



Faculty of Public Health

of the Royal Colleges of Physicians of the United Kingdom

Working to improve the public's health

FPH Clean Air Strategy Consultation Response

Government's draft Clean Air Strategy 2018

About the Faculty of Public Health

The Faculty of Public Health (FPH) is a membership organisation for nearly 4,000 public health professionals across the UK and around the world. We are also a registered charity. Our role is to improve the health and wellbeing of local communities and national populations. We do this by supporting the training and development of public health professionals, encouraging and promoting new research and understanding of public health, and by campaigning to improve public health policy and practice at a local, national and international level.

Introduction

The FPH welcomes the Clean Air Strategy, its aspirations, commitments and actions to improve air quality. However, we have highlighted areas where these aspirations require more ambitious and specific actions and targets. In addition, greenhouse gas emissions are the most important of all air pollutants and their reduction, ideally to net zero, should be reflected in the narrative of the Strategy and in its recommended actions. Our response also highlights some missed opportunities e.g. incentivising and enabling more active and public transport choices, and some omissions e.g. the economic opportunities clean technologies present, the potential of healthier population level dietary choices to reduce harmful agricultural emissions, and that chapter 6 does not refer to tobacco smoke, the most important indoor air pollutant.

FPH is very encouraged by the proposal to work with Directors of Public Health but meaningful outcomes are dependent on giving them both statutory responsibilities to respond and powers to do so effectively. The success of the Strategy at a local level will be dependent on multi-agency and professional collaboration and effective public involvement. This principle also applies at a national and strategic level and cross-governmental ownership and partnership is key.

We hope our response will be helpful.

CHAPTER ONE - Understanding the problem

Summary: Air pollution comes from many sources. Pollutants can travel long distances and combine with each other to create different pollutants. Emissions from distant and local sources can build up into high local concentrations of pollution. The UK has set stringent targets to cut emissions by 2020 and 2030. The goal is to reduce the harm to human health from air pollution by half. A robust evidence base, backed by the most up to date science is essential to help us achieve this.

Actions:

- We are investing £10m in improving our modelling, data and analytical tools to give a more precise picture of current air quality and the impact of policies on it in future.
- We will increase transparency by bringing local and national monitoring data together into a single accessible portal for information on air quality monitoring and modelling, catalysing public engagement through citizen science.

Questions:

1. What do you think about the actions put forward in the understanding the problem chapter? Please provide evidence in support of your answer if possible.
2. How can we improve the accessibility of evidence on air quality, so that it meets the wide-ranging needs of the public, the science community, and other interested parties?

FPH response:

- FPH welcomes this investment in data and analysis to better understand the nature, scale and distribution of air pollution and its impact on health. This is critical to effectively protecting our communities. While we have known for decades that air pollution is harmful to health we are only now starting to fully understand quite how dangerous it is and there remains much we need to learn about the mechanisms of effect, the interactions between pollutants, and the inequities in both exposure and susceptibility. There is emerging evidence that air pollution is implicated in a wider range of diseases/conditions than previously recognised and that its health effects are modified by both social and physical factors e.g. deprivation, diabetes, dementia and obesity. It is also clear that air pollution has significant health effects across the whole life course from pre-natal to old age and both research and policy interventions must reflect this. This has been highlighted in both the RCP 'Every Breath We Take' report (1) and the most recent Chief Medical Officer's Annual Report (2). Routinely integrating, analysing and interpreting data on hazards, exposures, pathways, health outcomes and risk factors will be a powerful resource to inform policy, target interventions, enable their evaluation, protect and improve health and reduce inequalities-these are the principles of Environmental Public Health Tracking. Realising the full utility of such an investment requires a real alliance of scientists, epidemiologists, researchers and clinicians supported with appropriate funding. This Tracking system which has been advocated for many years by the FPH and many others could address a range of environment and health issues (3), focussing interventions on those areas with the greatest potential for health gain and for reducing inequalities while also providing reassurance for communities that the Government is routinely monitoring their safety. The level of health gain is potentially enormous while the investment required is modest as pilot schemes have already demonstrated (3,4).
- FPH also welcomes the commitment to make this intelligence more accessible to the public and to foster citizen science. It is also important to empower people and communities to be able to respond appropriately to this information to protect themselves. Despite the scale of the problem as outlined above, public awareness remains disappointingly low which is inevitably reflected in the low priority given to air quality by many local politicians. It is doubtful that this relative indifference would be the case if contamination of our drinking water supplies for example was associated with the same burden of disease and shortened lives. Public engagement with air pollution is essential to catalyse change (5), An air pollution expert panel at PHE's annual conference in September 2017 was asked to identify the single most important action to improve air quality and each member of the panel cited raising public awareness to increase local political pressure. Empowering individuals and communities with evidence will enable them to use the potential of local democracy more effectively. Professor Stephen Holgate FPH, chair of the working group that produced the RCP report on air pollution (1), has recently demonstrated how scientists can also make a powerful and highly visible contribution to the public understanding of the harm associated with poor quality by linking local air quality measurements with the tragic death of a young asthmatic girl in Lewisham. His considered and expert view that there was a "real prospect that without unlawful levels of air pollution, Ella would not have died" made international headlines (6). Citizen science requires more than simply providing the public with data and information. It requires active recruitment of individuals and communities to every stage of the programme. While there are concerns about the accuracy, sensitivity and specificity of personal air pollution monitors they can have a place as an indicative measure so should

be seriously considered alongside support for the development of more robust and reliable devices to supplement existing air quality monitoring networks. Local communities in areas of air quality standard exceedances should be enabled and encouraged to bid for ring-fenced funding for local air quality monitoring and interventions to reduce pollution in their areas, especially around sensitive receptors (e.g. school-run traffic around primary schools).

