Item 4

Air Quality in Derbyshire

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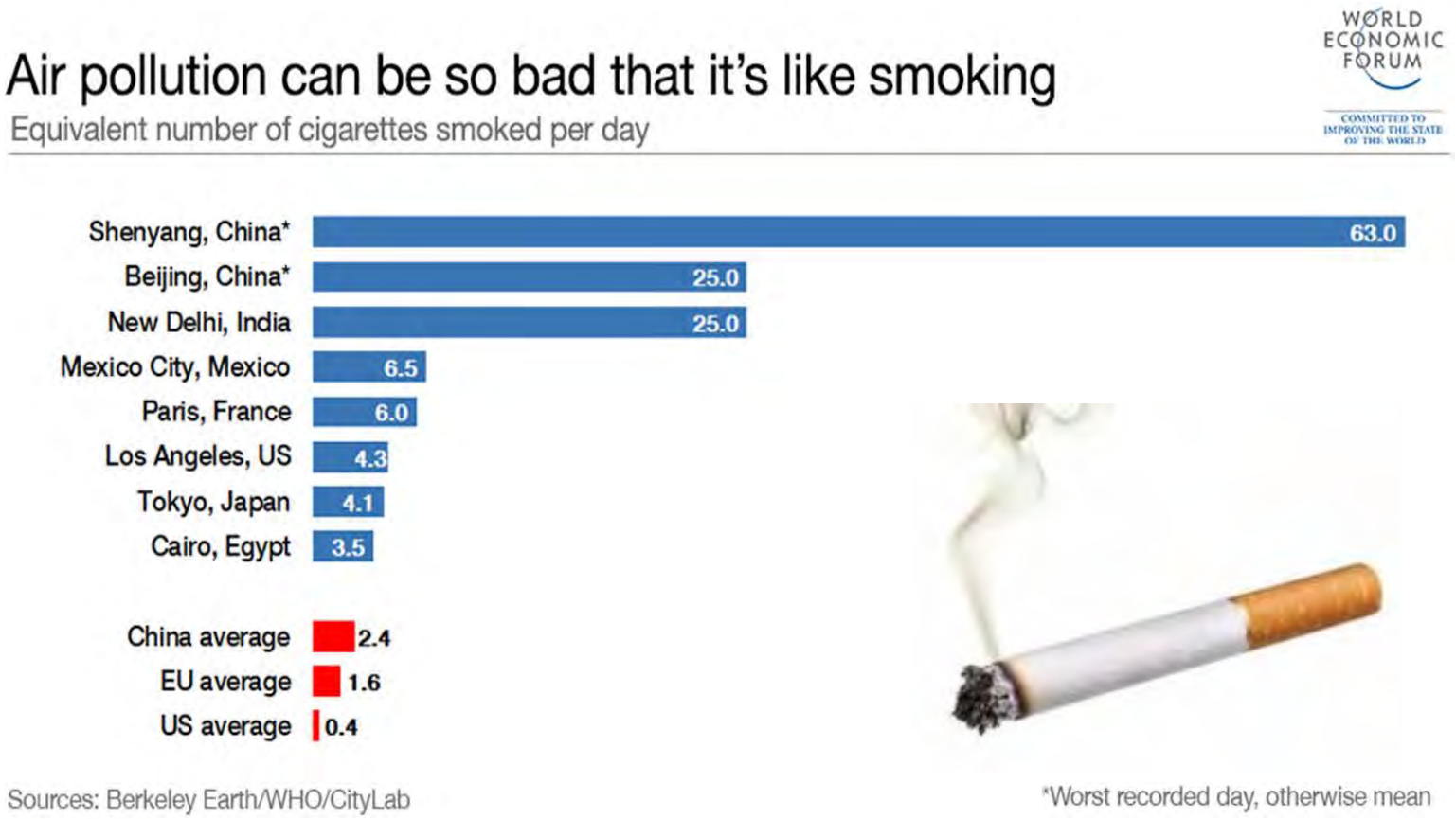
The impact of air pollution

- Air pollution is a mixture of particles and gases
- Air pollution costs the population, health services and business, at an economic cost of £20 billion a year.
- Impacts relate to short and long term exposure
- Role in range of health issues; cancer, asthma, stroke, heart disease, diabetes

