae	 3 hours 3 hours 3 hours	 99.3% 99.9% 99%
SGS – Hong Kong	TBC	24 hours	99.7%
軍事醫學科學院微生物流行病研究所 - China	Airborne Bacteria E. Coli Salmonella Surface Bacteria E. Coli Salmonella	 10 minutes 10 minutes 3 hours 3 hours	 100% 100% 97.49% 98.39%
國家空調設備質量監督檢驗中心 - China	Formaldehyde	30 minutes 3 hours	>71% 89%
國家質量監督檢驗檢疫總局 – China	H_2S	7 minutes	100%

Products 產 品 介 紹

MobiZone Series 汽車 / 旅遊系列

Primarily used in vehicle and hotel rooms (during travel with an optional adaptor).

Specification :

Model	MZ I / MZ II (Heavy Duty)
Size	140 x 80 x 37 mm
Weight	<220g
Power Consumption	12 W
Rating	12V 2A transformer, B centertap +
Operation Temperature	-20ºC - + 40 ºC
Humidity	0-90% RH non-condensing
Manufacturing Materials	ASA
Shelf Life	3 years
Warranty	1 year

PR Series 家居及辦公室系列

Primarily used in residential and light office areas.

Specification :

Model	PR - 10 / 20 / 30
Size	270 x 230 x 95 mm
Weight	<1.5 kg
Power Consumption	12 W
Rating	12V 2A transformer, B centertap +
Operation Temperature	-20ºC - + 40 ºC
Humidity	0-90% RH non-condensing
Manufacturing Materials	ASA / ASA, Aluminum
Shelf Life	3 years
Warranty	1 year

ExcelZone Series

Suitable for solving odor and contamination problems in public elevators/lifts or light buses and small rooms.

Specification 12 Volts version (with adaptor):

Model	EZ 5 / 10 / 20 / 30
Size	3152x 100 x 60 mm
Weight	<925g
Power Consumption	12 W
Rating	12V 2A transformer, B centertap +
Operation Temperature	-20ºC - + 40 ºC
Humidity	0-90% RH non-condensing
Manufacturing Materials	ASA, Aluminum
Shelf Life	3 years
Warranty	1 year

AirCare Series

Solves odor and contamination problems in public restrooms; may be used for restaurants, bar, lounges, office buildings, manufacturing facilities, retail establishments, etc.

Specifications for 230 Volts version :

Model	AC 5 / 10 / 20 / 30
Size	401 x 131 x 91 mm
Weight	<960 g
Power Consumption	16 W
Power Cord	4 m
Rating	110-240 VAC, 50-60 Hz,
Operation Temperature	-20ºC - + 40 ºC
Humidity	0-90% RH non-condensing
Manufacturing Materials	ASA, Aluminum
Shelf Life	3 years
Warranty	1 year

AirCare S Series

Solves odor and contamination problems in public restrooms; may be used for restaurants, bar, lounges, office buildings, manufacturing facilities, retail establishments, etc. Comes with IP (International Protection) 45 standard.

IP (international protection*) standard

- Based on IP Code defined at international standards IEC 60529
- Classifies the level of protection against intrusion of solid objects, dust, accidental contact, or water - the two digits each indicate the degree of protection

IP45
- **first digit (4) indicates objects > 1mm cannot enter**
- **second digit (5) indicates protection from water jets**

Specifications :

Model	ACS 10 / 20 / 30
Size	315 x 282 x 103 mm
Weight	<3 kg
Power Consumption	12 W
Power Cord	4-5 m
Rating	110-240 VAC, 50-60 Hz, 0.22-0.11A
Operation Temperature	-20ºC - + 40 ºC
Humidity	0-90% RH non-condensing
Manufacturing Materials	ASA, Stainless Steel, Aluminum
Shelf Life	3 years
Warranty	1 year

IceZone Series 純冰系列

Designed for installation in ice machines to significantly reduce pollutants and contaminants for production of clean, clear ice.

Specification :

Model	IZ 10 / 20
Size	401 x 131 x 91 mm
Max. Capacity	300 kg / 600 kg
Weight	<890g
Power Consumption	12 W
Power Cord	2.5m
Power Adapter	12V 2A transformer, B centertap +
Rating	110-240 VAC, 50-60 Hz
Suggested Volume Flow m^3/h	250
Operation Temperature	-20ºC - + 40 ºC
Humidity	0-90% RH non-condensing
Manufacturing Materials	ASA, Aluminum
Shelf Life	3 years
Warranty	1 year

InDuct Series 空調系列

Designed for installation into ventilation or air-conditioning systems for central air purification.