- Indoor air quality is strongly influenced by outdoor air quality and is an under-researched area which must not be neglected. In addition recent data have shown that the occupants of many modern cars are exposed to high levels of particulates for example (7)-given that older vehicles will almost certainly have less efficient filtration and ventilation systems the potential for widespread dangerous levels of exposure is real. At the very least regulatory standards for vehicle air-filtration systems should be introduced.
- Healthcare professionals are ideally placed to advise their patients on the personal significance of poor air quality and simple measures to reduce their exposure. However they require access to good quality and timely information on pollution levels, the knowledge to interpret this, and the skills to communicate this effectively. These elements should be included in their training and CPD and they require access to readily available and credible resources to appropriately inform their advice to their patients and communities.

CHAPTER TWO - Protecting the nation's health

Summary: Air quality is the largest environmental health risk in the UK. It shortens lives and contributes to chronic illness. Health can be affected both by short-term, high-pollution episodes and by long term exposure to lower levels of pollution. There are small things we can all do that will make a big difference to emissions locally and nationally. Effective communication of health messages about air pollution can save lives and improve quality of life for many.

Actions:

- We will progressively cut public exposure to particulate matter pollution as suggested by the World Health Organisation. We will halve the population living in areas with concentrations of fine particulate matter above WHO guideline levels (10 µg/m³) by 2025.
- We will provide a personal air quality messaging system to inform the public, particularly those who are vulnerable to air pollution, about the air quality forecast, providing clearer information on air pollution episodes and accessible health advice.
- We will work with media outlets to improve public access to the air quality forecast.
- We will work to improve air quality by helping individuals and organisations understand how they could reduce their contribution to air pollution, showing how this can help them protect their families, colleagues and neighbours.
- We will publish updated appraisal tools and accompanying guidance this summer to enable the health impacts of air pollution to be considered in every relevant policy decision that is made.

Questions:

1. What do you think of the package of actions put forward in the health chapter? Please provide evidence in support of your answer if possible.
2. How can we improve the way we communicate with the public about poor air quality and what people can do?

FPH response:

- FPH welcomes the commitment to reduce exposure to particulate matter (PM) but the

- laudable intentions need to be supplemented with specific targets and actions. The health and economic effects of PM are significant, well documented and continue to emerge as research matures. We also welcome the acknowledgement of the WHO advice on reducing PM exposure. However, PM is only one toxic component of poor air quality and we would urge a formal commitment to adopt WHO Guideline values for other pollutants, in particular NO_x as the evidence that it is a significant cause of morbidity and mortality is now compelling (1). Adoption of the more stringent WHO standard would be a major public health dividend of Brexit and an objective demonstration the Government's commitment to the public's health and recognition of the FPH's #DoNoHarm campaign which led to amendments to the EU (Withdrawal) Bill (8). In addition, there are no safe levels of exposure for some components of air pollution and this must be reflected in a commitment to reduce exposure to as close to zero as is practicable rather than simply meeting current statutory standards. These should be fundamental principles of a new Clean Air Act which should also include establishing, as soon as possible, a new independent statutory body to enforce these limits together with appropriate and adequate powers and resources for local and regional enforcement, and empowerment of local authorities to respond rapidly and imaginatively to protect public health during periods of high pollution (e.g. closure of roads and/or diversion of traffic).
- FPH is very encouraged by the welcome proposal to work with Directors of Public Health (DsPH) (p27 of draft strategy). This should be strengthened by giving DsPH statutory responsibilities e.g. to report on air pollution levels in their annual reports, and powers e.g. to require road closures, refuse planning permission for polluting industrial processes in areas of deprived or vulnerable populations and the closure of persistent or serious industrial sources of pollution.
- It is encouraging that the strategy recognises the need to protect those who are most vulnerable to air pollution. While the draft Clean Air Strategy is right to identify children, the elderly and individuals with pre-existing cardiovascular and respiratory conditions as particularly vulnerable to air pollution, it fails to recognise the importance of deprivation. Our most deprived communities are disproportionately exposed to poor air quality contributing to the gap in life expectancy of nearly 10 years between the most and the least affluent communities. This inequity and its impact on health was highlighted in the 2016 RCP report (1) and reiterated in the CMO's 2017 Annual Report (2) which highlighted that where air quality had deteriorated between 2001-2010 it did so most quickly in the most deprived areas and where it had improved it did so most quickly in the least deprived areas. In addition, this report also refers to the triple jeopardy 'disadvantaged groups face: first, increased risks from social and behavioural determinants of health; second, higher risks from high ambient pollution exposure; and, third, an effect modification that makes exposure to ambient pollutants exert disproportionately large health effects on them compared with advantaged groups. This is not simply an inequality it is an inequity (RCP) and Government should require agencies to develop, implement and evaluate specific actions to address this.
- Local communities need clear, evidence based and practical actions that they can take to reduce both their contribution and their exposures to poor air quality in addition to improved understanding. These actions and activities need to be enabled, promoted and incentivised to become the new 'default'. Examples include:
 - Reducing car use
 - Increasing levels of walking and cycling (in most urban environments the benefits of physical activity outweigh the risks of air pollution)
 - Switching engines off when stationary
 - Increased use of, and access to, good quality public transport options
 - Use of pick up points for deliveries – and encourage people to walk to them
 - Limiting the use of wood burning stoves especially those that are not government approved and use low emissions fuel

