

Citizen Participation and Public Petitions Committee
Wednesday 22 January 2025
1st Meeting, 2025 (Session 6)

PE2123: Update air quality standards in Scotland to align with 2021 World Health Organisation guidelines

Introduction

Petitioner Gareth Brown on behalf of Asthma + Lung UK Scotland

Petition summary Calling on the Scottish Parliament to urge the Scottish Government to amend the Air Quality Standards (Scotland) Regulations 2010 by setting new limit values for nitrogen dioxide and fine particulate matter which align with the World Health Organisation air quality guidelines published in 2021.

Webpage <https://petitions.parliament.scot/petitions/PE2123>

1. This is a new petition that was lodged on 4 November 2024.
2. A full summary of this petition and its aims can be found at **Annexe A**.
3. A SPICe briefing has been prepared to inform the Committee's consideration of the petition and can be found at **Annexe B**.
4. Every petition can collect signatures while it remains under consideration. At the time of writing, 171 signatures have been received on this petition.
5. The Committee seeks views from the Scottish Government on all new petitions before they are formally considered.
6. The Committee has received submissions from the Scottish Government and the Petitioner, which are set out in **Annexe C** of this paper.
7. Members may wish to note that [the Net Zero, Energy and Transport \(NZET\) Committee published its report on the Scottish Government's Air Quality Improvement Plan and wider air quality issues in May 2023](#). In its report the NZET Committee acknowledged that immediate adoption of the 2021 World Health Organisation guidelines would present major practical challenges, and urged the Scottish Government to work with local authorities and others to map out pathways for achieving these ambitious targets.

Action

8. The Committee is invited to consider what action it wishes to take on this petition.

Clerks to the Committee
January 2025

Annexe A: Summary of petition

PE2123: Update air quality standards in Scotland to align with 2021 World Health Organisation guidelines.

Petitioner

Gareth Brown on behalf of Asthma + Lung UK Scotland

Date Lodged

4 November 2024

Petition summary

Calling on the Scottish Parliament to urge the Scottish Government to amend the Air Quality Standards (Scotland) Regulations 2010 by setting new limit values for nitrogen dioxide and fine particulate matter which align with the World Health Organisation air quality guidelines published in 2021.

Background information

The Scottish Government's vision is for Scotland to have the best air quality in Europe. Progress has been made to meet the legal limits for nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}), with 2022 being the first year, excluding lockdown years, Scotland has not breached the limits. Local authority reports in 2023 showed all automatic monitoring sites recorded NO₂ and PM_{2.5} under the limits of 40 µg/m³ and 10 µg/m³ – the legal limits enacted in the Air Quality Standards (Scotland) Regulations 2010, based on the 2005 World Health Organisation (WHO) air quality guidelines.

In 2021, [WHO produced updated air quality guidelines](#), which halved the previously recommended limits. Using the 2023 local authority annual reports, Asthma + Lung UK Scotland found that only 60 of the 85 automatic monitoring sites would meet the new 2021 guidelines for NO₂ and 35 of the 82 monitoring sites would meet the guidelines for PM_{2.5}.

Annexe B: SPICe briefing on petition PE2123



The petitioner is calling on the Scottish Parliament to urge the Scottish Government to amend the Air Quality Standards (Scotland) Regulations 2010 by setting new limit values for nitrogen dioxide and fine particulate matter which align with the 2021 World Health Organisation air quality guidelines.

Air quality and health

Poor air quality is a major threat to human health. The [World Health Organisation \(WHO\) state](#) that by reducing air pollution, countries can reduce the burden of disease from stroke, heart disease, lung cancer, and chronic and acute respiratory diseases including asthma.

Elevated pollution levels, often located in urban areas with high volumes of road traffic [are associated with a number of health issues](#), in particular respiratory and cardiovascular diseases. [Health Protection Scotland estimate](#) that approximately 1,700 premature deaths in Scotland annually are attributable to air quality issues ([studies have put the range of estimated annual deaths as high as 2,700 per year](#)). [Research has also shown](#) an association between prenatal exposure to air pollution and developmental delay, as well as psychological and behavioural problems later on, including attention deficit hyperactivity disorder (ADHD), anxiety and depression.