Main goals:

1. Kill and destroy all bacteria, viruses and microbes in duct.
2. For disinfection and purification, to ensure the purity of our air.
3. Sterilization of air and surfaces in central air-conditioning systems connected to various places

Specifications :

Model	ID60
Size	200 x 110 x 450 mm
Weight	<890g
Power Consumption	18 W
Power Cord	2.5m
Power Adapter	12V 2A transformer, B centertap +
Rating	110-240 VAC, 50-60 Hz
Suggested Volume Flow m^3/h	250
Operation Temperature	-20ºC - + 40 ºC
Humidity	0-90% RH non-condensing
Manufacturing Materials	ASA, Aluminum
Shelf Life	3 years
Warranty	1 year

Mini PowerZone Series

Primarily used in heavily contaminated areas. It will eliminate smoke, gas, VOC, odors, mold and germs. A rapidly acting power-solution for garbage rooms, toilets, hotel rooms etc.

Specifications :

Model	MPZ I / II
Size	487 x 135 x 93 mm
Weight	<1.75 kg
Power Consumption	100 W
Rating	12V 8.4A transformer, B centertap +
Operation Temperature	-20ºC - + 40 ºC
Humidity	0-90% RH non-condensing
Air Flow	20 lpm
Manufacturing Materials	ASA, Aluminum
Shelf Life	3 years
Warranty	1 year

PowerZone Series

Primarily used in heavily contaminated areas. Ideal for agricultural and industrial applications where odor or contamination levels are high. These units have been successful in the control of hog odors and pathogens in the swine industry, as well as rapid decontamination and odor removal from properties burnt or damaged by floods.

Specifications :

Model	PZ II
Size	620 x 220 x 200 mm
Weight	<8 kg
Power Consumption	36 W
Rating	12 VDC, 100-240 VAC, 50-60 Hz, 0.55-0.2
Operation Temperature	+4ºC - + 37 ºC
Humidity	0-85% RH non-condensing
Manufacturing Materials	ASA, Aluminum
Shelf Life	3 years
Warranty	1 year

Not appropriate for long-term use in human presence

BIOZONE Q & A

Q. What makes BIOZONE's Air Purification technology so unique and different?

A. BIOZONE has taken four of the most powerful, accepted, and well-documented air purification methods and united them with an exciting technology which we call PureWave™. The unique synergy created by this marriage of science and electronics results in a truly superlative air cleaning technology. Read the article below to learn more.

Q. How do BIOZONE Air Purifiers work?

A. BIOZONE air purifiers are state-of-the-art purification devices. It must be noted that they are not air filters, but air **purifiers** that utilize a multitude of air cleaning methods. The advanced and unique technology you get with a BIOZONE Air Purifier combines the use of a strong purifying gas plasma with basic photochemistry to effectively reduce indoor air pollutants and odors in residential, commercial, industrial, and agricultural settings.

Q. Can BIOZONE Air Purifiers be run 24 hours a day?

A. BIOZONE Air Purifiers are designed to be run continually, 24 hours a day, with no need to monitor them in any way. While in many instances the pollutants in your indoor space can be adequately addressed by running the unit part time, you don't have to turn the unit off unless you want to. Our 12 volt technology keeps ozone levels safe and the unit will not overheat due to high voltages common to many other air purifiers.

Q. What kind of maintenance is involved with BIOZONE Air Cleaners?

A. ***BIOZONE Air Purifiers*** are virtually maintenance-free. There is nothing to maintain unless the device is located in a very dusty or smoky area. In these instances we recommend opening the unit up once in a while and wiping off the ultraviolet lamp with a soft cloth. Some accumulations on the bulb (i.e., chemicals from tobacco smoke) may require rubbing alcohol to remove. The UV lamp must be replaced once every 12 months.

Q. Are there filters that need to be replaced?

A. There are no expensive filters to be replaced on BIOZONE Air Purifiers. By comparison, HEPA filters can cost from US$60 to US$200 or more per year to replace. In BIOZONE units, all that ever needs replacement is a special ultraviolet lamp that should be replaced once per year.