Actions should also recognise the different requirements within different domains (city centre, urban, rural etc)

- FPH welcomes the commitment to widening public access to information on air quality. This requires the use of multiple public communication routes to ensure the broadest reach and particularly those groups more exposed and/or vulnerable. It is important that this communication strategy recognises that there are large numbers of people who do not, or cannot, routinely access online resources. An MP from Staffordshire for example recently commented at a Welfare Reform conference that 20% of people in her constituency had not accessed the internet in the previous six months (9). The closure of around 500 libraries in the UK since 2010 has removed an important, and in some cases the only, online access for many (10). It is important that information programmes are piloted and monitored to ensure effectiveness and cost-effectiveness
- Real-world emission values of vehicles should be available to consumers in a readily understandable way e.g. similar to the energy efficiency rating system used in housing. This will allow a consumer to make a decision based not just on fuel efficiency but also on the basis of social responsibility.

CHAPTER THREE - Protecting the environment

Summary: This strategy is a key part of delivering our 25 Year Environment Plan. Air pollution has direct impacts on the natural environment, contributing to climate change, reducing crop yields and polluting oceans. Cleaner air will directly benefit animals and habitats as well as creating a better environment for everyone to live, work and thrive in.

Actions:

- We will monitor the impacts of air pollution on natural habitats and report annually so that we can chart progress as we reduce the harm air pollution does to the environment.
- Later this year we will provide guidance for local authorities explaining how cumulative impacts of nitrogen deposition on natural habitats should be mitigated and assessed through the planning system.

Questions:

1. What do you think of the actions put forward in the environment chapter? Please provide evidence in support of your answer if possible.
2. What further action do you think can be taken to reduce the impact of air pollution on the natural environment? Where possible, please include evidence of the potential effectiveness of suggestions.

FPH response

- FPH is disappointed that the proposed actions in this critical section are largely vague and deferred focussing on research funding and providing guidance. Specific, measurable and targeted interventions and actions are required.
- Climate change is the single most important environmental threat to human health. It is already driving rises in sea levels, extreme weather events such as floods and droughts, and disrupting agriculture and local economies. It is a major omission that the Strategy fails to recognise that greenhouse gas (GHG) emissions are the most important component of air pollution and this should be reflected in a stated intention to move to net zero GHG emissions, rather than the 80% reduction enshrined in the climate change act, as soon as possible. The communities which bear the greatest burden of the consequences of climate change are amongst the poorest in the world and have contributed little, if anything, to

global warming. Those in poverty or experiencing discrimination are also often the most vulnerable to these health impacts - a reality which applies to the UK. In its 2017 statement on the state of the global climate, the World Meteorological Organisation notes that climate change is already claiming lives and destroying livelihoods and has “eradicated decades of development gains in small islands in the Caribbean” (11). It is also estimated that 30% of the world’s population lives in climatic conditions that deliver potentially deadly temperatures at least 20 days a year and that weather-related disasters displaced 23.5 million people in 2016 (12). Climate change mitigation policies will prevent thousands of premature deaths, sickness absence and keep people healthy over longer periods. An effective Clean Air Strategy must include actions to support the delivery of the health, social and economic benefits of realising the enormous health benefits of mitigating climate change.

- The appropriate installation of green infrastructure (e.g. green walls, living walls, hedges) has been found to reduce pollutant concentrations in street canyons and could be applied to most urban settings. It can also create attractive urban environments with health and wellbeing benefits and improved biodiversity and should be actively promoted especially where conventional technical interventions cannot effectively address areas of poor air quality (13-16). Their use must be clearly informed by local circumstances to avoid inadvertent consequences such as inappropriate planting of allergenic trees, the creation of a more enclosed space trapping air pollutants or the negative socioeconomic outcomes associated with increased gentrification in urban areas (17).

CHAPTER FOUR - Securing clean growth and innovation

Summary: This strategy contributes to the Government’s action on clean growth. Action to clean up the air will boost productivity and economic growth. We will make the UK a world leader in the development, use and export of goods and services focused on tackling air pollution.

Actions:

- In partnership with UKRI, we will seek ways to support further investment in Clean Air innovation to enable the development of novel technologies and solutions that tackle emissions from industry, vehicles, products, combustion and agriculture and support both improvements in air quality and decarbonisation.
- We will make the UK a world leader in goods and services focused on tackling air pollution.
- Future energy, heat and industrial policies will together improve air quality and tackle climate change. Phasing out coalfired power stations, improving energy efficiency, and shifting to cleaner power sources will reduce emissions of air pollution as well as carbon. As we phase out oil and coal heating, we will ensure this transition improves air quality wherever possible and cost effective to do so. In addition, the government will conduct a cross-departmental review into the role of biomass in future policy for low carbon electricity and heat, focusing on the air quality impacts. The proposed way forward will be set out in the final Clean Air Strategy.
- We will minimise the air quality impacts of the Renewable Heat Incentive Scheme, for example by tackling non-compliance and consulting on excluding biomass from the RHI if installed in urban areas which are on the gas grid. We will work across central and local government to put a plan in place. In addition, we will consult on making coal to biomass conversions ineligible for future allocation rounds of the contracts for difference scheme.
- We are seeking evidence on the uses of non-road diesel, mainly in urban areas, considering the air quality impacts and the potential for market distortion. The Treasury has

also announced it will review how alternative fuel rates line up with rates of petrol and diesel ahead of Budget 2018.

