



THE RIGHT TO **BREATHE**  
HEALTHY, **CLEAN AIR**

**Therapy Air®**

**zepter®**  
INTERNATIONAL  
LIVE BETTER · LIVE LONGER

# THE POLLUTED AIR WE BREATHE IS MAKING US SICK



Air is most essential to life. But only **clean air is essential to a healthy life**. In this day and age, only purified air is healthy air. Breathing polluted air has permanent fatal health effects, ranging from cancer, respiratory irritation, nervous system problems, birth defects, respiratory problems and even obesity. WHO estimates that each year **7 million** people die prematurely due to indoor and outdoor **air pollution** [1], which is now the world's largest single **environmental health risk**.



Particulate matter (**PM**) **2.5**, **NO<sub>2</sub>** and **O<sub>3</sub>** are recognised as having the worst impact on human health.

## IS POLLUTED AIR DEADLY?

On average, we take about **23 000** breaths/day, inhaling over **11 000** L of air a day, and that's nearly **8** litres every minute. Imagine breathing this much **polluted air**. Nine out of **10** people globally are breathing poor quality air. **98 percent** of the world's city dwellers breathe polluted outdoor and indoor air.

The indoor and outdoor air we breathe contains **dust particles, lead, arsenic, mercury, benzene, dioxins, cadmium** - to name a few, which we inhale into our bodies and they affect our health making us mentally and physically sick.

Many studies directly link the size of particles to their potential for causing **irreversible health problems**. Small particles of less than **2.5 micrometers** in diameter have the biggest health impact, because they can penetrate the alveoli and enter the systemic circulation (bloodstream), spreading **toxins** to all organs of the body in only a matter of few seconds.

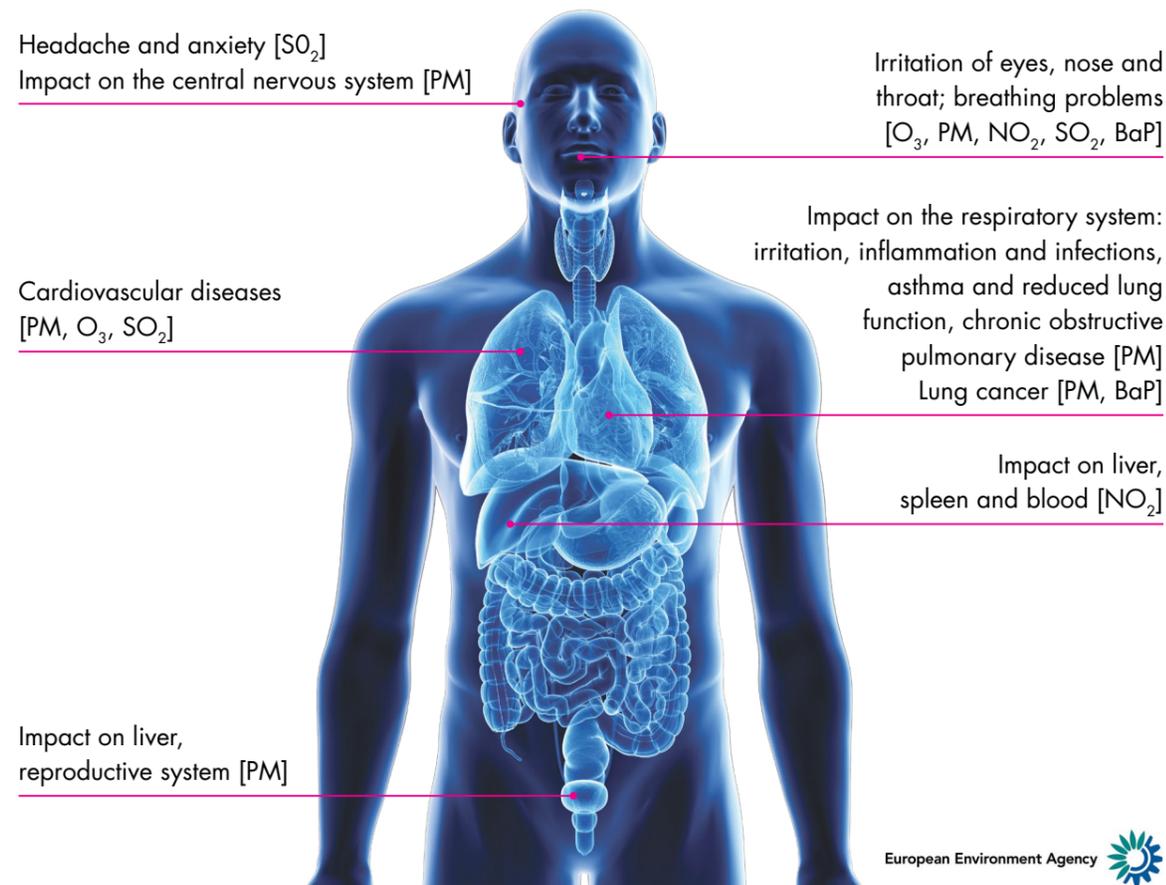
### Sources of common indoor air pollutants are numerous:

- Fuel-burning combustion appliances
- Tobacco smoke
- Building materials and furnishings as diverse as:
  - Deteriorated asbestos-containing insulation
  - Newly installed flooring, upholstery or carpet
  - Cabinetry or furniture made of certain pressed wood products
- Products for household cleaning and maintenance, personal care, or hobbies
- Central heating and cooling systems and humidification devices
- Products like air fresheners that release pollutants more or less continuously
- Polluted air outdoors
- Biological contaminants (bacteria, moulds, allergens, viruses, pollen etc.)
- Scented candles and air fresheners



# AIR POLLUTION'S IMPACT ON HEALTH

Air pollution can have a detrimental impact on human health. Children and elderly are especially vulnerable.



**Particulate matter [PM]** are particles that are suspended in the air. Sea salt, black carbon, dust and condensed particles from certain chemicals can be classed as **PM** pollutant.

**Ground-level ozone [O<sub>3</sub>]** is formed by chemical reactions (triggered by sunlight) involving pollutants emitted into air, including those by transport, natural gas extraction, landfills and household chemicals.

**Benzo[a]pyrene [BaP]** originates from incomplete combustion of fuels. Main sources include wood and waste burning, coke and steel production and motor vehicle engines.

**Nitrogen dioxide [NO<sub>2</sub>]** is formed mainly by combustion processes such as those occurring in car engines and power plants.

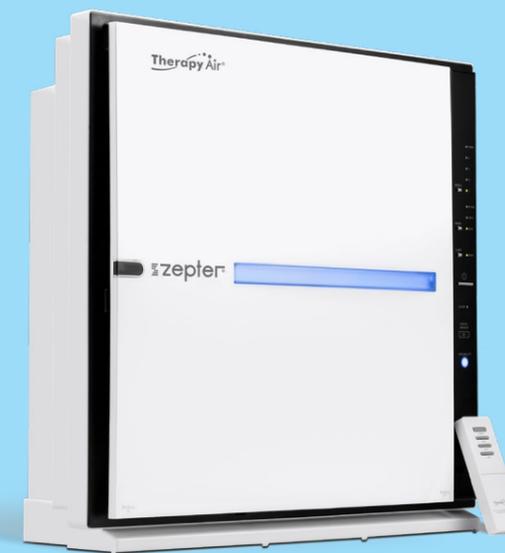
**Sulphur dioxide [SO<sub>2</sub>]** is emitted when sulphur containing fuels are burned for heating, power generation and transport. Volcanoes also emit **SO<sub>2</sub>** into the atmosphere.

220-300 € was the cost of air pollution in 2009 for each (EU) citizen coming from the 10 000 largest polluting facilities.