Q. Since BIOZONE air cleaners do not rely on air filters, how do they clean the air?

A. *BIOZONE negative ion and ozone air purifiers* clean the air inside the **same way nature does outside**, by emitting the world's strongest air-cleansing agents - ***negative ions, ultraviolet light, hydroxyl radicals, and moderate, controlled amounts of photolic ozone*** - in a **unique, powerful gas plasma**. This purifying plasma attacks biological contaminants at a molecular level, and oxidizes other particulate matter, in addition to attaching to contaminants and removing them from the air by making them too heavy to remain airborne (where you can inhale them). BIOZONE uses advanced UV technology available nowhere else.

Q. How expensive on electricity consumption are the units to operate?

A. The average operating cost for a BIOZONE Air Purifier is about HKD 7 – 8 per month. Our unique 12 volt technology is efficient and economical.

Q. How effective are BIOZONE Air Purifiers on tobacco or cigarette smoke?

A. There are two components to tobacco smoke: 1) The smoke itself, which is actually an airborne particulate mass; and 2) the chemical fumes and odors. BIOZONE's negative ions and photoelectrons help remove the smoke particulate from the air, while the highly active oxygen atoms and purifying hydroxyls that make up the BIOZONE Plasma actually neutralize the chemical fumes and destroy the odors. There should be a noticeable improvement if the right sized unit is employed.

Q. Will the unit remove smoke and other odors from clothing and upholstered furniture?

A. Yes, but depending upon how saturated the fabric is, it may take anywhere from 1 to 48 hours. Upholstered fabric can be cleansed of smoke odors fairly readily, but couches and chairs and also carpeting that are pet stained may not completely release odors if the stuffing of the article of furniture or the carpet pad and/or subfloor are stained. Also bear in mind that pet stains can be on floor molding, walls, and wood furniture.

Q. Do the units work to get rid of mold and mildew?

A. Yes. The ultraviolet light will kill mold spores that enter the unit, and the purifying plasma that is circulated by the unit is also fungicidal, meaning it will kill fungi like mold and mildew. Ideally, you want to expose the most seriously affected area to large amounts of plasma. Even a small basement could require a large unit. Serious mold and mildew situations may require an ozone generator like our PowerZone. Our PowerZone units are **NOT** designed for use in inhabited spaces, but are highly effective in eliminating mold if the source of the mold has been eliminated. Some mold remediation companies are using them now. Have your remediation specialist contact us for information.

Q. Will my family get fewer colds and flu if I have a BIOZONE Air Cleaner in my home?

A. While there have not been official studies to confirm this yet, independent lab tests have confirmed a remarkable reduction in airborne bacteria, as well as surface bacteria, when a BIOZONE Air Purifier is used. Since 90% of colds and flu are caught indoors, and the majority of those are caught at home, it makes sense to conclude that an overall reduction in contagions in the air and on things you and your family touch should certainly have a positive effect on cold and flu reduction, winter and summer. When your immune system doesn't have to fight off pollutants you inhale, it can do what it's designed to do - protect you from illness.

Q. Will a BIOZONE Air Purifier cure allergies and asthma?

A. BIOZONE Air Purifiers will not cure allergies or asthma or other breathing problems. They are not medical devices and are not designed specifically for the treatment or prevention of any health problem or ailment. However, it has been shown that most asthma and allergy sufferers do benefit greatly from the pollutant reduction these units provide. Mold, pollen, dust, animal dander, dust mites, chemical gases, and other common allergens are all effectively reduced in a BIOZONE environment.

Q. Are some people over-sensitive to ozone?

A. About 2% of the population do exhibit hypersensitivity to ozone, to varying degrees. Even the extremely low levels of ozone present in our purifying plasma may produce symptoms of over-ozonization in these individuals. Although this phenomenon is relatively rare, this is one reason we do offer a full money back guarantee on the purchase price of all of our units.

Q. How will a BIOZONE Air Purifier work with other filtration or air cleaning devices I already use?

A. Adding a BIOZONE unit to an existing air cleaner or filter is a great idea. The different units will only compliment each other, reducing the contaminant load on each unit and making each more effective than if used alone. Some air cleaning devices have undesirable byproducts that can also be addressed with a BIOZONE unit.

Q. Is there any research supporting the effectiveness of BIOZONE Air Purifiers?

A. In addition to volumes of research supporting the use of ultraviolet light, ozone and other active oxygen atoms, hydroxyl radicals, negative ions, and plasmas in air and surface purification and sanitizing, BIOZONE has conducted independent testing to support the effectiveness of its units.

