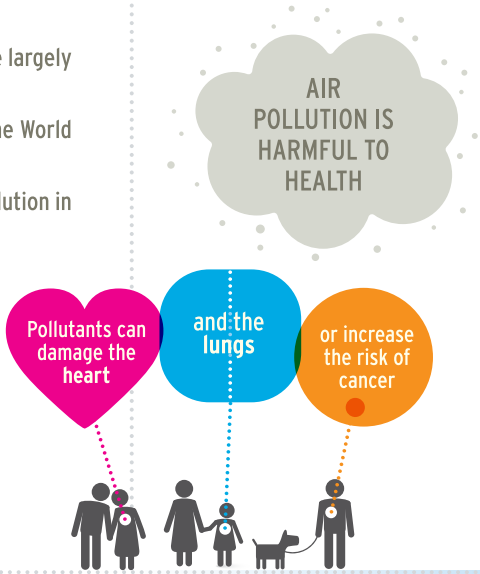
IRELAND'S ENVIRONMENT
AIR QUALITY

DID YOU KNOW?

- Air quality in Ireland is of a high standard across the country and is among the best in Europe. This is due largely to prevailing clean Atlantic air and a lack of large cities and heavy industry
- Particulate Matter levels in Ireland are a concern, and are above air quality guidelines established by the World Health Organisation
- The ban on bituminous coal in large cities and towns has greatly reduced levels of particulate matter pollution in these areas
- Nitrogen dioxide concentrations are strongly linked to traffic emissions. Increasing rates of private car ownership are likely to have a negative impact on Nitrogen dioxide concentrations in our urban centres
- Ozone concentrations are strongly influenced by meteorological conditions, higher levels of ozone occur in warm sunny conditions
- The **Air Quality Index for Health** provides information on current air quality with appropriate health advice. It is available on the EPA website at **airquality.epa.ie**



AIR QUALITY POLLUTANTS

The ambient air quality pollutants of most importance on an EU-wide level are nitrogen dioxide, particulate matter and ozone. They can impact on human health and are at levels approaching the relevant limit value or long-term objective.

Nitrogen Dioxide (NO_2)

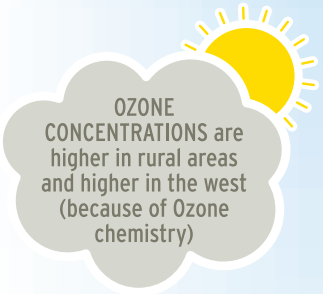
Nitrogen dioxide has a direct effect on health. Short-term exposure is associated with reduced lung function and airway responsiveness and increased reactivity to natural allergens. Long-term exposure is associated with increased risk of respiratory infection in children.
Concentrations of nitrogen dioxide were below the limit at all 17 sites measured in 2012. Annual concentrations measured at suburban and rural sites are significantly lower than those measured at urban stations.

Particulate Matter (PM_{10} and $PM_{2.5}$)

PM_{10} and $PM_{2.5}$ are very small particles which can penetrate deep into the respiratory tract. Inhalation of these particles can increase the risk, frequency and severity of respiratory and cardiopulmonary disorders.
All stations measured for PM_{10} and $PM_{2.5}$ in 2014 were compliant with the limit values. Levels were highest at traffic influenced sites in cities and in large towns due to burning of coal and other solid fuel in addition to emissions from traffic.

Ozone (O_3)

Ozone is a naturally occurring gas which is also formed from chemical reactions of air pollutants. At ground level, higher concentrations of ozone in the air have adverse implications for human health and for crops and other vegetation. With respect to human health, high concentrations of ozone affect the functioning of the respiratory system.
Concentrations of ozone measured at 11 stations in 2014 were below the target value. The long term objective of 120ug / m3 was not exceeded at any site.
Levels in Ireland are highly influenced by transboundary sources and are higher at the west coast than in the east of the country. In urban areas ozone is depleted through reactions with traffic-emitted pollutants, therefore levels of ozone are higher in rural areas than in urban areas. Ozone concentrations are strongly influenced by meteorological conditions; higher levels of ozone occur in warm sunny conditions. Unlike most of mainland Europe, Ireland does not experience notable ozone pollution.



PAH

PAH are chemical compounds which consist of two or more fused aromatic rings made entirely from carbon and hydrogen. PAH are emitted domestically from the combustion of solid fuels, such as peat, wood and coal, and they can be emitted from incomplete combustion of fuel in automobiles. Waste burning or 'backyard burning' and bonfires are a source of PAH as is cigarette smoke.
B(a)P which is a marker for PAH concentrations was monitored at five stations across Ireland in 2014. Levels at all monitoring sites were below the legal target value of 1 ng/m3

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Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

MAIN SOURCES OF POLLUTANTS

Emissions from road traffic are the main source of many air pollutants harmful to human health, including nitrogen dioxide, oxides of nitrogen, particulate matter, carbon monoxide, volatile organic compounds and heavy metals. In Dublin and Cork concentrations of nitrogen dioxide are close to the limit value at monitoring stations near busy roads.

