

**PRESS RELEASE**

**New release**

# **CO Filter vft Astrea**



**Vallfirest and Astrea Materials** have developed **the first and only filter for wildland firefighters capable to eliminate CO, Formaldehyde and NOx**

PRESS RELEASE

# HOW TO AVOID AN INTOXICATION FOR **CARBON MONOXIDE** IN A WILDLAND FIRE

New CO filter for wildland firefighters



**If you see a fire  
without smoke,  
Carbon Monoxide  
is present.**

**One of the Top 5 Wildfire Smoke Hazards is Carbon Monoxide (CO)**, present at different stages in wildland firefighting operations.

## **How is CO produced?**

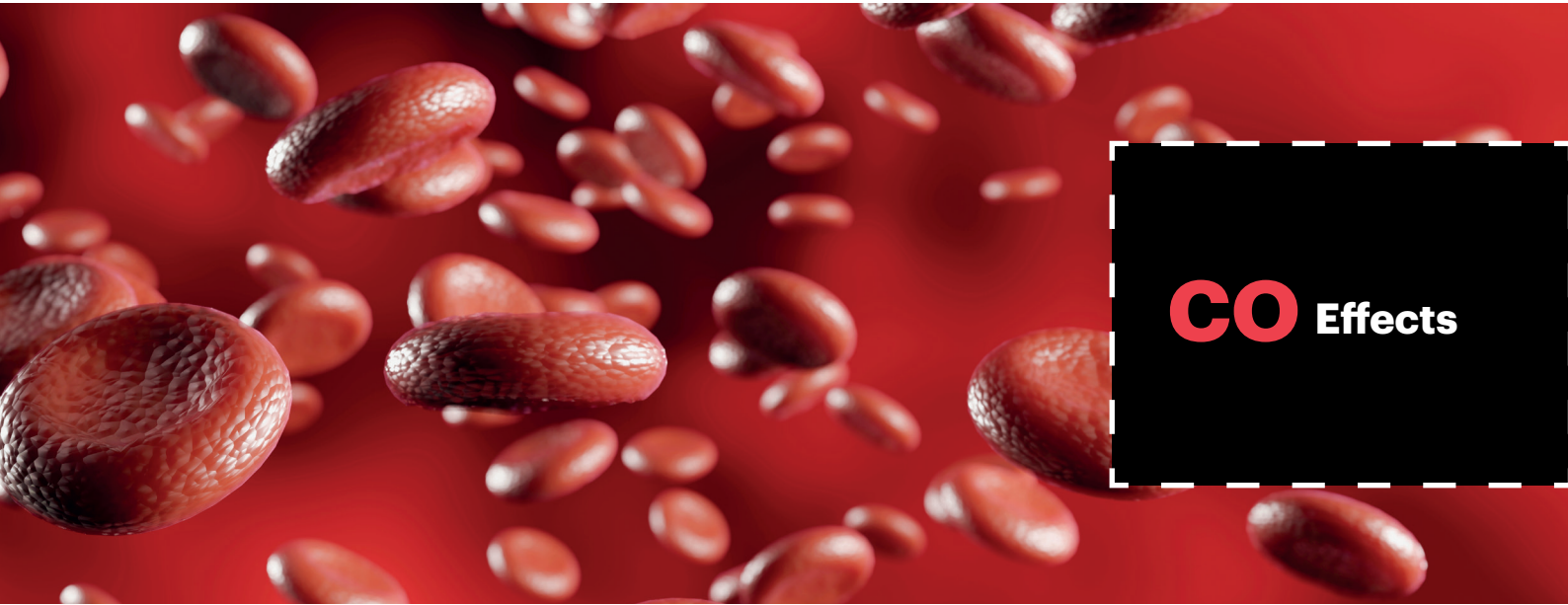
Carbon Monoxide is produced by incomplete combustion of wood or other organic materials, due to lack of air to burn. All fuel needs a certain amount of oxygen to burn completely through the chemical oxidation reaction that causes fire and if this does not happen, this colorless, odorless, inaudible and highly toxic gas is generated.

## **Why is Carbon Monoxide toxic?**

Carbon monoxide transforms the oxygen from hemoglobin in the blood to carboxyhemoglobin (COHb), which affects major and vital organs like the brain and the heart that require large amounts of oxygen to function properly.

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## New CO filter for wildland firefighters



### Levels of exposure

“When people are exposed to CO, the time until they reach a toxic level of COHb can be predicted as a function of CO concentration, breathing rate, altitude, and other factors. The harder the work and the higher the altitude, the more rapidly COHb forms at a given concentration of CO. In heavy smoke where there is a high level of CO, symptoms of overexposure to CO can occur during hard physical labor after 15 minutes.”

**“Smoke Management Guide for Prescribed Fire”**

National Wildfire Coordination Group

## New CO filter for wildland firefighters



**Tunnel vision is a classic sign of CO intoxication.**

### Mild exposures

- Diminished work capacity
- Loss of visual perception
- Loss of manual dexterity
- Loss of driving performance
- Loss of attention level
- Slight headache
- Nausea

### Medium exposures

- Severe headaches
- Dizziness
- Loss of perception of the environment
- Tachycardia
- Tunnel vision

### High exposures

- Loss consciousness
- Seizures
- Heart failure
- Death

⚠ Especially dangerous in individuals suffering from preexisting heart diseases.



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# How can we eliminate CO?

**Carbon monoxide** is not a gas that can be filtered with activated carbon, it must be dissociated with a catalyst, as we see in the automotive or mining industries.

## Available solutions

**ARE** (Autonomous Breathing Equipment). These are respiratory systems with compressed air bottles **non recommended for wildland firefighting** operations due to their weight and size.



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# New **vft** Astrea CO filter

The first and only filter in small size and long lasting, able to protect against CO, especially designed for wildland fires.



An exclusive and patented **gold nanoparticulate** formula, resulting from 15 years of basic research and industrial development.

Its nanostructured catalyst can remove the toxic compounds in a wildland fire with a **98% of filtration efficiency.**

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## New CO filter for wildland firefighters



# How do we connect it?

Bayonet for direct connection to the **Xtreme Mask**, guaranteeing a good seal and comfortable use in wildfire, compatible with all types of glasses, hearing protectors and with most helmets available on the market.

## Fire test results

The CO filter was tested on the field. This are the data resultant after several evaluations.

### In typical shift of 6 h:

- CO Filtration > 98%
- NOx Filtration >98%
- Formaldehyde removal (formaldehyde is turned to CO2 and H2O) > 98%
- Additional protection from VOCs

### Do you need more information? Please contact:

#### Vallfirest Tecnologias Forestales, S.L

Polígono Industrial la Serra  
C/ Ignasi Barraquer 4-6  
08460 Santa Maria de Palautordera

T (+34) 93 867 87 79  
@ marketing@vallfirest.com

[www.vallfirest.com](http://www.vallfirest.com)