

Air quality and pollution

NICHS is concerned about the current and future impact of air quality and pollution on our health and is calling for further actions and measures to limit these effects. Air pollution can exacerbate existing conditions, including the following;

Respiratory diseases - **Over 165,000 people** - or just under 8.5% of the population - are on registers for respiratory conditions.



Deaths due to Respiratory Conditions: 6 per day

2,201 people or 14% of all recorded deaths. (excludes lung cancers).

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Cardiovascular and circulatory diseases - **Over 170,000 people** - or 8.5% of the population in Northern Ireland - are on registers for circulatory conditions.



Deaths due to Circulatory Conditions: 10 per day

3,686 people or 22.8% of all recorded deaths.

Coronary Heart Disease (CHD) - In 2019, 1,613 recorded deaths in Northern Ireland were due to CHD. This is about **4 deaths per day**. This was more than **4 in 10** (43.7%) of all circulatory deaths.

Air pollution

As noted above air pollution does not necessarily cause these illnesses nor necessarily directly lead to deaths; however, it is a contributory factor and may often exacerbate matters. It can worsen asthma and affect lung function; leading to complications and unnecessary admissions to hospital. This is particularly the case for frail older people, and young children.¹

A report published by Public Health England in 2014² estimated that in 2010, 553 deaths in over-25s in Northern Ireland were attributable to exposure to anthropogenic (i.e man-made) air pollution.

Air Pollutants of Concern and the Current Situation in Northern Ireland

The four main pollutants that are concerning are Particulate Matter, Nitrogen oxides (NO_x), Sulphur dioxide (SO₂) and Ammonia (NH₃). Due to significant changes in both power generation, home heating and, more recently, a switch away from diesel to petrol vehicles the air pollution situation has improved in recent years.

¹ PHE, Estimation of costs to the NHS and social care due to the health impacts of air pollution, 2018. Annual Report of the Chief Medical Officer, 2017.

² 2 Public Health England, Estimating Local Mortality Burdens Associated with Particulate Air Pollution, 2014, p21. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332854/PHE_CRCE_010.pdf

National Atmospheric Emissions Inventory figures show that levels of all air pollutants, except ammonia, are less than they were in 1990.

Northern Ireland total emissions estimates

Pollutant	Change 1990-2017, %	Proportion of UK total in 2017, %
Ammonia	+13	12
Particulate matter PM ₁₀	-50	5
Volatile Organic Compounds VOC	-50	4
Nitrogen oxides NO _x	-67	4
Carbon monoxide CO	-77	4
Sulphur dioxide SO ₂	-93	5
Lead Pb	-95	3

Action to tackle air pollution in Northern Ireland

Air pollution in Northern Ireland is dominated by three main sources:

- nitrogen oxides from road traffic emissions, in particular those from diesel vehicles;
- particulate matter from residential burning of solid fuels, in particular coal; and
- ammonia emissions from agricultural activities such as manure storage, handling and spreading.

Northern Ireland has largely seen reductions in emissions in recent years similar to the rest of the UK for nitrogen oxides and sulphur dioxide, however, further action is needed on these areas and much more action is required regarding particulate matter and ammonia.

Nitrogen Oxides (and Carbon Monoxide)

In a bid to cut CO₂ emissions in the 1990s people were encouraged to switch to diesel cars. The market share of diesel engines in the UK rose markedly, however, diesels produce 15% less CO₂ than petrol but emit four times more nitrogen dioxide pollution (NO₂) and 22 times more particulates. When we breath in these fine particulates are absorbed into the circulation where they 1] alter or increase blood coagulation 2] and reach the brain and heart (coronary circulation). This policy is gradually being rectified the UK, including NI, combined with a small but steady growth of electric, hybrid cars and hydrogen buses should see a continued decline in NO₂.

NICHs:

- Backs Translink’s commitment to de-carbonise Northern Ireland’s public transport to zero emissions by 2040. We welcome the commitment that all Belfast and Foyle Metro services will be operated by zero-emission vehicles by 2030
- Supports increased investment in public transport generally and specifically in urban areas. Given the problem with emissions in urban areas we support priority to investment in these areas using greener forms of vehicle.

