

ECOBreeze

by Washroom-Wizard LTD

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Ecobreeze - Environmental Credibility

1. Priority environmental and human health impacts associated with products in the air freshener/filtration/fragrance category.

Environmental:

- **Batteries.** Many filtration and scenting products utilise batteries as a power source. Not all battery types are categorised as hazardous waste, but often waste contractors treat all consignments as hazardous and additionally when disposing of batteries, they must be segregated to avoid consigning all as hazardous waste.¹ This is not common consumer knowledge so even when it is possible to recycle batteries, they end up in landfill. This falls mainly into the disposal stage of the lifecycle.
- **Aerosol canisters.** Within scenting systems is extremely common as they are one of the most cost-effective means of dispersing a scent. Despite the phasing out of CFCs, aerosols still make use of propellants containing hydrocarbons and VOCs which contribute to greenhouse gas emissions and climate change.² These environmental issues are within the use and disposal phases as it is not possible to recycle canisters unless they are completely void of their contents, which as we all know is extremely difficult. Because of this waste, it leads to increase production that leads to more packaging, transport etc.
- **UV and Ozone.** Some air filtration systems make use of UV as a supposed means of neutralising airborne pathogens. Also, air purifier manufacturers do not usually explain what kind of UV technology they use, and some of these technologies produce high volumes of ozone again contributing to climate change.³ Furthermore, some types of UV lamps, especially those that are classified as 'germicidal' contain mercury which can be extremely detrimental to ecosystems, through bioaccumulation, if released into the environment. Again, this is part of use and disposal.
- **Ionisers.** Another commonly used air filtration mechanism is through the use of ionisers. Through their action they increase the likelihood of oxygen molecules bonding to each other to create ozone.³ This problem is within the usephase.

Health:

- **Ozone,** as a product of ionisers, UV air filters and ozone generators, has been shown to cause a multitude of detrimental human health impacts particularly on the respiratory and cardiovascular systems. Some of these impacts include chest pains, aggravation of asthma, decreases in lung function and a higher susceptibility to infection.⁴ This is within the usephase.
- **VOCs** are ubiquitous to fragrances, and are in fact equally as, if not more, common in fragrances made from naturally-derived compounds. Therefore, all products that release a scent will release VOCs. Furthermore, when expelled from the vessel some of the fragrance compounds react with ozone in the air to form secondary pollutants including formaldehyde.⁵ This problem is within the usephase.
- **Sick Building Syndrome (SBS)** is a physical reaction to multiple low-level contaminants which typically affects office workers and can cause respiratory

issues.⁶ The air indoors can be up to five times more polluted than outside with pathogens, mould, pollen, dander, dust from carpets, emissions from printers etc.⁷ Air filtration/purification systems are in common use in workplaces due to these potential health impacts but as mentioned above they can in fact exacerbate the problem by contributing to the level of indoor pollutants.

- **Indoor air quality.** Because all of the above health effects are a result of poor indoor air quality, it means certain groups are more at risk. This includes infants, pregnant women, the elderly and infirm all of whom are already at increased risk of illness. This is because in all of these groups they are likely to spend more time indoors and in the case of infants, they breathe in 50% more air per pound of body weight than adults.⁸

2. How Ecobreeze's innovative features and functionality reduces these impacts.

Due to its **unique release and refiltration** mechanism, Ecobreeze is specifically designed to prevent the build of VOCs released from the fragrance vessel. This is especially important as one of **Ecobreeze's primary functions is to filter the air** in spaces with little or no ventilation. This is achieved via the following means:

- **Firstly**, the extraction fan within the Ecobreeze system extracts the pollutant air from the room and draws the air through an electrostatic pre-filter captures large particulate such as dust, pollen, hair.
- **Secondly**, the filtered air then passes through a 40mm honeycomb structured activated carbon filter; because the activated carbon filter is so porous it is very effective at capturing VOCs, and other pollutants, present within an area including those released from the fragrance vessel. The extraction fans powerful action allows the air within a 28 m³ room to be cleaned in as little as 21 minutes. Please see attached report entitled *WW-1 Ecobreeze Air Flow Rate Review.pdf* for evidence of this.
- **Thirdly**, the wick within the fragrance vessel is precision engineered to ensure the fragrance is released at a slow, linear rate (Ecobreeze fragrance release is only **2 ml/24 hours** when the Ecobreeze unit is on the highest fan speed setting, therefore the amount of fragrance released into the air via the Ecobreeze system is negligible. And due to the constant re-filtering, there is no build-up of fragrance and associated chemicals in the room as all stale fragrance is filtered out.

