



Air cleaning in the car – the AirRevival technology

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Ambient air pollution largely comprises small and ultra-fine particles, oxides of nitrogen and ozone, and is largely invisible apart from episodes when particles and oxides of nitrogen cause a brown haze which, in some regions of the world such as China and South-East Asia, is becoming a regular feature. However, although pollution often cannot be seen or smelled, its effects are insidious and dangerous. Population-based studies as well as modern biological science have revealed highly potent toxic effects of chronic exposure to ‘modern-day pollutants’, not only on the lungs but also on the heart and broader cardiovascular system. We are further recognizing that the systemic effects of pollutants extend beyond the cardiopulmonary system to affect many other organs, increasing the risk of disease that begins from conception and persists across the life course. According to results from the Global Burden of Disease Study, outdoor particulate matter air pollution contributed to more than 3.2 million premature deaths and 76 million disability-adjusted life-years in 2010, ranking among the most important health risks worldwide¹.

The question is then what to do? The obvious answer is to reduce and improve road traffic but this will take time if achievable. In the meantime we have to focus on developing technologies that reduce the air pollution indoors. Furthermore, the technology has to be able to handle the very fine particles (< 1µm) as those are existing in great numbers and are biologically most active by activating an inflammatory response and so called *Oxidative stress*. An interesting aspect is that the body recovers within hours, once this oxidative stress has been reduced.

Electrostatic Air Cleaning – AirRevival™

The AirRevival technology has been developed with these aspects in focus. Research conducted over the last 20 years - for more detailed information see www.airrevival.com – have provided an insight into the capacity of electrostatic mechanisms in improving the indoor air. Two mechanisms have been identified to improve the indoor air we breathe.

- A. The ability of a structured electrostatic field to capture fine and ultra-fine particles.
- B. The impact of electron enriched air to hinder the growth of mould and to kill viruses.

AirRevival made in Sweden, cost effective and easy to use

AirRevival is patented and significantly more cost-effective than other air purifiers on the market. Its relatively small size makes it easy to transport and highly adaptable. It is also easy to set up and requires little maintenance.



For the car

The car cabin is the most exposed environment, especially when driving in

¹ www.thelancet.com/respiratory Published online January 22, 2015 [http://dx.doi.org/10.1016/S2213-2600\(15\)00003-X](http://dx.doi.org/10.1016/S2213-2600(15)00003-X)



slowly moving traffic. An AirRevival unit with a 27 cm emitter requires a small supply of 12V DC (0.6 W) provided from the standard cigarette lighter outlet. The device is placed in the back of the car, preferably on the rear side window attached by suction cups. It does not generate any ozone and is completely silent. The only maintenance is to whip the particles from the window as needed. It provides **1000 liters of air free from ultrafine particles per minute!**

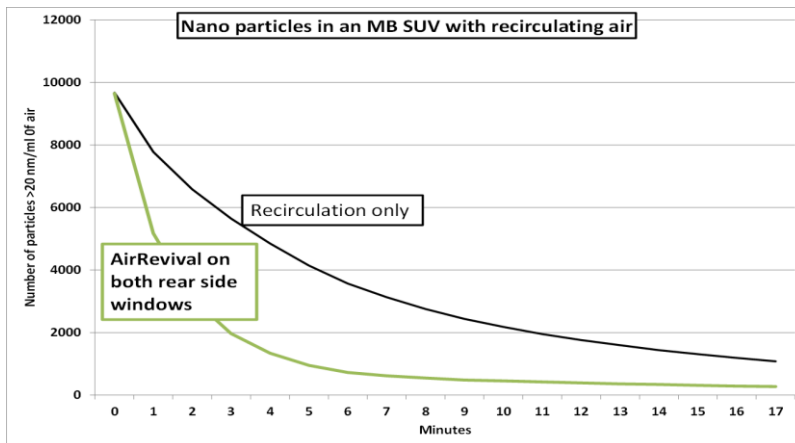
Key observations

- Inner city air due to stagnant traffic causes immunological stress (oxidative stress) with reduced life expectancy in humans
- Fine and ultrafine (nano-size) particles is the cause
- A controlled negatively charged electrostatic field has a unique capacity to capture these particles and provides unique air cleaning

The most exposed are those in the car and there is a reason for concern and need to improve in cabin air quality.

- The cabin is a confined space to be controlled
- Ideal for optimizing air quality – recirculation of the cabin air + adding air purification
- Concern for driver and passenger safety
- Modern Cars provides “clean in-cabin environment”
- AirRevival™ is an opportunity to make it even more clean and to offer environmental safety for the driver and passengers

This figure illustrates how rapidly the nano-size particles disappear from the cabin air. Within 2-3 minutes there is a clean air environment.



This graph illustrates how the concentration of ultra-fine particles varies during a drive in the city of Hong Kong. Please note the very high levels reached when passing through the Aberdeen tunnel and how this exposure can be minimized when AirRevival is activated together with allowing the cabin air to recirculate (air con on to take out the moisture generated by the passengers).