- Calls for increased investment in measures to promote cycling and walking – including support for the Belfast Bikes
- Supports the creation of a 'fit for purpose' MOT system that can adequately carry all checks required
- Increased infrastructure to support the growth of electric vehicles
- Consideration of the designation of Low Emissions Zones where pollution problems relating to traffic persist – e.g. Stockman's Lane.

Particulate Matter

Residential combustion activity contributes a large proportion of Particulate Matters emissions in Northern Ireland. The switch to gas from coal in the production of electricity and the advent of natural gas for domestic purposes drove a significant reduction of PM pollution in the early 90s. The use of wood burning stoves in residential homes is on the rise in Northern Ireland. Domestic combustion is an issue for Northern Ireland due to the relatively high proportion of homes that do not have gas or electrical heating.

In 2016, oil central heating accounted for 68% of heating systems and gas accounted for 24%. Significant extensions to the gas network in recent years should mean 60% of homes and businesses will have gas by 2022. This will hopefully lead to a further reduction in PM pollution. It should be noted, however, poultry and pig farming contribute 22.7% of Northern Ireland's total PM10 emissions in 2015.

NICHS supports measures to reduce PM emissions including:

1. Measures to improve insulation of homes
2. Measures to discourage the burning on solid fuel – both 'wet' wood and non-smokeless fuels. Ideally, in all urban areas, but particularly in Belfast and Londonderry
3. Increased awareness and enforcement of Smoke Control Areas. The level of public awareness appears to be very low and it is not clear that there is adequate enforcement. In addition, District Councils should revise the boundaries of their SCA's to ensure all urban areas are covered.
4. Ban the sale of smoky/bituminous/household coal and the importation high-sulphur coal.
5. Ban the sale to the general public of unseasoned wood in Northern Ireland at retail outlets.

Ammonia

The main source of ammonia emissions in Northern Ireland is from agricultural activities –in particular, manure handling, storage and spreading. Ammonia can persist for a long time in the atmosphere and be transported for long distances. It can react with other air pollutants like nitrogen dioxide and sulphur dioxide to form ammonium aerosols, which are precursors for fine particulate matter, PM2.5, which has adverse effects on human health. A substantial amount of PM2.5 – perhaps in the region of 20% - that is routinely monitored in our air is now believed to have arisen from ammonia in the atmosphere.

According to latest inventory figures, **Northern Ireland emissions of ammonia in 2017 made up 11% of the UK's total ammonia emissions¹⁴⁶, despite only having 2.8% of the UK population and 5.9% of total UK land area.** This relatively high contribution reflects the importance of the agriculture sector here and it also reflects the nature of Northern Ireland a food-exporting region in which agriculture is dominated by livestock, with relatively little arable farming. In 2017, Northern Ireland's ammonia emissions were 13% greater than 1990 levels.

Ammonia emissions in Northern Ireland peaked in the late 1990s and by 2010, ammonia emissions were 17% less than they had been in 1998. ***However, since 2010, there has been a notable increase in ammonia emissions. Emissions were 23% higher in 2017 than they had been in 2010 with significant spikes experienced in recent years. For example, ammonia emissions increased by 5.8% from 2015 to 2016 and then a further 5.1% from 2016 to 2017.***

NICHS backs

- The creation of the Ammonia Project Board and looks forward to seeing it develop a comprehensive approach to ammonia, with a detailed set of proposals, which will achieve the tangible and sustained reductions in emissions required.

Monitoring

There is clearly a need for more extensive monitoring, more planning of concerted action and better communication regarding air quality.

NICHS calls for

- More rigorous monitoring in Air Quality Management Areas and the development of new (or expanded) areas and Action Plans were appropriate
- More Councils to widely adopt low-cost air quality monitoring systems
- Declaration of entire urban districts as AQMAs (or Low Emissions Zones)
- Increased communication by government and councils about the dangers of air pollution
- The creation of an Air Quality Forum

Summary

It is clear that while much has been achieved with regard to air pollution much remains to be done. It is imperative that air quality is seen as a health issue rather than purely an environmental one. By taking action on air quality we can improve health and, crucially, reduce health inequalities as it is those in areas of deprivation who pay the highest price in terms of health for pollution.