Overall, we have found that this makes Ecobreeze suitable for even those with very sensitive respiratory systems and furthermore the scenting aspect is extremely tolerable even for prolonged periods of time. This is due to:

- The minimal fragrance quantity released into the air, which is favourable when compared to aerosols, for example, which release a large quantity of VOCs and propellants in a short space of time.
- The Ecobreeze system's functionality, as mentioned previously, which facilitates constant recirculation and filtration of the air in a space. Other systems such as aerosols, gels, fan assisted fragrance release products,

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- ozone generators and ionizers clog the room with potentially harmful allergens and pollutants that remain unless dispersed by adequate ventilation. Please see attached report entitled *Chemical Analysis Ecobreeze Carbon Filter.pdf* for identification and quantification of the VOCs captured and retained by the Ecobreeze release and refiltration mechanism.
- The porous nature of the carbon filter. As well as providing effective retention of VOCs, the sustainable coconut shell activated carbon filter traps a multitude of allergens and pollutants including mould, pollen and dust. Again, this provides considerable benefit for the users of spaces where Ecobreeze is installed by improving the indoor air quality. This is especially true in the case of the groups mentioned above who are likely to spend more time indoors.
 - The Ecobreeze consumables (electrostatic pre-filter, activated carbon filter, and fragrance vessels) have all been sourced with intention of reducing our environmental impact.
 - **The electrostatic pre-filters** are easily washable using a small amount of cold water or a short burst of air to remove dust and particulate matter. This means they can be reused indefinitely thus decreasing landfill waste. As a result, this ability to reuse the pre-filters reduces environmental impact right across the product lifecycle as fewer need to be made.
 - **The carbon filters** are produced from sustainable coconut shell sources. Coconut husks are otherwise seen as a by/waste product of the nut itself, they grow in abundance from mature trees and can be harvested without detriment to the tree itself or its ability to act as a 'carbon sink'.
 - **Finally, all components of the fragrance vessel** (excluding the wick) are made from fully recyclable HDPE which can be disposed of in normal recycling waste containers. Our hope is to establish a discount/loyalty scheme in future whereby customers receive rewards for returning their empty vessels to us. This way we can ensure our HDPE components are indeed reused or recycled. Additionally, unlike aerosol canisters, Ecobreeze fragrance vessels are translucent and so it is easy for the user to determine when they are completely devoid of their contents and therefore when they may be disposed of in recycling waste. Furthermore, and again in contrast to aerosols, the wicking system ensures complete dissipation of the fragrance contents as there is a constant air flow over the wick which allows it to dry out. Therefore, it is unlikely that the fragrance can be released into the environment in a liquid state thus reducing environmental impact during the disposal phase.
 - All fragrances are manufactured according to EPA and IFRA standards by world leading fragrance manufacturers to ensure that all environmental and health regulations are adhered to. We are continually in discussion to evaluate and improve upon both the environmental and health aspects of the fragrances within our fragrance range both current and future. Furthermore, we operate on a basis of complete transparency with all our clients and distributors and share our

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supplier's information. This helps to ensure our suppliers meet and adhere to not only ours, but also our client's corporate H&S and environmental policies.

- Ecobreeze is an extra low voltage (12V/5W) electrical appliance and is certified and compliant to; UL, RoHs, EMC, WEEE. The average yearly electrical running cost is only \$2.94. Ecobreeze is guaranteed for 5 years, reducing the need to purchase disposable products, that are costly to the environment through their production and disposal.

3. Other products in the air freshener/filtration/fragrance category that are claiming closely related innovations to address these impacts.

Our product has been granted a patent in the US, UK, Australia, Canada etc. for its innovation and we are the only company that currently offers a system into the commercial sector that both filters and fragrances. As evidence of our green credentials Ecobreeze has been funded by the EU Carbon footprint trust due to the products low environmental impact and has passed approval for the LOCASE (low carbon across the South East) grant further validating our low carbon practices.

References:

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- <https://www.metoffice.gov.uk/climate-guide/science/science-behind-climate-change/aerosols>
- https://www.epa.gov/sites/production/files/2018-07/documents/residential_air_cleaners_-_a_technical_summary_3rd_edition.pdf
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