97% of Europeans are exposed to O<sub>3</sub> concentration above the World Health Organization recommendations.

63% of Europeans say they reduced their car use in the last two years in order to improve air quality.

Sources: EEA, WHO, Eurobarometer



PWC-570

The widespread exposure to many of these **pollutants in the air** we breathe outside, as well as in our offices, homes, restaurants and schools has **immediate negative health effects** at best and is fatal after many years of exposure.

**Watery or dry eyes, headache, tiredness** occur very soon after a person inhales a toxic air pollutant.

Other, more dangerous, life threatening health problems may not appear until many months or years after a person's first exposure to the **toxic air pollutant**.

Long-term exposure to high levels of these particulates has been linked to a diverse range of **respiratory and cardiovascular diseases, decreased lung function, lung cancer [2] and heart disease**, induced **chronic bronchitis and premature death**.

For more information about the effects of polluted air on our health, please read pages 13, 14.

# WHAT IS THE SOLUTION?

## Therapy Air®

- **Voted the best air purifier of the year** (Germany, May 2016, 2019, April 2020, 2021) which purifies **99.9%** of pollutants including **PM** of **2.5** micrometers in diameter.

- **6 stage air purification system:**

**5 filters:**

- antistatic
- antibacterial
- HEPA
- anti-allergenic
- activated-carbon

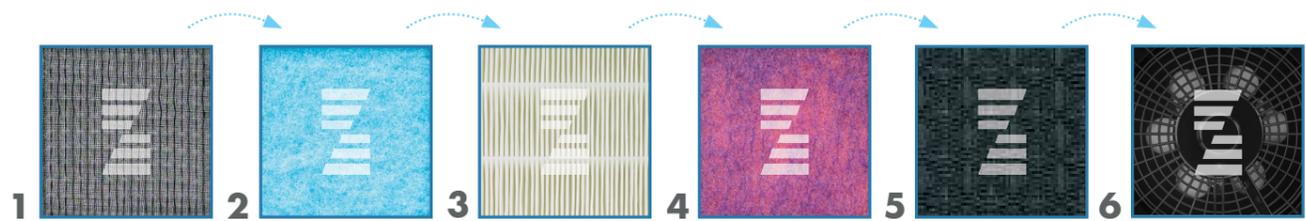
**Negative iON Generator:**

**1 236 000 ions/cm<sup>3</sup>**

**Effective area**  
ACPH – air changes per hour  
**26 m<sup>2</sup>** (ACPH 5 times)  
**130 m<sup>2</sup>** (ACPH 1 time)  
**Air flow**  
**6.05 m<sup>3</sup>/min**



### 6 STAGES 5 FILTERS | A UNIQUE BARRIER



**1. ANTISTATIC FILTER:** Removes larger particles of dust, mold, hair, dandruff, and pet hair.

**2. ANTIBACTERIAL FILTER:** Removes the remaining small particles of dust, bacteria (≥ 1 micron) and pollen.

**3. HEPA-FILTER:** Coated with an organic antibacterial material Thiabendazole Type and anti-mold substances to remove indoor pollutants, bacilli, mold spores and germs, thus preventing the risk of infection. It also eliminates the tiniest particles of dust and tobacco smoke.

**4. ANTI-ALLERGENIC FILTER:** This mixture of silver, apatite (a mineral) and an antibacterial agent is especially effective against Legionella bacteria that are particularly dangerous for babies. The filter contains an

extract of ginkgo biloba leaves that can be processed by the body and used very effectively in asthma, lung diseases and circulation problems. This filter is used to eliminate allergens, flu viruses and bacteria.

**5. ACTIVATED-CARBON FILTER:** Eliminates unpleasant food and cigarette smells, toxic gases such as VOCs, toluene, benzene, xylene, styrene and formaldehyde, ammonia, acetaldehyde, and acetic acid and other odours thanks to its high absorption characteristics. AC Deodorant Filter removes harmful gases and the smell of food or cigarettes.