- We will cut emissions from non-road mobile machinery and give local authorities tough new powers to control the use of such machinery where it is causing an air pollution problem.
- Green Great Britain Week, starting in autumn 2018, will engage the public on air quality, alongside climate change, and highlight the economic opportunities it offers for the UK.

Questions:

1. What do you think of the package of actions put forward in the clean growth and innovation chapter? Please provide evidence in support of your answer if possible.
2. In what areas of the air quality industry is there potential for UK leadership?
3. In your view, what are the barriers to the take-up of existing technologies which can help tackle air pollution? How can these barriers be overcome?
4. In your view, are the priorities identified for innovation funding the right ones?

FPH response

- FPH commends this clear endorsement of clean growth and innovation. The interests of a clean or green agenda are the same as those of a job creation agenda (4). During periods of austerity government's primary instinct is that we can't afford to do things but there is a supplementary question to this-can we afford not to do them? Tackling air quality and climate change is not only critical for health it creates jobs, saves us money, creates wealth and is a driver for more involved, active and self-reliant communities. This will be even more important in post-Brexit Britain; an environment which, if we plan effectively for, can enable this country to lead in green technologies e.g. investment and incentives for clean transport technologies and banning the sale of diesel and petrol vehicles by 2030. It is also essential that the UK continues to work with the EU in responding to trans-boundary air pollution sources and reducing climate change. Further research and investment in personal air quality monitors can address most of their shortcomings and position the UK as a market leader in their manufacture. This also applies to developing technologies around controlling emissions from industry, vehicles, products, combustion and agriculture.
- This commitment to clean growth and innovation should also be manifest in a review of the decision to enable test drilling for hydraulic fracturing without planning permission in England and to classify drilling sites as nationally significant infrastructure. The latter means the decision on the application will be taken by Government rather than local authorities and locally accountable councillors This contrasts markedly with the Government's current position on wind-farm applications which is to give 'local people a final say on such applications' and requires local planning authorities to grant permission only once 'following consultation, it can be demonstrated that the planning impacts identified by affected local communities have been fully addressed and therefore the proposal has their backing'. Although the scale of harm that shale gas production will bring to local communities and the immediate environment is uncertain, the evidence that it will exacerbate climate change is more than compelling (18). Meeting our 2008 Climate Change Act pledge of an 80% reduction in GHG emissions by mid-century can reduce air pollution by over 50% across the UK (19). However, we must be mindful of the potential negative air pollution consequences of interventions to tackle climate change. Increased biomass burning if not managed effectively for example can lead to increased particulate matter pollution. These tensions can and must be anticipated and avoided.
- It is noteworthy that the Republic of Ireland has become the first country in the world to divest from fossil fuels requiring its national investment fund to disinvest from coal, oil, gas and peat as soon as practicable with an expectation that this will be completed within 5 years. The UK should consider our close neighbour's significant move with more than simply interest.

- FPH would recommend a commitment to phase out the rebate on ‘red’ diesel as soon as practicable; promote research into, and installation of, technology to ensure biomass boilers are clean (including retrofitting of such technology and installation in rural as well as urban settings); and more active promotion of, and the removal of barriers to, installation of renewable energy capacity.
- It is important that the public are informed of, and understand, the benefits of clean growth and innovation. Events such as ‘Green Great Britain Week’ are opportunities to highlight the economic benefits of decarbonisation. Public information on clean growth should reference the health and well-being dividend that comes with climate change mitigation and the reduction of air pollution. Local government should also be encouraged and enabled to promote “car-free days” on the most polluting streets through Traffic Regulation Orders. Local communities and residents’ groups should be enabled to close roads to reduce pollution concentrations and encourage street play and street events.
- It is important that local authorities are able, wherever possible, to evidence the cost-benefit of proposed interventions. This should include the business benefits of increased footfall in more-pedestrian friendly environments (20) and improved productivity and reduced workplace absenteeism (21) as well as the overall cost savings associated with reductions in air pollution related morbidity and mortality (1).

CHAPTER FIVE - Action to reduce emissions from transport

Summary: Transport is a significant source of emissions of air pollution. The immediate air quality challenge is to reduce emissions of nitrogen oxides in the areas where concentrations of these harmful gases currently exceed legal limits. The government has already committed £3.5bn to tackle poor air quality through cleaner road transport and is working closely with local authorities and Local Economic Partnerships to make progress. Alongside this, the government is committed to cutting air pollution from all forms of transport.