The Scottish Government published a '[Review and Assessment of the Evidence on Health Impacts of Low-Level Pollution in Countries with Levels of Ambient Air Pollution Comparable to Scotland](#)' in 2023. The review states that overall, the evidence shows "the broad range of impacts from air pollution and the necessity to mitigate the harmful health effects of air pollution", and that "As these harmful effects have been extensively evidenced at concentrations below national and international air quality standards, effective policies and interventions are necessary to reduce air pollution levels".

World Health Organisation Air Quality Guidelines

[WHO Air Quality Guidelines](#) (AQG) offer global guidance on thresholds and limits for key air pollutants that pose health risks. They are recommendations (not legally binding standards) of limit values for specific pollutants based on literature reviews, evaluation and consultation on the most up to date evidence on air quality and associated health impacts. The guidelines were first released in 1987 and there have been several updates, the most recent in 2021. The Guidelines provide global limit values for Particulate matter (PM)- particles of solids or liquids including dust, dirt, soot, smoke etc, nitrogen dioxide (NO₂), sulfur dioxide (SO₂), ozone (O₃) and

carbon monoxide (CO). The following table shows the recommended 2021 AQG levels compared to the previous 2005 guidelines.

Pollutant	Averaging Time	2005 AQGs	2021 AQGs
PM _{2.5} , µg/m ³	Annual	10	5
	24-hour ^a	25	15
PM ₁₀ , µg/m ³	Annual	20	15
	24-hour ^a	50	45
O ₃ , µg/m ³	Peak season ^b	-	60
	8-hour ^a	100	100
NO ₂ , µg/m ³	Annual	40	10
	24-hour ^a	-	25
SO ₂ , µg/m ³	24-hour ^a	20	40
CO, mg/m ³	24-hour ^a	-	4

µg = microgram ^a 99th percentile (i.e. 3–4 exceedance days per year). ^b Average of daily maximum 8-hour mean O₃ concentration in the six consecutive months with the highest six-month running- average O₃ concentration. Note: Annual and peak season is long-term exposure, while 24 hour and 8 hour is short-term exposure. [Source: WHO](#)

The [WHO states that Governments can use the guidelines](#) “in different ways depending on their technical capabilities, economic capacity, air quality management policies and other political and social factors. Before adopting the WHO guideline values as legally based standards, governments should consider their unique, local conditions”.

Air quality in Scotland and the Clean Air for Scotland Strategy

Sources of air pollution in Scotland are distributed across many sectors, including transport, agriculture, energy industries and domestic (household) sources. The petitioner focuses on air pollution from road transport. The two air pollutants in the petition, nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}), are [two key pollutants when considering the impact of road transport on health](#). NO₂ is produced in an internal combustion engine and PM_{2.5} can include particles from combustion, engine abrasion, brake pads and tyres e.g. soot, heavy metals, silica and rubber.

Key legislation setting air quality limit values is [the Air Quality \(Scotland\) Regulations 2000](#) (as amended) and [the Air Quality Standards \(Scotland\) Regulations 2010](#). Current standards in Scotland for NO₂ and PM_{2.5} are based on 2005 AQGs - 40 µg/m³ for NO₂ and 10 µg/m³ for PM_{2.5} (as annual averages – there are additional standards for peak levels). [The 2021 AQGs halved the annual average limit value for PM_{2.5} to 5 µg/m³ and quartered the NO₂ limit value to 10 µg/m³](#) (with suggested reductions to 30 µg/m³ as ‘interim target 2’, and 20 µg/m³ as ‘interim target 3’, to provide a pathway from 40 µg/m³).

In 2016 Scotland was the first country in Europe to adopt the (WHO guideline value for PM_{2.5} of 10µg m³ as an annual mean into domestic law.

The Scottish Government published [Cleaner Air For Scotland 2 Towards a Better Place for Everyone](#) (CAFS2) in 2021. It is the second national air quality strategy,

following a consultation in 2020 and [an independent review of the first strategy in 2019](#).

CAFS2 sets out that although no figure has been calculated for the combined impact of PM_{2.5} and NO₂ attributable deaths, evidence suggests that around 2,000 attributable deaths annually may be a reasonable number.

CAFS2 sets out policy commitments across 10 themes, which include adopting a **precautionary public health approach** to air pollution reduction, and as such efforts should be made to go beyond legal compliance.

Under the Environment Act 1995 and associated regulations, all Scottish local authorities are required to regularly review and assess air quality in their areas against objectives for several air pollutants of concern for human health. Data on local air quality, supplied by local authorities, can be found on the [Air quality in Scotland website](#). More information on how air quality is regulated including roles of public bodies, [is set out in a SPICe briefing](#).