Q. How do negative ions and ozone work?

A. Negative ions are negatively-charged electrical particles that are magnetically attracted to allergens and other airborne contaminates, which are positively-charged. The newly-formed larger particles are then able to **fall harmlessly to the ground**, and out of the air we breathe.
Ozone oxidizes (burns) pollutants, destroying them altogether. The ozone molecule (O_3) is highly reactive, so whenever it encounters a floating particulate, one of the oxygen atoms breaks away to oxidize the pollutant. This leaves behind O_2 (pure oxygen), refreshing the air even more. Ozone has the 2nd highest oxidation potential out of all the elements.

Q. What's a purifying hydroxyl or hydroxyl radical?

A. **Hydroxyl radicals,** which occur naturally in our atmosphere, are formed when an oxygen singlet (O_1) plucks a Hydrogen atom (H) from natural humidity (H_2O) to form the radical OH. **This hydroxyl radical is 33% more effective at oxidizing pollutants in the air** than ozone, and 2.5 times more germicidal and fungicidal than chlorine, making them the most effective method of destroying mold, bacteria, viruses, and germs that you can buy. BIOZONE's proprietary process produces large volumes of these powerful air cleaning agents with only a very small amount of ozone - far less than what is required by other ozonating air cleaners.

Q. What happens to the ionized particle once it falls to the ground?

A. It becomes too heavy to remain airborne and falls to a nearby surface. The most important thing is that these microscopic pollutants are out of the air you breathe, which renders them harmless. If they're not in the air, they cannot find their way into your lungs where they do their damage. Remember, these are microscopic particles we are talking about, not specks of dirt, so your floors, furniture, and other **surfaces will not suddenly become "dirty"** once these pollutants begin falling out the air. It is possible, though, for these particulates to be collected as a result of your routine cleaning, like vacuuming and dusting. It is also possible for these particles to become "kicked up" again into the air. Fortunately, ***BIOZONE air purifiers*** produce a **continual supply of negative ions and low levels of ozone**, which means "kicked up" particulates will find themselves grounded again very quickly.

Q. How can I tell if the BIOZONE Air Purifier is really working?

A. This depends on your individual circumstances. Concerning the elimination of unpleasant odors, improvement could be noticeable within minutes - or results could take several hours. People with allergies and hay fever should see a marked improvement in a very short period of time. People with animals in their homes should also be able to notice a dramatic reduction in pet odors within hours. Many health benefits, however, are less overt and can only be noticed and evaluated over longer periods of time. Sometimes, though, people do not report a difference in their air when using one of our purifiers. In these instances, what happens is that people become so accustomed to an odor or quality of air that they don't even realize that their home or office has an odor - they've simply gotten used to it. With these people, there is often no "shock" of immediate improvement that they can ascertain. And, as the unit begins to work, they also adjust to the steady improvement in air quality. Usually, though, once they get used to clean, pure air, they do notice a difference if they stop using the BIOZONE unit. All the old odors usually return pretty quickly, and are extremely noticeable. That's why we often have customers who have a unit in their homes for a few weeks, return it because they didn't notice a difference, and then call us back a few days later because the old pollutants have returned - and they notice that!

Q. Can ozone be dangerous?

A. Yes, but only when occurring in extremely high concentrations - **much** higher than what a *BIOZONE air purifier* is capable of producing. **Ozone** is much **like just about any other element** in that it has its **range of effects**. It is harmless or useful at moderate concentrations, but harmful at extremely high levels. For example, chlorine, an extremely powerful sanitizing agent, can be extremely dangerous if misused. However, we have learned to use it appropriately and thus can enjoy things like safe water in our swimming pools and even from our tap! ***BIZONRE Air Purification Units*** will not produce ozone at a level higher than what is considered healthy in outdoor settings - generally not more than 0.04 ppm when the unit is used in the appropriate size space, Ozone levels produced as part of the BIOZONE Purifying Plasma do not surpass the Federal Government safety guideline of 0.05 - 0.06 ppm. In fact, our units only need a modest amount of ozone to fuel our unique purifying process.

Q. What different kinds of air cleaners does BIOZONE offer?

A. We have a broad range models for home, office, vehicle, commercial, and personal use.

Q. How do I figure out what model is best for me?

A. While a number of factors do influence the air purifier model that is best for you, with a little thought, it's easy to determine the right one. For details please consult with our local dealers near you on selecting a BIOZONE Air Purifier for your home or office.