Actions:

- In 2018, we will set out our ambitious plans to drive down emissions from shipping and aviation.
- We will end the sale of new conventional petrol and diesel cars and vans by 2040. We will position the UK as the best place in the world to develop, manufacture and use zero exhaust emissions vehicles and, during the transition, we will ensure that the cleanest conventional vehicles are driven on our roads.
- We will work with international partners to research and develop new standards for tyres and brakes to enable us to address toxic non-exhaust emissions of micro plastics from vehicles which can pollute air and water.
- New legislation will enable the Transport Secretary to compel manufacturers to recall vehicles and machinery for any failures in their emissions control system, and make tampering with an emissions control system a legal offence.
- We will reduce emissions from rail and reduce passenger and worker exposure to air pollution. By the autumn, the rail industry will produce plans to phase out diesel-only trains by 2040.
- All major English ports should produce air quality strategies setting out their plans to reduce emissions. These plans will be reviewed periodically to establish if the measures are effective or whether government action is required.

- We will review policy on aviation-related emissions to improve air quality.

Questions:

1. What do you think of the package of actions put forward in the transport chapter? Please provide evidence in support of your answer if possible.
2. Do you feel that the approaches proposed for reducing emissions from NonRoad Mobile Machinery are appropriate or not? Why?

FPH response

- FPH welcomes the commitment to address emissions from all forms of transport recognising the serious impact of the shipping and aviation sectors. Effectively tackling road transport pollution is critical to achieving the Government's aspirations and the FPH proposes the national expansion of Clean Air Zones in urban areas and key interchanges for other modes of transport, including ports and airports.
- FPH welcomes the commitment 'to encouraging more sustainable modes of transport like cycling, walking and public transport, and shifting freight from road to rail'. However delivering on this requires action and investment and it is disappointing that no specific additional actions or investment have been identified. Spending on active travel is an investment not a subsidy. The commitment of £1.2 bn for walking and cycling 2016-2021 is hugely reliant on investment by local authorities and Local Enterprise Partnerships as the Government has only committed £316m, well below the recommendation of the parliamentary Get Britain Cycling report of £10 per person annually, rising to £20, in order to boost cycle use to 10% of trips by 2025, and to 25% by 2050 (22). There is solid evidence, accepted by the DfT, to support this. DfT's robust mechanism for calculating return on investment has consistently demonstrated that walking and cycling schemes show much better value for money than most motor transport schemes (23) An analysis by Sustrans has shown that the average benefit-to-cost ratio of a traffic-free walking and cycling route is 26:1, with the majority of benefit coming from improved health (24) This is well in excess of the DfT's own bench mark for valuing 'very highly' any scheme which returns more than £4 for every £1 invested' (23).
- It is also clear that the public strongly values active travel and supports investment to increase it. In a survey of seven UK cities 75% of respondents supported increased investment in cycling and considered that Government should be investing an average of £26 per head per year (25).
- Fiscal policy needs to address that currently, even with Vehicle Excise Duty and tax paid on fuel, the costs to society greatly outweigh the costs paid by drivers (26). In addition while the marginal costs of car use are low the marginal costs of public transport journeys are high. Addressing this imbalance requires encouraging more people not to drive.
- As well as dis-incentivising the use of polluting vehicles, Government policies must also incentivise the mass adoption of zero emission transport, reductions in the use of vehicles in general, and increased use of active and shared transport modes. These incentives could include a 'National Mobility Scheme' to support households and businesses to move away from polluting vehicles to more sustainable alternatives and a reduction in vehicle use in general, providing discounts on car club schemes, subsidised zero emission vehicles and access to bikes and support to engage in physical activity.
- FPH believes that Government needs to change the travel default from vehicle to active travel. There is good evidence that the latter has a significant impact on improving health and well-being and reduces healthcare spending. We recommend that Government increases investment in active transport, improved infrastructure to increase public transport use, cycling and walking, the promotion of safer road design, cycle training in schools, and expanded cycle networks.

- The public health and economic case for investment in passenger transport infrastructure across the country is overwhelming, particularly in the north and in rural areas. This should include electrification of all existing rail lines, as well as a programme for (re-)opening lines. At the same time, the economics of the passenger transport system, including in particular bus and coach travel, needs urgently to be reviewed with a view to making it substantially cheaper and more frequent for passengers and re-establishing it as a realistic alternative to private car travel particularly in rural areas.
- FPH considers that we should end the sale of petrol, diesel and some hybrid cars and vans by 2025 or 2030 at the latest rather than the current target of 2040. This is achievable and would be in line with many other countries including Scotland, Norway and India. This should also apply to diesel only trains. This would also have economic benefits halving UK oil imports and boosting our manufacturing economy (27). Given that 20% of all electric cars sold in Europe in 2016, for example, were manufactured in England the UK would be well placed to develop a leading position in cleaner vehicle technology. We would need to recognise that such vehicles still have a pollution impact through tyre wear-and-tear, breaking and particle resuspension in terms of our longer term strategy and aspiration to reduce air pollution to levels as low as practicable. Even if all new cars are electric by 2040, the existing vehicle fleet will continue to pollute for many years. Research investment into technology to retrofit existing vehicles makes sense both in terms of health and economically putting the UK at the forefront of what is sure to become a burgeoning market
- FPH considers the commitment to simply ‘review policy on aviation-related emissions to improve air quality’ to be wholly inadequate. Whilst it is unrealistic that aviation could either cease or become completely clean altogether, its continued growth must be halted.
- As well as treating the health effects of exposure to poor air quality the NHS also has an important role to play in reducing emissions from transport. NHS related transport accounts for up to 18% of the NHS carbon footprint in England (28) and 5% of all road traffic in England (29) The NHS can make a substantial contribution to reducing emissions and, as the leading health system in the world (30), also has a moral imperative to do so. The NHS must lead the way in moving to sustainable modes of transport reducing carbon emissions, improving convenience and safety, saving time and money (29) and reducing the burden of air-pollution-related illness on the NHS. This is implicit in the Five Year Forward View recognition that ‘the future health of millions of children, the sustainability of the NHS, and the economic prosperity of Britain all now depend on a radical upgrade in prevention and Public Health’ (31). FPH recommends that the Department of Health and Social Care, NHS England and the devolved administrations incentivise commissioners and providers to reduce their emissions, and protect their employees and patients from dangerous pollutants. The NHS must review its transport policies and needs to achieve this effectively and where vehicles are required they should be low or zero emission. The investment required must be ‘new money’ and not at the expense of existing and proposed core NHS and social care budgets. In addition, procurement policies, for example, should require the adoption of low and zero emission vehicles by those companies and providers using transport on NHS business.
- FPH welcomes investment in research and the development of new standards for tyres and brakes and legislation on manufacturers tampering with emissions. Penalties for contraventions of this legislation must reflect both the ‘polluter pays’ principle and the sheer scale of the consequences of these crimes. The VW emissions scandal for example has been estimated to have led to 9 million fraudulent VW cars being sold in Europe/US with associated emissions of 526 kt of NO_x more than legally allowed, 45,000 DALYs, and a life lost value of \$39 bn approximately five times the amount VW had put aside for the worldwide costs of the fraud (32).