Environmental Standards Scotland air quality investigation (and Scottish Government Improvement Plan)

In [September 2022, Environmental Standards Scotland \(ESS - Scotland's environmental standards watchdog\) published an Air Quality Investigation Improvement Report](#) which investigated arrangements in place in Scotland to meet statutory limits for NO₂. Whilst it did not make an explicit recommendation regarding WHO guidelines, it concluded that there were significant weaknesses in systems to improve air quality with respect to NO₂ and made a number of recommendations for improvements. Those included that the Scottish Government should revise CAFS2 “to include specific and measurable timescales (consistent with the overarching duty to achieve compliance within the shortest time possible) for when compliance with NO₂ limit values should be achieved”.

The [Scottish Government set out in its Air Quality Improvement Plan, published March 2023](#) (required by law in response to an Improvement Report by ESS), that it accepted that recommendation, but did not reference any plans to update limit values to align with WHO 2021 guidelines.

Asthma and Lung UK Scotland 2024 report

In [September 2024, Asthma and Lung UK Scotland \(the petitioner\) published a report, Clearing the Air: Transport + Lung Health](#), which set out information on how air pollution impacts people's health and health inequalities in Scotland; air pollution levels and how those are monitored; and a series of recommendations. Its key findings included that all automatic air quality monitoring stations were within the current legal limits for NO₂ and PM_{2.5} in 2023, but less than half of those sites would meet the WHO 2021 guidelines for PM_{2.5} and just over two-thirds would meet the 2021 guidelines for NO₂. The report includes ten recommendations – the first is that the Scottish Government should introduce legislation to adopt the 2021 WHO guidelines.

In [response to a Parliamentary Question on 24 October 2024](#) asking the Scottish Government what its response was to the recommendations in this report, the acting Cabinet Secretary for Net Zero and Energy, Gillian Martin MSP said regarding WHO guidelines that “the review of Cleaner Air for Scotland 2 will consider the current air quality objectives. The 2021 WHO guideline values will be a factor in our considerations.”

Alexa Morrison, Senior Researcher

9 December 2024

The purpose of this briefing is to provide a brief overview of issues raised by the petition. SPICe research specialists are not able to discuss the content of petition briefings with petitioners or other members of the public. However, if you have any comments on any petition briefing you can email us at spice@parliament.scot

Every effort is made to ensure that the information contained in petition briefings is correct at the time of publication. Readers should be aware that these briefings are not necessarily updated or otherwise amended to reflect subsequent changes.

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Annexe C: Written submissions

Scottish Government written submission, 25 November 2024

PE2123/A: Update air quality standards in Scotland to align with 2021 World Health Organisation guidelines

I am writing to set out the Scottish Government's views on the above named petition, as requested in your email of 4 November 2024.

The Government's current air quality strategy, Cleaner Air for Scotland 2, expires in July 2026. A planned review of the strategy will consider current air quality standards and objectives, and the World Health Organisation's updated guideline values will be a factor in our considerations.

We will be engaging with stakeholders as the review progresses, and updates will be made publicly available in due course.

I hope you find this information helpful.

**Environmental Quality and Resilience Division
Environment and Forestry Directorate**

Petitioner written submission, 11 December 2024

PE2123/B: Update air quality standards in Scotland to align with 2021 World Health Organisation guidelines

Air pollution is the greatest environmental threat to public health. The causes of air pollution are complex with numerous sources and the harms to human health are widespread. Everyone is exposed to air pollution, short-term or long-term, and at all stages of life, no matter where they live, work and play. It is a cause of ill-health and mortality for people across Scotland, especially for those living with a lung condition, such as asthma or chronic obstructive pulmonary disease (COPD). There is no safe level of air pollution.

