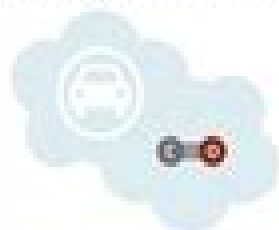


# A BRIEF GUIDE TO ATMOSPHERIC POLLUTANTS

A number of different chemical entities, from a range of sources, can contribute towards atmospheric pollution, the consequences of which can include global warming and smog. This graphic looks at a selection of major groups of atmospheric pollutants, their major sources, and their effects.



## CARBON MONOXIDE

A gas generated by the incomplete combustion of fuels – primarily from road transport. Affects human health, as it reduces oxygen-carrying capacity of the blood. It also reacts with other atmospheric gases to produce acids.



## CARBON DIOXIDE

A gas generated by the burning of fossil fuels in the production of electricity. Also emitted by natural processes. Human emissions are linked with rising atmospheric CO<sub>2</sub> levels and anthropogenic global warming.



## NITROGEN OXIDES

Primarily created by combustion in road transport. Nitrous oxide is an important global warming contributor, whilst nitrogen dioxide is involved in ground-level ozone-forming reactions, and is also a component of smog.



## SULFUR DIOXIDE

The primary source of sulfur dioxide is the burning of fossil fuels to generate electricity. It can contribute to smog, reacts with water to produce acid rain, and can also cause wheezing and breathing problems for asthmatics.



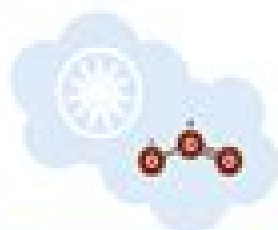
## AMMONIA

Ammonia's primary atmospheric source is from its use in agriculture, both as manure & fertilisers. It can react with other pollutants to produce particulate matter. It also has the ability to neutralise ecosystems with nitrogen.



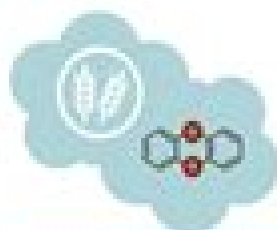
## VOCs

VOCs (volatile organic compounds) are emitted naturally by vegetation. Amongst significant human sources is road transport, as well as solvents. They can contribute to formation of ground-level ozone and smog.



## OZONE

The ozone layer shields us from UV radiation, but ground-level ozone is a major pollutant. It's formed from other pollutants in the presence of sunlight. Ozone is a major component of smog, and can also cause health effects.



## POPs

POPs (persistent organic pollutants) are volatile chemicals released into the atmosphere, often from agricultural or industrial uses. They persist in the environment and can have health effects on both wildlife & humans.



## PARTICULATE MATTER

Particulate matter is composed of a huge number of different components. Some are directly emitted, while others are generated by reactions in the atmosphere. They cause haze and can also cause lung problems if inhaled.



## HEAVY METALS

Heavy metals are released into the atmosphere from a range of sources, including burning of fossil fuels and road transport emissions. Some, such as mercury and lead, have toxic health effects on humans.



# Emissions Of Atmospheric Trace Compounds



**SJ Ball**

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web apr 1 2009 chen et al 18 carried out an optimal design for the assel roll profile using a genetic artificial neural network an automatic rpd method was proposed by lambiase and langella 19 to

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web mar 6 2023 the roll pass design scheme corresponding to the minimal target function is considered the best the general idea and scheme of optimizing roll pass design that is suitable for a most broad range of structural sections is described in work 1 as part of the optimal roll pass design concept

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web jun 18 2014 roll pass design is an essential part of long product rolling process since the long products are rolled between the shaped rolls in the long product rolling mills roll pass design generally means the cutting of grooves in the roll body through which steel to be rolled is made to pass sequentially to get the desired contour and size

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web jan 1 1990 in this study a computer aided design cad system to support roll pass and roll profile design of bar rolling where simple shapes like round and square bars are produced was developed in order to minimize trial and errors in industry