

AIR POLLUTION AND CLIMATE CHANGE

Dirty Air or Air Pollution

Air pollution in the form of smoke and climate change are closely related, and also a major driving cause for climate change. The main causes of Carbon dioxide emission is; the extraction or burning of fossil fuels, burning forests and burning stubble is also one of the major source of **air pollution**. What's more, many air pollutants contribute to climate change by affecting the amount of incoming sunlight that is reflected or **adsorbed** by the atmosphere. Some of these pollutants are warming the earth and many of them are cooling the earth. These are named as

»» Short-Lived Climate-Forcing Pollutants ««

Such as

- ▲ Methane (CH₄)
- ▲ Black Carbon
- ▲ Ground-Level-Ozone (O₃)
- ▲ Sulfur dioxide (SO₂)
- ▲ Carbon dioxide (CO₂)
- ▲ Carbon monoxide (CO) and Volatile Organic Compounds (VOCs)
- ▲ Polyaromatic hydrocarbons (PAH)
- ▲ Primary Aerosols (PA)
- ▲ Secondary Organic Aerosols (SOA)

Silent Health Killer

Approximately 7.5 million **premature deaths** are annually recorded due to the effects of **air pollution** in which 4.2 million are caused due to ambient (outdoor) air

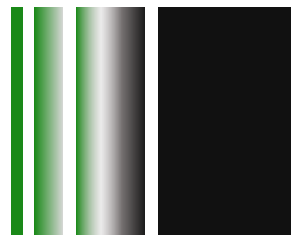
pollution. Beyond shortening lives, air pollution can negatively impact our day-to-day lives by causing **respiratory illness** and leading to death. This smog can cause eye irritation, sour throats, asthma and other **respiratory problems**.



Smog is a common form of air pollution found mainly in urban areas and large population centers. The term refers to any type of **atmospheric pollution** regardless of source, composition, or concentration-that creates a significant reduction in atmospheric visibility. Air pollution also harms our natural environment, impacting both vegetation and wildlife: almost half of the world's ecosystems are threatened by the effects of air pollution.

It is time for **Watch Air[®]** to act and prevent further damage.

PM	Particulate Matter
SO₂	Sulphur dioxide
NO₂	Nitrogen (di)oxide
NH₃	Ammonia
VOC	Volatile Organic Compound
CH₄	Methane
CO₂	Carbon (di)oxide



WATCH AIR®

Particulate Matter (PM)

A mixture of solid and liquid particles suspended in the air. PM₁₀ refers to particles with a diameter smaller than 10 microns PM_{2.5} refers to fine particles with a diameter of 2.5 micrometers and smaller. Both types can easily be inhaled.

Sulphur dioxide (SO₂)

Sulphur dioxide is a pungent colorless gas emitted by power stations, industry, shipping and households.

Nitrogen dioxide (NO₂)

Refers to a family of gases that includes nitrogen oxide (NO) and nitrogen dioxide (NO₂). The brown haze sometimes seen over cities is mainly nitrogen oxides. NO₂ is emitted by vehicles, shipping, power plants, industry, households and coal burning including stubble.

Ammonia (NH₃)

Ammonia is a colorless gas with a pungent smell and odor. It is emitted by livestock farming and the use of fertilizers in agriculture.

Volatile Organic Compound (VOC)

Volatile Organic Compounds are a class of chemicals compounds that under normal conditions are gaseous or can vaporize and enter the atmosphere. VOCs excluding methane, are emitted by the use of solvents in products and industry, road vehicles, household heating and power generation.

Methane (CH₄)

Methane is an air pollutant and a greenhouse gas. Through a series of chemical reactions methane contributes with nitrogen dioxide to Ozone (O₃) formation. Most important sources are the energy sector, landfills and agriculture (mainly cattle)

Carbon dioxide (CO₂)

While methane is a part of climate change, the contribution of Carbon dioxide (CO₂) remains the main culprit that **Watch Air®** point at. Because of its **Bad-Guy-Status**, **Watch Air®** knows how to capture and store this guy and utilize this CO₂

CARBOFIX[®]

Breakthrough

Watch[®] from **Mannheim, Germany** has developed a **Novel absorber** which can **suck-out Carbon dioxide (CO₂)** from the burning materials for example, **Petrol, Diesel, Gases (CH₄), Charcoal, Wood Turf** and even **Brown Coal** including the worlds huge problem of burning forest and stubble burning. The principle of this **absorber** is ingeniously simple: it sucks in **CO₂** and fix it on another **oxygen** and change the structure to **CO₃** and precipitate. During precipitation and discharge, the carbonate is discharged or released in the ground forever. Carbon is fixed until we need it; we can store this fixed carbon for millions of years. **Carbofix[®]** absorber is made of **Metal Organic Frameworks (MOF's)** with the largest surface area so that the **gases such as**

Hydrogen Sulphide, Methane, Ozone, Carbon dioxide, Sulphur dioxide, Ammonia, Volatile Organic Compounds and even reduces all Particulate Matter to less than two (2)

can enter into the **Miso, Meso and Macropores** of the **absorber**. **Carbofix[®]** absorber is available in four different forms.