Toxic air is a public health emergency, causing new lung conditions and worsening existing ones. It can stunt the growth of children's lungs and travel deep into the lungs and brains of unborn babies. The evidence on the damage to public health by air pollution is well-documented. Depending on the source, between 1,800 and 2,700 people die prematurely each year in Scotland as a result of toxic air. There is a clear link between air pollution and respiratory disease, lung cancer and cardiovascular disease, and there is growing research and evidence linking air pollution to brain health issues, mental health problems, neurological conditions, and diabetes. Air pollution has been shown to cause cancers, with research showing that for every 10 µg/m³ of increased exposure to fine particulate matter (PM_{2.5}), the risk of dying from any cancer rose by 22%.¹

¹ <https://aacrjournals.org/cebpa/article/25/5/839/71066/Cancer-Mortality-Risks-from-Long-term-Exposure-to>

As well as the serious impacts on public health, there are economic consequences on individuals, communities, and society as a whole. Air pollution is estimated to cost the Scottish economy over £1.1 billion each year in days lost at work and costs to the NHS². As air quality improves and the effects on people with respiratory and other health conditions ease, the financial burden on the NHS and employers will be significantly reduced. However, given the growing evidence associating air pollution with various conditions, the estimated cost to the economy and NHS is likely to rise as research progresses. This is also true for the numbers of estimated early deaths attributable to air pollution.

A parliamentary question (S6W-03401)³ submitted by Mark Ruskell MSP to the Scottish Government, following the publication of the updated World Health Organisation (WHO) air quality guidelines in September 2021, asked what its response was to the new air quality guidelines and what new targets were planned to meet the new WHO guidelines accordingly. Responding for the Scottish Government, then Minister for Environment, Biodiversity and Land Reform, Màiri McAllan MSP said that the Scottish Government welcomed, and was “carefully considering” the recommendations, adding that the “case for making any changes to air quality targets in Scotland to reflect the new guidelines will be assessed and taken forward during implementation of the Cleaner Air for Scotland 2 strategy.” In June 2023, then Cabinet Secretary for Transport, Net Zero and Just Transition, Màiri McAllan MSP responded to the Scottish Parliament’s Net Zero, Energy and Transport Committee’s inquiry ‘Air pollution in Scotland’ to state that the Scottish Government was “currently considering the ambitious targets” in the new WHO guidelines “in the context of both CAFS2 and development of the next air quality strategy”. The 2024 ‘Cleaner Air for Scotland 2 strategy: progress report’ confirmed that the updated WHO guidelines will be considered as part of the review of CAFS2, however made it clear that adopting the 2021 guidelines will “have implications for the current system of LAQM [Local Air Quality Management].”

Using local authority Annual Summary Reports for 2023, we found that 60 of the 85 automatic monitoring sites for NO₂ and 35 of the 82 sites recording PM_{2.5} would meet the new WHO guidelines. Only four local authorities would meet these new limits – East Renfrewshire, Inverclyde, Midlothian, and North Lanarkshire. This shows that Scotland could adopt the lower limits for NO₂ and PM_{2.5}, but more work will need to be done to achieve these targets and we hope that the next version of the Cleaner Air for Scotland strategy will go further than previous strategies to tackle sources of air pollution like domestic burning and transport. More information on [the summary reports and local authority monitoring performance can be found on page 14 of our Clearing the Air: Transport + Lung Health report](#).

Furthermore, we believe that for Scotland to meet its ambition to have the best air quality in Europe, every part of the country should have better monitoring. Other stakeholders have expressed similar positions with the Royal College of Physicians Edinburgh, the Royal College of Paediatrics and Child Health, and the Royal College

² <https://foe.scot/press-release/scottish-budget-announcement-a-strong-step-towards-changing-transport/>

³ <https://www.parliament.scot/chamber-and-committees/questions-and-answers/question?ref=S6W-03401>

of General Practitioners Scotland calling for greater monitoring where groups of vulnerable people are.⁴

The Net Zero, Energy and Transport Committee heard during the 'Air Quality in Scotland' inquiry that a more robust system of monitoring is required. Environmental Standards Scotland questioned if the existing network of monitoring was "comprehensive enough to detect poor air quality". The data in paragraph four of this submission, taken from the Clearing the Air: Transport + Lung Health report, excludes Aberdeenshire, Argyll and Bute, Moray, Nan Eilean Siar, and Orkney Islands as no information was available.

Asthma + Lung UK Scotland strongly encourages the Scottish Government to align its air quality ambitions with the 2021 World Health Organisation air quality guidelines. Meeting the new targets may prove challenging for the Scottish Government, local authorities, and other public bodies. However, with no safe levels of air pollution, lower limits will better protect human health, particularly those living with lung conditions and those at risk from developing lung conditions. Greater monitoring will determine if Scotland is on track to have the best air quality in Europe.

⁴ <https://www.rcpe.ac.uk/news/doctors-call-action-air-pollution>