The burning of coal and other solid fuel is also a source of particulate matter and other air pollutants including sulphur dioxide and polycyclic aromatic hydrocarbons. The ban on bituminous coal in large cities and towns has greatly reduced levels of particulate matter in those areas. The absence of a ban on bituminous coal in smaller towns means levels of particulate matter there are as high or higher than levels in some cities.

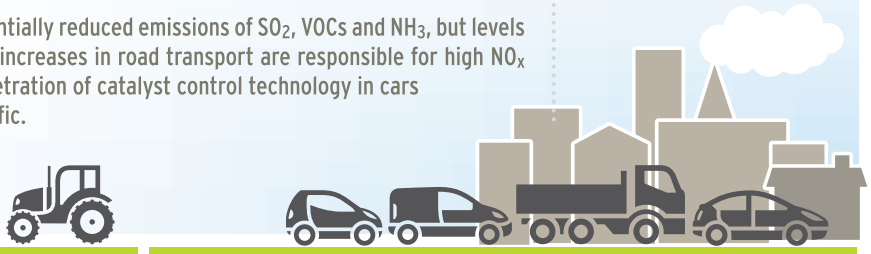
Transboundary Pollution

Air pollution has a transboundary aspect meaning that emissions in one country can cause pollution in a different country. National emissions ceilings are in place across Europe to control emissions of four key transboundary pollutants: sulphur dioxide (SO_2), oxides of nitrogen (NO_x), volatile organic compounds (VOCs) and ammonia (NH_3). These pollutants can contribute to acidification, eutrophication and ozone formation.

Strategies implemented in Ireland in recent years have substantially reduced emissions of SO_2, VOCs and NH_3, but levels of NO_x are expected to remain high in the short term. Large increases in road transport are responsible for high NO_x emissions levels. The benefits associated with increased penetration of catalyst control technology in cars and goods vehicles have been offset by increases in road traffic.

PARTICULATE MATTER CONCENTRATIONS are highest in colder, calm weather

OZONE CONCENTRATIONS are highest in warmer weather



RESPONSES

European Union Legislation

The Clean Air for Europe Directive (2008/50/EC) and the Fourth Daughter Directive (2004/107/EC) set limits and target values for ambient concentrations of air pollutants harmful to human health and the environment. If any limits are exceeded, Member States must implement measures to ensure the air quality standards are met.
A comprehensive monitoring network supplies real-time data on air quality to the public.

Emissions from Industry

The continued implementation and enforcement of existing policy measures is vital to maintain Ireland's good air quality.
The impact of emissions from industry on air quality has significantly reduced due to licensing and control by the EPA and others.

Bituminous Coal Ban

The ban on bituminous coal in large cities and towns has greatly reduced levels of particulate matter pollution in these areas. The ban was extended in 2012 and this is expected to further decrease levels of particulate matter across the country. A study on the effect of the bituminous coal ban found that that there were approximately 359 fewer cardiovascular and respiratory deaths per year in Dublin following the introduction of the ban.

Road Transport

While new standards for car emissions and the resultant cleaner technology have curbed emissions, this has been offset by the increasing number and bigger engine sizes of vehicles on Ireland's roads. This growth in traffic must be must be managed in an efficient manner to reduce emission due to traffic congestion and reduce air pollutants that impact health and to comply with EU standards.

OUTLOOK

Overall, air quality in Ireland is expected to remain good, due largely to the prevailing clean westerly air-flow from the Atlantic and the relative absence of large cities and heavy industry.
However, ambient concentrations of nitrogen dioxide are likely to remain high in Dublin and Cork due to emissions from traffic. Levels of particulate matter are highest in towns with no ban on bituminous coal and at traffic influenced sites in cities. Efforts are required to address both these sources, including extending the ban on bituminous coal to other areas of the country and reducing traffic emissions in cities. The Clean Air for Europe Directive (2008/50/EC) requires Member States to reduce the urban background concentrations of $PM_{2.5}$. Ireland will need to reduce its average $PM_{2.5}$ levels by 10 per cent by the year 2020. This will require an integrated approach across many sectors in Ireland, including the transport, agriculture, residential and industrial sectors.
Policy changes in key sectorial areas such as agriculture, transport and industry are likely to impact air quality over the longer term.

HOW CAN YOU HELP?

We all depend on breathing clean air to live. Traffic and domestic solid fuel can cause us to breathe in pollution, which increases the risk of respiratory illness. You can make a difference by driving less and using smokeless fuels at home.
To see the air quality in your area right now, check out the EPA air quality pages at www.epa.ie/air/quality.