**6. NEGATIVE ION GENERATOR:** Purified air enters the module containing the inbuilt ion generator where it is enriched with negative ions.

# THERAPY AIR® ION – CERTIFIED TO REDUCE COVID – 19

## BREATHE WORRY-FREE AND GET HEALTHY, STAY HEALTHY

Therapy Air® iOn has received the prestigious German GUI-lab certification mark. 6 stage air purification system with 5 powerful high performing filters eliminate the smallest particles in the air, such as fine dust, bacteria, mould and viruses, especially those which are transmitted via the so-called droplet infections such as the SARS-CoV-2. Therapy Air® iOn has also received a certificate as the perfect antiallergic device.



# HOW DOES THERAPY AIR<sup>®</sup> ION WORK?



## NEGATIVE IONS

Therapy Air iOn generates about **1,236,000 ions/cm<sup>3</sup>** in turbo mode, i.e. twelve times the amount of **negative ions** contained in the air of the healthiest of environments, such as surrounding massive waterfalls (Niagara falls generate over **100,000 negative ions per cm<sup>3</sup>**).

**Negative ions** increase the well-being and mental clarity by removing the debilitating effects of excessively **polluted air**, contaminated by **positive ions**, and are often described as **natural anti-depressants**.

**Negative ions** can significantly decrease **airborne viruses** and **bacteria** in our indoor environments (homes, offices, sports centres, kindergartens, etc.) and improve our health.

They improve the function of the **cilia** in our respiratory tract that protect our lungs from **irritation** and **inflammation**, thus leading to less instances of **respiratory illnesses** like **colds** and **flu** and even **hay fever** and **asthma**. Because **negative ions** are absorbed directly into the bloodstream, they may help to combat harmful free radicals within our body.

Researchers at the University of California showed that **negative ions** normalize serotonin levels in the brain, potentially improving a person's **positive outlook** and **mood**, **sleep quality**, **concentration** and **cognitive abilities**.

Mr. Pierce J. Howard, PhD at the Centre for Applied Cognitive Sciences says that: "Negative ions increase the flow of oxygen to the brain, resulting in higher alertness, decreased drowsiness, and **more mental energy**."

## THERAPY AIR ION 6-STAGE AIR PURIFICATION SYSTEM BE WELL, STAY WELL



### PROVIDES CLEAN, HEALTHY AIR IN ANY SPACE

Improved indoor air quality boosts the immune system, and thereby productivity at the workplace [31]. **Therapy Air<sup>®</sup> iOn** ensures optimal oxygenation of the body and the brain, improving alertness and concentration, as well as immunity to fight disease.

**Pathogens, pollutants, mold** and **allergens** that can be found in indoor air are removed by **Therapy Air<sup>®</sup> iOn**. It also protects individuals from the **flu** and **hay fever**, therefore reducing the amount of **medication/treatment required**.

The filtering system will not only protect against **outdoor pollution** and **allergens**, but also against indoor pollution from **chemical compounds, cleaning products, cooking** and from **fireplaces**, which are all harmful to our health.

Controlling indoor air pollutants in our homes, offices, schools, hospitals, fitness and wellness centres – and in every situation where the air is **polluted**, is essential for the prevention of **illnesses**, better recovery and for maintaining overall health.



## EXTRA FEATURES



- **Wall-Hanging Slim Design (Optional)**

The slim design makes the unit suitable for wall hanging for a pleasant decorative effect.

- **Rhythmic Cleaning Operation Mode**

This mode is designed for optimal indoor air circulation and the rapid removal of pollutants.

- **Silent Operation at Night (Bedtime Mode)**

The unit automatically operates silently to create a pleasant atmosphere at night.

- **Safety Design for Customers**

All operations stop automatically if the front cover is opened. The air intake/outlet is designed to ensure your safety and prevent accidents.