Q. What features should I look for when purchasing an air purifier? How can I tell if one is better than another?

A. When you purchase an air purifier, the most important things to consider are **what** the machine can remove from the air and **how** it removes it. Look at the particulate size the machine is capable of removing, square-footage coverage, cost per square foot purified, cost of replacement parts and how often they need to be replaced, electricity cost, noise generated, warranty, physical size. We're confident that we offer you the most technologically-advanced, affordable air cleaning unit on the market today and the longest warranty in the industry. Our units consistently out-perform other air cleaners in all categories.

Q. Do these units produce nitric oxide?

A. Since BIOZONE units use UV light to produce ozone, and not the corona discharge method, no nitric oxides or contingent substances are produced.

Q. Is a BIOZONE air purifier better than a HEPA air filter?

A. A *HEPA air filter* can only remove particles as small as 0.3 microns from the air, while *BIOZONE units* can remove **particles as small as 0.001 microns** from the air. *BIOZONE air purifiers* can also clean much larger areas than *HEPA air filters* that are even close to the same cost. HEPA air cleaners rely on an *air filter*, therefore **only cleans the air that passes through them**. *BIOZONE air purifiers* electronically emit nature's most powerful air-cleansing agents to **seek out pollutants**. *BIOZONE air cleaners* are also **much more cost- effective** than *HEPA air filters*. To begin with, HEPA **air filters must be replaced regularly**, costing as much as a few hundred dollars each time. *BIOZONE Air Purifiers* do not use parts requiring frequent replacement - just a low cost bulb to replace once a year. *HEPA air filters* are also far more costly to run in terms of electricity costs. Finally, *HEPA air purifiers* often run on a small motor, which **sounds a bit like a lawnmower** when turned on. *BIOZONE Units* barely make any noise at all.

Q. What kind of warranty do these air purifiers carry?

A. They come with a one (1) year limited warranty.

Q. How do BIOZONE air purifiers compare to other ozone generators / negative ion generators?

A. ***BIOZONE air purifiers*** do not use glass plates like ***other negative ion and ozone generators***. As a result, they do not require maintenance, and do not produce **oxides of nitrogen** *like air cleaners that do use glass plates*. Oxides of nitrogen can result in a "metallic" or "bleach-like" odor that many find unpleasant. These oxides can also serve as a minor lung irritant if occurring in high enough concentrations.

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APEX NOBLE EQUIPMENT LTD.
雅麗盈設備有限公司

香港荃灣柴灣角街95號華俊工業中心18樓05號室
Flat 5, 18/F, Wah Chun Industrial Centre,
95 Chai Wan Kok Street, Tsuen Wan, New Territories, Hong Kong
Mobile: 852-94505051, 853-62839652, 86-14715675669
Tel: 852-36901333, 36901338, Fax: 852-36901339
Website: www.anel.com.hk

淨化科技的疑問與解答

問：有什麼特點令 BIOZONE 空氣淨化技術這樣與別不同？

答：BIOZONE 採用了五種最有效、最廣泛接受及記載的空氣淨化方法，並加以融合，當中所用的是一種令人耳目一新的技術，就是我們稱為的淨化流。將科學與電子工程扣合在一起以產生這種獨特的共聯，發展出一套真正無與倫比的空氣淨化技術。詳情請參閱以下篇章。

問：BIOZONE 空氣淨化機怎樣運作？

答：BIOZONE 空氣淨化機是精心設計的淨化裝置。有一點大家必須知道，就是 BIOZONE 並不是空氣過濾器，而是淨化器。集合先進及獨有的科技，結合強力淨化作用的氣態等離子以及基本光化學原理，有效地消除室內的空氣污染物及異味，並適用於住宅、商業、工業及農業環境。

問：BIOZONE 空氣淨化機可否全日廿四小時不停運作？

答：BIOZONE 空氣淨化機的設計是供全日廿四小時不停運作的，並不需要進行任何監察。雖然在很多情況下分段時間運作已經足夠應付室內空間的污染物，但閣下仍然無須將裝置關掉，除非閣下自己決定有此需要。