1 **As Liquid.... CARBOFIX-L**

2 **As Powder.... CARBOFIX-P**

3 **As Granular.... CARBOFIX-G**

4 **As Beads.... CARBOFIX-B**

»» **Watch[®] Solves World's Two Huge Problems.**
Watch Water[®] Solved the Water Pollution Problems and
Now **Watch Air[®]** Solved the Air Pollution and Climate Change Problems with **Carbofix[®]**. ««

Spraying Carbofix[®]



Each **absorber** has a single molecular layer of the **oxide** which enables **unique chemical reaction**. If **CO₂** is not removed, then it stays in the atmosphere as **CO₂ (gas)**. When **CO₂** encounters with **Carbofix-L**, it changes to **H₂CO₃** (Liquid Acid). In-contact with solids granular or beads of **Carbofix**, **CO₂** changes structure into carbonate form. **Therefore, CO₂** can form a gas, liquid or solids for various applications. **Watch Air[®] Carbofix[®]** absorber have a **Natural Affinity** for **Carbon dioxide (CO₂)**, which means **100% fixation of CO₂** in any form. It is time for **Watch Air[®]** to act and prevent further damages.

The **greatest advantage** of **Carbofix[®]** absorber over all the other carbon capture technologies is the **Global-Carbon-Cycle** nature of the absorbents affinity to **carbon dioxide (CO₂)**. "This natural affinity allow

Fixation of Carbon dioxide

CARBOFIX[®]

From any concentration even 420 milligrams (Present levels of CO₂ in the atmosphere). It allows desorption and use in any **industrial** or **commercial process**.

What is Watch Air[®] Carbofix?

Carbofix[®] is the only **Alkaline-Cell** and is one of the most developed cell technology in chemistry. **Carbofix[®]** cells consume **carbon** and **pure oxygen** producing carbonates (CO₃). They are among the most efficient cell for producing

- a) **Potable Water**
- b) **Heat**
- c) **Energy**

And have potential to reach 100%.

Chemistry

The **Carbofix[®]** produces carbonates through a **Redox-reaction** between **calcium (CA²⁺)** and **Oxygen**. At the **anode, carbon dioxide** is **absorbed** according to the reaction.



Calcium
&
Magnesium
Carbonate



Electricity and heat are formed as **by-products** of this reaction. Because of this, alkaline cells operate **absorbing** carbon dioxide, the **absorber** is in-corporation with **Air SCRUBBER** is designed to **Clean (absorb-out) carbon dioxide** as much as possible. When carbon dioxide reacts with the **absorber, pure carbonates** are formed. The carbonates precipitate on the **surface pores of the absorber** and can be washed to clean and collect carbonates.

Advantages over other technologies

Carbofix[®] Alkaline Absorber cells operate at any temperature, but the best efficiency is achieved at ambient temperature and 90° with an **absorption capacity** of **almost 100%**. Because of the **Alkaline character of Carbofix - Chemistry, Oxygen Reduction Reaction (ORR) kinetics** at the cations are very strong. The **catalyst** such as **Iron, Zinc** and **Titanium Oxide** are used in formulations to speed-up the process up-to 1000 times faster or even more.



Commercial Prospects of Carbofix[®]

Carbon-Capturing by **Carbofix[®]** is cheapest than all other technologies. At the cost of between **\$ 25 to \$ 30**, it can capture one ton of **carbon dioxide**. The **Carbofix[®]** is so simple and easy to use due to its simple form which is available in **Powder, Liquid, Granular or Bead** structure. **Watch Air[®]** is introducing a very simple and efficient **Air Scrubber** to **reduce carbon dioxide** and **save our planet from this climate change problem**.

The commercial prospects for **Carbofix[®]** lie largely with-in the new policy of the entire world to reduce CO₂. **Carbofix[®]** absorber has the world's first **solid-state Alkaline cell**, utilizing a solid **Metal Organic Frameworks (MOFs)** instead of low-grade products. This resolves the problem of **poisoning the planet** with heat and hunger.