- The cumulative impact of the proposed actions on the reduction of air pollution should be quantified and assessed against the reductions required to meet our statutory and public health obligations
- Buses outside of London should be prioritised for retrofit programmes, especially those that are Euro 3 or older which still make up a considerable proportion of the bus fleet given their contribution to emissions on heavily trafficked urban streets and the deregulated environment they currently operate in.

CHAPTER SIX - Action to reduce emissions at home

Summary: Many people are unaware that emissions in the home increase personal exposure to pollutants and contribute significantly to our overall national emissions. Burning solid fuel in open fires and stoves makes up 38% of the UK's primary emissions of fine particulate matter (PM2.5). Harmful sulphur dioxide (SO₂) is emitted by coal burned in open fires. Non-methane volatile organic compounds (NMVOCs) from a wide variety of chemicals that are found in carpets, upholstery, paint, cleaning, fragrance, and personal care products are another significant source of pollution.

Actions:

- We will legislate to prohibit the sale of the most polluting fuels.
- We will ensure only the cleanest stoves are available for sale by 2022.
- We will update outmoded legislation on 'dark smoke' from chimneys and underused provisions on Smoke Control Areas to bring these into the 21st century with more flexible, proportionate enforcement powers for local government.
- The government will work with industry, retailers, health experts and consumer groups to reduce emissions of NMVOCs from consumer products, develop options to promote product innovation and encourage the use of low emissions alternatives.

Questions:

1. What do you think of the package of actions put forward to reduce the impact of domestic combustion? Please provide evidence in support of your answer if possible.
2. Which of the following measures to provide information on a product's non-methane volatile organic compound content would you find most helpful for informing your choice of household and personal care products, and please would you briefly explain your answer?
 - "A B C" label on product packaging (a categorised product rating for relevant domestic products, similar to other labels such as food traffic light labels)
 - information on manufacturer website
 - leaflet at the point of sale
 - inclusion in advertising campaigns
 - other option
3. What further actions do you think can be taken to reduce human exposure from indoor air pollution?

FPH response:

- FPH welcomes the proposals to tackle poor indoor air quality which although is estimated to have caused, or contributed to, several thousands of deaths in the UK and healthcare costs in the tens of millions regulatory controls are few (1). Making homes more energy efficient through improved insulation and reduced ventilation may be making the situation worse especially as this is where most people in the UK spend most of their time. Poor indoor air quality is associated with unfit or inadequate housing standards, conditions that overwhelmingly affect the poorest in our society.
- A more systematic approach to the quantification of the effects of indoor air pollution is required to strengthen our understanding of the relationship between indoor air pollution

and health, including the key risk factors and effects of poor air quality in our homes, schools and workplaces.

- The causes and significance of indoor air pollution are poorly understood by the public and the actions proposed should be supported by an information and education programme including a labelling scheme for products associated with indoor air pollution that provides an easily-understandable measure of the risk and ways to mitigate that risk.
- Tobacco smoke is the single most important component of indoor air pollution and the strategy should recognise this e.g. NICE guidance on indoor air quality at home is expected by September 2019.
- Of the proposed measures on product information, the 'ABC' labelling seems most likely to have an impact on consumer behaviour as the others will not necessarily be seen at point of purchase. However they are not mutually exclusive, and a combination of methods might be appropriate. Any proposed scheme should be piloted.
- FPH believes that increased taxation on more polluting products would be effective and appropriate, as it is a proven way to shift consumer behaviour.

CHAPTER SEVEN - Action to reduce emissions from farming

Summary: The agriculture sector accounts for 88% of UK emissions of ammonia, which is emitted during storage and spreading of manures, slurries and from application of inorganic fertilisers. Ammonia damages sensitive natural habitats and contributes to smog in urban areas. Action by farmers can make a big difference to ammonia emissions. The government is already acting to help farmers by funding the necessary equipment.