問：BIOZONE 空氣淨化機需要什麼保養程序？

答：BIOZONE 空氣淨化機實際上是不需保養的，除非該紫外光燈積滿了塵及有許多積聚物（如香煙發出的化學物質），就可能需要以酒精拭抹了。

問：是否須要更換濾網？

答：使用 BIOZONE 空氣淨化機無須更換昂貴的濾網，唯一須要更換的就只有專用的紫外光燈，每年應更換一次。

問：淨化裝置電費的支出需要多少？

答：BIOZONE 獨有的 12 伏特之技術，效率高而且經濟，每月的電費只約 7 至 8 元，若與某些其它空氣過濾器相比，它們每月運作的費用可能要花上 100 至 300 元不等，還未沒有包括更換濾網的費用 ， 那麼 BIOZONE 的產品肯定是壓倒性的優勢。

問：BIOZONE 空氣淨化機不靠濾網運作，那麼怎樣將空氣淨化呢？

答：BIOZONE 裝置淨化室內空氣的原理，**正是與室外自然環境的相同**，就是利用世上最強勁的空氣潔淨劑 – **負離子、紫外線、氫氧自由基、及適量而有限度的臭氧** – 全部包含在獨有而強力的氣態等離子內。這種具淨化作用的等離子會在分子的層面攻擊生物致害物質，及氧化其他粒子物質，另一方面亦會先附著有害物質，令有害物質過重而不能保持懸浮狀態（即能透過呼吸而吸入的狀態），從而把它們從空氣中移除。

問：BIOZONE 空氣淨化機對煙草類及香煙發出的煙塵有多少效力？

答：煙草發出的煙霧有兩種成份：1）煙霧本身，其實就是空氣懸浮粒子團；及 2）其他化學煙霧及氣味粒子。BIOZONE 的負離子及光電子有助去除空氣中的煙霧粒子，而由高度活性的氧原子及具淨化作用的氫氧自由基所組成的光等離子，實際上會中和化學煙霧及消除氣味粒子。

問：淨化機會否除去衣服及布墊傢俱的煙味及其他異味？

答：會。不過視乎氣味對布料纖維的滲透程度，可能需要一至四十八小時不等。布墊纖維的煙味可以相當容易地清除，但沙發和椅子、及被寵物染污了的地毯未必能將異味完全釋放，這是假設該件傢俱或加墊地毯的填塞物及/或地毯下的底層地板已遭染污的情況而言。須要清楚的是，寵物可以在地腳線、牆身及木質傢俱上留下了污積。

問：淨化機能否有效去除霉菌和黴菌？

答：能夠。紫外線會殺滅進入裝置的霉菌孢子，而裝置放出的流動淨化等離子亦有真菌殺滅性，即是會殺滅霉菌和黴菌之類的真菌。最理想的做法是，在嚴重受影響的地方使用大量的等離子。即使在細小的地下室也要用上較大的型號。在嚴重受霉菌或黴菌影響的情況下更會需要用上超強型號的 PowerZone。關於超強力型號的使用方法及有關事項，請聯絡我們索取詳細資料。

問：在家中裝設 BIOZONE 淨化機會否令家人減少患上傷風和感冒？

答：儘管這方面還未有官方調查的確定，但已有獨立實驗室的測試證實用了陽光空氣淨化機後顯注減少了空氣懸浮細菌及表生細菌。由於百分之九十的傷風和感冒都是在家中感染到的，所以有理由作出以下的定論，即是當透過室內空氣及家人曾接觸過的物件而仍能整體地減少感染的機會時，肯定對減少傷風和感冒有正面的作用，不論在冬季或夏季。

問：BIOZONE 空氣淨化機會否可治癒敏感症及哮喘？

答：BIOZONE 空氣淨化機不會治癒敏感症或哮喘或其他呼吸毛病。淨化機不是醫療儀器，也不是專為治療或預防任何健康問題或病患而設計的。不過已有資料顯示，哮喘及敏感症患者的確從淨化機提供的滅菌除塵效果中得到很大的裨益。霉菌、花粉、塵粒、動物毛屑、塵蟎、化學氣體、及其他常見致敏源全部都在 BIOZONE 環境中被有效地清除。