- **Mood Light**

You can select a colour from the front of the unit for mood lighting.

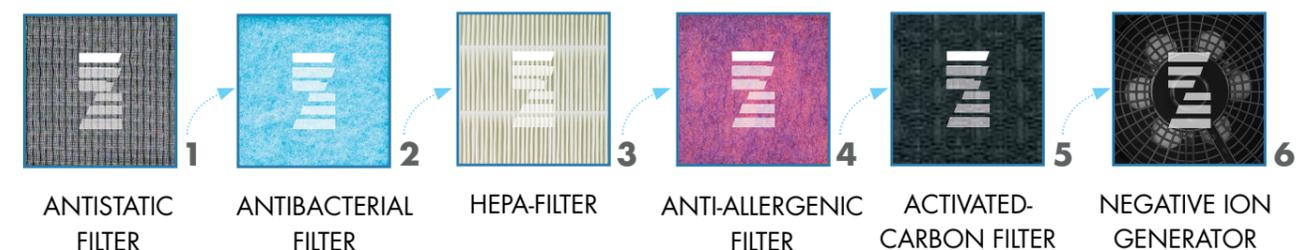
- **Child Mode**

The air circulation speed is lowered to prevent children from feeling cold.

THE ULTIMATE **BREATH-GIVING**  
**INNOVATION**

## TECHNICAL DATA

Product Name	Therapy Air iOn
Product code	PWC-570
Manufacturer	Home Art and Sales Service, Sihlegsstrasse 23, 8832 Wollerau, Switzerland
Country of origin	Zepter Korea
Rated voltage (V)	220 - 240V, 50 Hz
Power consumption (W)	47W
Noise level	Max. 60 dBA
Negative ion generation	1,236,000 ions/cm <sup>3</sup>
Air flow	6.05 m <sup>3</sup> /min 363.3 m <sup>3</sup> /h
CADR (smoke)	154.2 cfm
CADR (dust)	167.6 cfm
CADR (pollen)	178.2 cfm
Effective area	26 m <sup>2</sup> (ACPH 5 times) 130 m <sup>2</sup> (ACPH 1 time)
Ozone generation	<0.002%
Gas removal efficiency	99.97%
Deodorisation efficiency	85%
Product dimensions (LxWxH)	0.51x0.181x0.51 m
Product net weight (kg)	8.8 kg
Warranty	5 years