Actions:

- We will provide a national code of good agricultural practice to control ammonia emissions.
- We will require and support farmers to make investments in the farm infrastructure and equipment that will reduce emissions.
- A future environmental land management system will fund targeted action to protect habitats impacted by ammonia.
- We will continue to work with the agriculture sector to ensure the ammonia inventory reflects existing farming practice and the latest evidence on emissions.
- We will regulate to reduce ammonia emissions from farming and are seeking views on 3 possible approaches to regulation.
-

Questions:

1. What do you think of the package of actions put forward in the farming chapter? Please provide evidence in support of your answer if possible.
 2. What are your preferences in relation to the 3 regulatory approaches outlined and the timeframe for their implementation:
 - (1) introduction of nitrogen (or fertiliser) limits;
 - (2) extension of permitting to large dairy farms;
 - (3) rules on specific emissions-reducing practices? Please provide evidence in support of your views if possible.
 3. Should future anaerobic digestion (AD) supported by government schemes be required to use best practice low emissions spreading techniques through certification? If not, what other short-term strategies to reduce ammonia emissions from AD should be implemented? Please provide any evidence you have to support your suggestions.
- FPH welcomes the Government's recognition of the impact of farming on air quality.
 - FPH supports the commitment to reduce ammonia emissions from the agriculture sector and any action taken in support of this goal. Global ammonia emissions have more than
 - doubled in the past 70 years, with the increase due entirely to NH₃ emissions from agriculture; nitrogen fertilizer contributes 33% and livestock production 66% (33). In the UK,

agriculture (specifically livestock and fertilizers) accounts for about 82% of all ammonia emissions (NH₃); half of which are from cattle and 14% from poultry. Ammonia emissions create airborne PM, a significant factor in human all-cause mortality and in particular in cardiopulmonary mortality (34).

- While FPH welcomes a clear code of practice, we would support mandatory measures and the setting of clear standards in conjunction with incentives for compliance, or disincentives for non-compliance.
- The emissions from livestock production come from animal houses and storage systems, animal manure, and grazing and are associated with intensive livestock farming systems. Intensive farming practices are associated with the highest ammonia emissions, both from extensive use of fertiliser and from solid bio-waste produced within intensive farming of livestock. Increases in permanently housed cattle and intensification of UK dairy systems are contributing to overall ammonia emissions and should be addressed through planned increases in access to grazing. FPH therefore recommends measures to support and incentivise farmers to adopt and continue with non-intensive and environmentally responsible practices, noting that there are cross-over benefits to this approach, e.g., reduced need for anti-microbial, less water pollution, and management of countryside to a higher environmental standard.
- FPH welcomes controls for large dairy farms in order to reduce ammonia emissions
- It should also be acknowledged that the agriculture sector is responsible for emissions other than ammonia that damage our air quality. In particular, global livestock production is responsible for 14.5% of anthropogenic GHG emissions, with beef and milk production contributing to approximately 65% to these emissions. Methane in particular is a by-product of livestock production, and its reduction is essential to reducing GHG necessary to keep global temperature changes to below 2C (35).
- Adopting and meeting ammonia emission targets would lead to a maximum of 84% of current livestock production (36).
- Reducing consumer demand for meat is in line with reduced output, and complements the recent advice of The British Dietetic Association (BDA) that public health nutrition advice should emphasise the 'reduction of meat (red and processed meat in particular) and processed meat products as per the Eatwell Guide (EWG) and replacement with appropriate plant based proteins such as beans and pulses, and plant based dairy alternatives.' (37).
- Alternative strategies such as afforestation schemes have been shown to reduce ammonia emissions and can reduce potential impacts on sensitive ecosystems (38).

Question 2

- FPH welcomes the introduction of nitrogen limits and we agree that a deadline of November 2019 for recommendations is appropriate. These should be subject to professional and public consultation.

CHAPTER EIGHT - Action to reduce emissions from industry

Summary: Industrial processes, including energy generation to power our businesses and homes and the manufacture of goods and food, can all create pollution. For many decades, the UK has been at the forefront of reducing industrial pollution, and significant progress has already been made. We will continue to build on that progress by increasing standards to reflect international best practice.

Actions:

- We will maintain our longstanding policy of continuous improvement in relation to industrial emissions, building on existing good practice to deliver a stable and predictable regulatory environment for business as part of a world-leading clean green economy.
- We will work with industrial sectors to review improvements to date, and to explore opportunities to go further through a series of sector roadmaps that set ambitious standards – moving beyond a focus on minimum standards to make UK industry world leaders in clean technology and secure further emissions reductions.
- We will close the regulatory gap between the current Ecodesign and medium combustion plant regulations to tackle emissions from plants in the 500kW to 1MW thermal input range. As legislation on medium combustion plants and generators comes into force, we will consider the case for tighter emissions standards on this source of emissions.