問：淨化裝置會否產生氧化氮？

答：由於 BIOZONE 裝置使用紫外線來產生臭氧，而不是透過電暈放電法 (高壓)，所以不會有氧化氮或附帶物質產生。

問：是否有部分人對臭氧過敏？

答：大約有百分之二的人口對臭氧表現出不同程度的過敏反應。即使有極微量的臭氧存在於淨化等離子中，亦會對這些人士引致臭氧過度的徵狀。

問：BIOZONE 空氣淨化機怎樣與其他已裝置的空氣過濾器或潔淨同時運作？

答：在原有的空氣潔淨裝置或過濾器下加設 BIOZONE 淨化機是不錯的考慮。不同的裝置只會互補不足，互相協助去減輕對消除有害物質的負擔，所以比單獨使用一種更加有效。某些潔淨裝置會產生不必要的附帶物，但 BIOZONE 裝置都能一一把它加以處理。

問：有沒有進行任何研究證實 BIOZONE 空氣淨化機的成效？

答：除了有大量的科學研究支持使用紫外線、臭氧及其他活性原子氧、氫氧自由基、負離子及等離子以進行空氣及表面之淨化及消毒以外，BIOZONE 還進行了獨立測試以證實各款裝置的成效。

問：怎樣能夠辨別 BIOZONE 淨化機是否真的正在運作？

答：這需要視乎個別情況。在消除異味方面，可以在數分鐘內察覺到情況的改善，也可能在數小時後才可看出結果。患上敏感症及花粉症的人士，可以在非常短的時間內就看出明顯的改善。在家中飼養動物的人士也可在數小時內便察覺到寵物氣味的大幅減少。不過有很多對身體有益處的優點是較為不易察覺的，需要經過長時間的使用才能被察覺和評定。有些使用者會指稱使用了我們的淨化機後室內空氣跟以前沒有分別。在這些情況中，箇中原因是使用者已經長時間習慣了原有的氣味或空氣質素，他們甚至不會感覺到家中或辦公室內存在著異味，因為他們已習慣適應了原來的環境。對於這些人士來說，他們不會驚覺到有任何即時的改善。然後，隨著新裝置開始了運作，他們又會很快地就適應持續改善的空氣質素。通常，當他們一旦習慣了清潔純淨的空氣時，就會停止使用 BIOZONE 的裝置，這時才察覺到有很大的分別。另外，所有舊有的氣味通常會很快重現，而且極為明顯。他們也察覺到，因此，我們不時都會遇到有些用戶於家中裝設了淨化機後，只用了數星期便退回，因為他們察覺不到有任何分別； 跟著在數日後又再致電給我們，訴說他們已察覺到舊有的污染物再次重現。

問：負離子與臭氧怎樣運作？

答：負離子是帶負電荷的粒子，而且會被致敏源及其他空氣懸浮有害物質的磁場吸引而附著它們，因為它們帶正電荷。隨之形成的較大粒子會**落在地上而成為無害物質**，脫離人體呼吸的空氣範圍。

臭氧會將污染物**氧化**（燃燒），從而將它們一同消滅。臭氧分子（O_3）有高度活性，所以當它在任何時候遇到懸浮的粒子，它其中一粒氧原子會分裂出去，將污染物氧化。剩下來的便是 O_2（純氧氣），令空氣更加清新。臭氧在所有化學原素中氧化能力是第二強。

問：當電離粒子落到地上的時候會怎樣？

答：它會變得過重而不能保持懸浮狀態，跟著落到附近的表面。最重要的是，這些微細的污染物已經脫離呼吸的空氣範圍，令它們變成無害。如果它們不存在於空氣中，它們便無法進入人體的肺部進行破壞。請記著，我們說及的是微細粒子，而不是塵屑污垢，所以閣下之地板、傢俱、及其他**表面**在污染物開始從空氣中掉下之後仍**不會突然變得骯髒**。這些粒子有可能在日常清潔中，如吸塵及抹塵的時候，被移動或被收集起來。但這些粒子亦有可能會再次被散發回空氣中。幸好 BIOZONE 空氣淨化機會**不斷供應負離子及低度臭氧**，令這些重回的粒子很快便會再度被沉降於地上。

問：臭氧會否引致危險？

答：會。但危險只會出現於異常高的濃度下 – 遠超過 BIOZONE 臭氧淨化機所能提供的安全水平。臭氧就**像其他化學原素一樣**，有自己的**效應幅度**。在輕微的濃度時，本身是無害或有其它用途；但在極高的濃度時，便會成為有害。例如氯氣，它便是一種極強的消毒劑，如果被誤用便會極為危險。不過，我們已學會了適當地利用它，所以能夠受惠於它帶來的益處；例如為了有清潔安全的水質，我們會將氯氣加於泳池、甚至於食水中。BIOZONE **空氣淨化裝置**產生的臭氧水平，並不會高於室外設定時介定為符合健康的水平 – 當裝置使用於合適的空間時，一般不超過 0.04 ppm（請參閱：保證之安全臭氧水平）。包含在 BIOZONE 淨化等離子中的臭氧水平不會超過聯邦政府安全指引所定下的 0.05 – 0.06 ppm 水平。事實上，我們的裝置只需輕微量的臭氧便已足夠推動我們獨有的淨化運作。