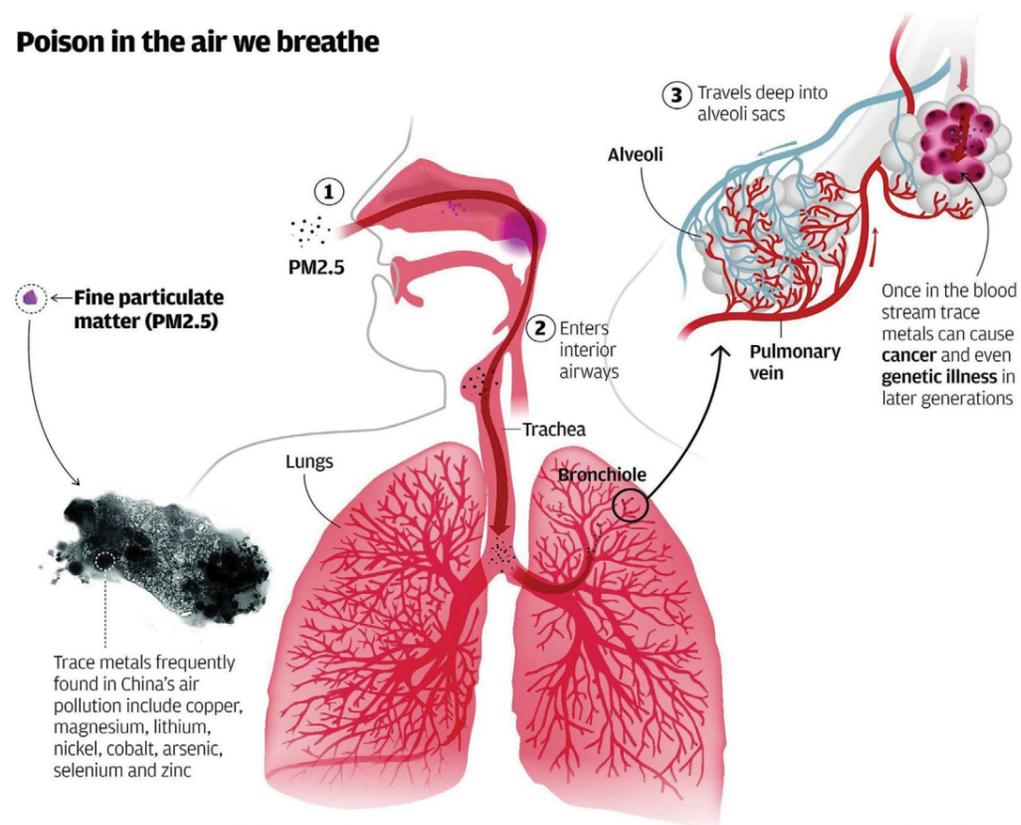


# ADDITIONAL INFORMATION ON HEALTH RISKS

## EFFECTS ON THE RESPIRATORY SYSTEM

A systematic review, which is the best possible evidence in research, shows an association between exposure to **PM2.5, traffic related air pollution, carbon monoxide, pollen and the development of paediatric asthma** [3, 4]. Exposure to **NO<sub>2</sub>, SO<sub>2</sub> and PM2.5** [5, 6, 7, 4] activates inflammatory markers [8] and increases oxidative stress within the cells, resulting in **cell death through apoptosis, autophagy, and necrosis** [9, 10]. **PM** exposure may also lead to **DNA damage and genomic instability, increasing the susceptibility to cancer** [11, 12].

### Poison in the air we breathe



Sources: EPA, Environmental Protection Department, Greenpeace.

SCMP Graphic: Adolfo Arranz

A prenatal exposure to **NO<sub>2</sub>, SO<sub>2</sub>, and PM** is related to **an increased risk of wheezing, and development of asthma** [13, 14, 15, 16]. In addition, infants whose mothers lived close to a major roadway at the time of delivery may be at greater risk to **develop lung infections in early life** [17] and such children may also be predisposed to **adverse cardio-metabolic health** [18].

Unfortunately, exposure to air pollution is also linked to **intrauterine hypoxia** during pregnancy, which has a negative impact on **the development of organs and embryonic processes** [18, 19], and is associated with **congenital abnormalities, in particular affecting the heart** [20, 21]. Similarly, Son et al (2017) provided supportive evidence from nearly **500 000** children born in the US that lifetime exposure to **PM2.5** increases the risk of **mortality from respiratory disorders and sudden infant death syndrome** [22].

## EFFECTS ON THE CARDIOVASCULAR SYSTEM

Research provides evidence that air pollution exposure increases **oxidative stress, systemic inflammation and autonomic nervous system imbalance that subsequently induces endothelial dysfunction and vasoconstriction** [23, 24]. Supported by robust evidence [25, 26, 27, 28, 29, 6, 24], these factors are central to **eliciting specific cardiac endpoints, and thereby modulating the risk of:**

- Myocardial infarction
- Cardiac arrhythmias
- Atrial fibrillation
- Sensitivity to ischemia
- Cardiovascular disease, such as ischemic stroke
- Vascular dysfunction
- Hypertension
- Atherosclerosis
- Reperfusion injury



In fact, **PM2.5** is associated with an **11%** increase in **cardiovascular mortality** [31].