Questions:

1. What do you think of the package of actions put forward in the industry chapter? Please provide evidence in support of your answer if possible.
 2. We have committed to applying Best Available Techniques to drive continuous improvement in reducing emissions from industrial sites. What other actions would be effective in promoting industrial emission reductions?
 3. Is there scope to strengthen the current regulatory framework in a proportionate manner for smaller industrial sites to further reduce emissions? If so, how?
 4. What further action, if any, should government take to tackle emissions from medium plants and generators? Please provide evidence in support of your suggestions where possible.
 5. How should we tackle emissions from combustion plants in the 500kW-1MW thermal input range? Please provide evidence you might have to support your proposals if possible.
 6. Do you agree or disagree with the proposal to exempt generators used for research and development from emission controls? Please provide evidence where possible.
- FPH welcomes the aspirations outlined and looks forward to a package of specific actions to deliver them including appropriate resourcing of local government enforcement and the definition and implementation of Best Available Techniques measures
 - FPH would suggest that emissions trading can be a useful adjunct to Best Available Techniques and can drive innovation.
 - Back-up generators are high emitters of NO_x, and can be emitters of PM. Technologies are available to control these emissions and their application should be required by setting and enforcing emission standards
 - Emissions from medium combustion plants and generators are a notable gap in the regulatory regime which should be addressed through emissions standards
 - Further information on the number and individual emissions of generators used for research and development is required to comment on the proposal to exempt them from emission controls

CHAPTER NINE - Leadership at all levels (local to international)

Summary: Emissions from abroad, across the UK and local sources all contribute to the pollution that people and the environment are exposed to. Effective action is needed at all levels to clean up our air. This strategy sets out our commitment to cut our national emissions to reduce population exposure. As part of this we will make it easier to take action at local level. Alongside this, the UK will continue to play an active, leading role in international action to improve air quality.

Our international air quality commitments have been agreed at a UK level. However, air quality is a substantially devolved policy area. Scotland and Northern Ireland have both already produced their own Air Quality Strategies and Wales is currently in the process of producing one (further details of these are set out in Chapter 9).

Actions:

- We are consulting on a new, independent statutory body to hold government to account on environmental commitments following EU exit. Ensuring that there is transparency and accountability in how we achieve our clean air ambitions will be a priority in this work.
- We will bring forward new clean air legislation at the earliest opportunity. This will bring long-standing frameworks for local and national action on air pollution into the 21st century with stronger powers and clearer accountability.
- To ensure that local action to reduce air pollution remains robust and relevant, we will transform existing structures to increase transparency and back this up with stronger statutory powers to tackle local air pollution.
- The UK government will work in partnership with the governments of Scotland, Wales and Northern Ireland to develop a detailed National Air Pollution Control Programme as required under the National Emissions Ceilings Directive for publication in 2019.

Questions:

1. What do you think of the package of actions put forward in the leadership chapter? Please provide evidence in support of your answer if possible.
 2. What are your views on the Englandwide legislative package set out in section 9.2.2? Please explain, with evidence where possible.
 3. Are there gaps in the powers available to local government for tackling local air problems? If so, what are they?
 4. What are the benefits of making changes to the balance of responsibility for clean local air between lower and upper tier authorities? What are the risks?
 5. What improvements should be made to the Local Air Quality Management (LAQM) system? How can we minimise the bureaucracy and reporting burdens associated with LAQM?
- Defra has a key role but cross-government leadership is required for effective delivery of the strategy
 - DsPH should be given statutory responsibilities and powers to intervene on local air quality issues.

CHAPTER TEN - Progress against targets

Summary: Analysis shows that the actions set out in this strategy can meet our ambitious emissions reduction targets, if they are implemented with the necessary pace and determination.

Questions:

1. What do you think of the package of actions in the strategy as a whole?
 2. Do you have any specific suggestions for additional or alternative actions that you think should be considered to achieve our objectives? Please outline briefly, providing evidence of potential effectiveness where possible.
 3. If you have any further comments not covered elsewhere, please provide them here.
- Overall the Strategy is a very welcome statement of intent and includes meaningful commitments and actions to improve air quality. However, we have highlighted areas where these aspirations require more ambitious and specific actions and targets. The Strategy should recognise that GHGs are the most important air pollutants and be more ambitious in highlighting the need to move to net zero GHG emissions rather than the 80% reduction enshrined in the Climate Change Act as soon as possible.
 - GHG emissions are the most important of all air pollutants and their reduction, ideally to net zero, should be reflected in the narrative of the Strategy and in its recommended actions. There are also some missed opportunities e.g. incentivising and enabling more active and public transport choices, and some omissions e.g. the economic opportunities clean technologies present and that chapter 6 does not refer to tobacco smoke, the most important indoor air pollutant.

- While the modelling of sector specific contributions in Chapter 10 is welcome, there is a lack of sector by sector SMART targets and detail of the impact of each proposed action, the sum of which needs to meet the reductions in emissions required.
- Effective delivery of the strategy is critically dependant on shared ownership across Government Departments, meaningful public involvement, and effective powers to address sources of pollution devolved locally.
- Major on-going investment is required in increasing the coverage, availability, regularity and integration of public transport services. We are aware, for example, of an absence of integrating public transport with major sports events despite requests from the venue to do so. This routinely leads to a disruptive disconnect between the regular timetabled services and the event itself resulting in spectators having to leave early and, for those who don't leave early, long waits for over-crowded trains and, in both cases, a failure to join up other public transport options for onward journeys. This is a powerful and unnecessary disincentive for many thousands of people not to choose public transport. An especially egregious example of this is the complete absence of a Boxing Day rail service and a shortened Sunday bus service meaning that public transport is an entirely unavailable option for 43,000 spectators at a major English football ground in one of the largest cities in Europe. There should be a duty on transport providers to respond appropriately to reasonable requests from statutory agencies and major events organisers to enable safe and efficient public transport services to accommodate a predictably heavy demand.

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