問：什麼是具淨化作用的氫氧自由基？

答：氫氧自由基存在於自然的大氣環境，形成的過程是當一粒單氧（O_1）從自然濕氣（H_2O）中拔走一粒氫原子（H），便形成 OH 自由基。

這氫氧自由基對空氣污染物的氧化效能比臭氧高 33%，而對細菌及真菌的殺滅效能就比氯氣高 2.5 倍，令它成為在市面上出售的最有效殺滅霉菌、細菌、病毒及病菌孢子的系統。BIOZONE 的專利淨化程序提供大量這種強力空氣淨化劑，而且只有非常少量的臭氧 – 遠低於其他臭氧淨化機所需要的水平。

問：在購買空氣淨化機的時候應該注意什麼特點？怎樣判斷某一款會比較其他的優勝？

答：在購買空氣淨化機的時間，最重要的是考慮該裝置能夠從空氣中去除**什麼**及**怎樣**去除。還要注意該裝置能夠去除何種大小的粒子；以平方尺計之有效面積範圍；要淨化每平方尺地方所需的成本；更要考慮換零件的費用及次數；以及電費、雜音、保用證、機身體積等各項。我們肯定，能為閣下提供目前市場上擁有最先進科技、空氣淨化效能最高的裝置，非 BIOZONE 產品莫屬了，因為它的空氣淨化機是以 5 合 1 尖端科技製造，在各方面都遠遠超越其他一般的淨化機。

問：BIOZONE 空氣淨化機是否比 HEPA 空氣過濾器較好呢？

答：HEPA 空氣過濾器只能去除空氣中小如 0.3 微米的微粒，而 BIOZONE 裝置則能去除空氣中**小至 0.001 微米的微粒**。若與售價更高或相若的 HEPA 過濾器相比，BIOZONE 空氣淨化機更能提供面積遠比 HEPA 為大的潔淨範圍。HEPA 空氣潔淨器只依賴一層空氣隔濾層，所以**只能將穿越潔淨機的空氣潔淨**，但 BIOZONE 空氣淨化機更能夠以電子化輸出大自然中最強的空氣淨化劑來追尋污染物。

若與 HEPA 過濾器相比，BIOZONE 淨化機**在成本效益方面亦遠較為高**。首先，HEPA 過濾器**必須定期更換濾網**，費用每次高達數百美元。BIOZONE 淨化機並不使用需要頻密更換的零件 – 只需要每年一次更換一個燈泡。其次，HEPA 過濾器的運作須要付出遠比 BIOZONE 為高的電費開支。最後，HEPA 過濾器通常靠著一個小型馬達去運作，當開動時發出的聲音就**有些像一部剪草機**。BIOZONE 裝置完全不會製造任何噪音。

問：怎樣比較 BIOZONE 空氣淨化機與其他臭氧 / 負離子裝置的優劣？

答：BIOZONE 空氣淨化機不像**其他負離子及臭氧裝置**般使用玻璃板。因此，淨化機並不需要特別維護，也不像使用玻璃板的潔淨器般產生**氧化氮** nitrogen monoxide (NO 一與空氣裏面啲 O_2 接觸就會變成 NO_2，出啡色氣體)。氧化氮能產生金屬或漂白劑般的氣味，很多人吸入後會有不適的感覺。當這些氧化物有足夠的高濃度時，亦能成為輕度的肺部刺激物。

香港及澳門代理商
Agent of HK & Macau

ANEL

APEX NOBLE EQUIPMENT LTD.
雅麗盈設備有限公司

香港荃灣柴灣角街95號華俊工業中心18樓05號室
Flat 5, 18/F, Wah Chun Industrial Centre,
95 Chai Wan Kok Street, Tsuen Wan, New Territories, Hong Kong
Mobile: 852-94505051, 853-62839652, 86-14715675669
Tel: 852-36901333, 36901338, Fax: 852-36901339
Website: www.anel.com.hk