Furthermore, environmental exposure to air pollution significantly increases **arterial blood pressure**, which, over the long term, may be capable of promoting **the development of sustained hypertension** [32] and increasing the risk of **arteriosclerosis**, as shown by **premature aortic and coronary calcification** [33, 31]. Even short-term increases in air pollution are associated with an increasing the risk of **myocardial infarction, stroke and acute heart failure**, because of an increase in **thrombus formation, coagulation factors and platelet activation** [34, 35, 36, 37, 38]. The risk is elevated even when pollutant concentrations are below European standards.



**PM** increases the risk of **cardiovascular events** especially in vulnerable subsets of individuals [21, 39, 40], such as persons with known or **suspected cardiovascular disease, the elderly, diabetic patients** (see 'Effects on weight, metabolism and diabetes'), pregnant women.

## EFFECTS ON WEIGHT, METABOLISM AND DIABETES

Exposure to very high pollution levels of **PM2.5** during **pregnancy**, particularly in the **8<sup>th</sup>** and **9<sup>th</sup>** month, are associated with a **lower birth weight in infants** [41] and potential childhood **obesity** later in life [42].



Leptin levels appear to be more than **70%** higher in infants whose mothers lived close to a major road during pregnancy compared to infants of mothers living further away from roads [43]. Leptin is a hormone produced by adipose tissue (i.e. fat) and is received by the brain. Leptin is proportional to the amount of body fat stored and informs about the body's caloric state. Therefore, distortions in **the leptin-signalling pathway** are associated with **obesity** and **diabetes** [44].



Exposure to air pollution has also been suggested as a contributing factor to **diabetes development** and its progression [14, 45] through biological pathways involving **endothelial** and **mitochondrial dysfunction**, **oxidative stress**, **deregulation of the visceral adipose tissue through inflammation**, **hepatic insulin resistance**, **elevated haemoglobin level**, **elevated blood pressure** and **alterations in the autonomic nervous system**, which may increase **insulin resistance** [46]. Consequently, **PM2.5** exposure may increase the risk of **diabetes** by **10 to 27%** [46].

Obesity is considered an **inflammatory disease**, and obese and overweight individuals have increased **inflammatory markers**. Because air pollution triggers an **inflammatory response** in the body, obese individuals appear more susceptible to air pollution due to the exasperation of already-existing **inflammation**.

In particular, obese individuals are more sensitive to **O<sub>3</sub>-induced impaired lung function** and are at greater risks for air pollution-induced **cardiopulmonary** effects [47].

## EFFECTS ON COGNITIVE FUNCTION

Air pollution and exposure to particulate matter is associated with **neuroinflammation**, increases in **oxidative stress**, induced **microglia dysfunction** and changes in the **blood-brain barrier** that may affect multiple **central nervous system pathways** leading to **cognitive decline**, **white matter disease**, **stroke** and **carotid artery disease** [48].

Therefore, air pollution is associated with **exacerbations** of neuropathologies, such as **Alzheimer** and **Parkinson's** diseases [48, 49]. Additionally, exposure to indoor air pollution from the burning of fossil fuels is associated with poorer cognitive performance in **verbal fluency**, **verbal learning**, **retention** and **orientation** in **adults over 50** [49].



Air pollution exposure during pregnancy and early antenatal period may lead to **inflammatory processes in the fetal brain** that interrupt the development of **microglia**, increasing susceptibility to **neurological disorders** [50].

Recent studies show that heavy exposure to pesticides and **PM** during pregnancy are associated with **autism** spectrum disorder development in children [51, 52, 53].

Because of the variations in composition of **PM2.5**, it is difficult to attribute the adverse health effects of air pollution to a single compound. However, a study investigating the effects of particulate matter **PM2.5** at birth and later in childhood in over **7,000** children in Germany, Netherlands, Italy and Spain showed that exposure to high iron levels found in ambient polluted air is associated with **reduced fine motor skills** in children under **9** years of age, suggesting that this highly prevalent element in **PM2.5** may be a neurotoxic compound [54].

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