The impact of air pollution

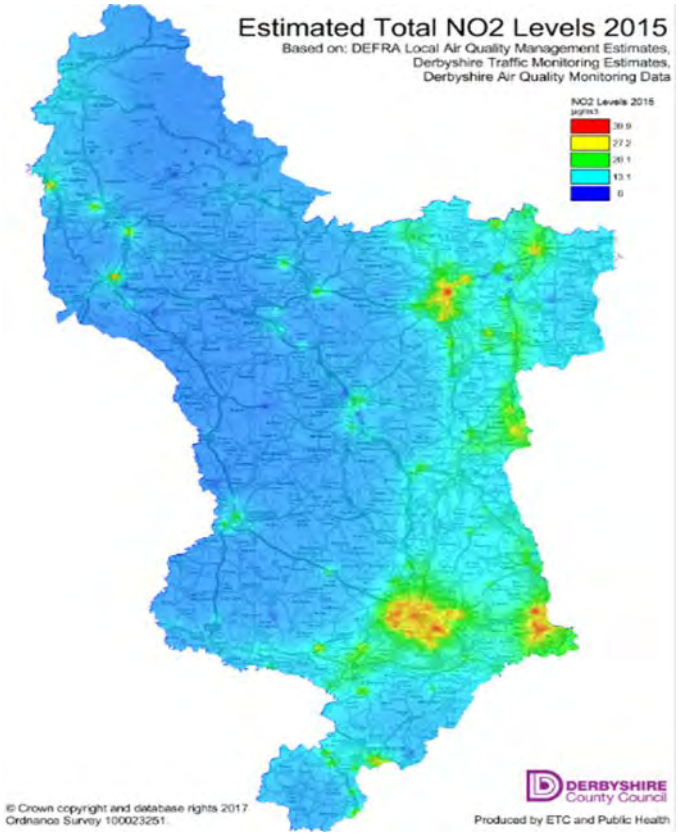


Sources of air pollution

- Man made sources include transport, household burning or solid fuels and industrial activities.
- Highest levels seen at source
- Particulate matter (PM) and Nitrogen Dioxide (NO2) have greatest impact on health
- No safe threshold

Air Quality in Derbyshire

- Mortality and morbidity attributed to air quality is calculated as equivalent to 402 deaths and 4041 life years lost.
- Air Quality Management Areas;
    - Chesterfield one AQMA on Church Street, Brimington
    - Erewash two AQMAs East of M1 motorway in Sandiacre and Long Eaton
    - Bolsover two AQMAs at Barlborough next to the M1 and one on Chesterfield Road;
- Clean Air Strategy directive East of A38 (Bolsover)



Local Strategy

Air quality working group

- Air quality heat map
- Promotional campaigns
- Annual report
- Evidence review
- Supplementary planning guidance
- Links to wider strategic plans
- Low Emission Vehicle strategies
- Links with Coal Fires project

Evidence and best practice

- Restriction zones around schools
- Engagement with workplaces on sustainable travel
- Fleet reviews and advice to businesses
- Retrofitting of vehicles
- Awareness raising campaigns
- Green walls

Conclusion

- Modest decreases in air pollution can lead to population impacts
- Interventions can deliver wider health and economic benefits
- Growing evidence base of measures to support reductions including return on investment tools
- Measures needed on population and local level
- LEV strategy support reductions in NO2 reductions
- Measures to support model shift and move from solid fuels support PM reductions

Resources

- Every breath we take (RCP) https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution
- Air quality a briefing for DPHs http://www.adph.org.uk/2017/03/air-quality-a-briefing-for-directors-of-public-health/
- NICE guidance https://www.nice.org.uk/guidance/ng70
- A breath of fresh air; addressing climate change and air pollution together for health http://www.ukhealthalliance.org/report-breath-fresh-air/

Any questions?

Agenda item 4

DERBYSHIRE HEALTH IMPROVEMENT AND SCRUTINY COMMITTEE

28th November 2018

Report of the Derbyshire County Council

Air Quality in Derbyshire

1. Purpose of the report

The report aims to provide an overview of the health impacts of air pollution for Derbyshire County, National and Local strategic action, and evidence for delivering change.

2. Information and analysis

The impact of air quality on health

Air pollution is a mixture of particles and gases that can have an adverse effect on health. Air quality is a significant determinant of health, and the largest environmental risk to public health. The health problems resulting from exposure to air pollution have a high cost to the population, to health services and to business. In the UK, these costs are estimated to be more than £20 billion a year, on a par with those from smoking and obesity. The impact of air pollution affects the whole population, however disproportionately affects the young, older people, those with underlying health conditions and the most disadvantaged within our communities.

Health can be affected both by short-term, high-pollution episodes and by long term exposure to lower levels of pollution. Each year in the UK, around 40,000 deaths are attributable to exposure to outdoor air pollution. Air pollution plays a role in a range of major health issues including cancer, asthma, stroke and heart disease, diabetes, and obesity.

Man-made sources of outdoor air pollutants include transport, household burning of solid fuels, and industrial activities. Highest levels are seen near the sources of pollution, however air pollution can stay around for days or weeks after it is created. Small particulate matter (PM) and nitrogen dioxides (No2) have the greatest epidemiological link to health outcomes, with traffic related sources being the most significant contributor. Current research indicates that at a population level, no thresholds of effect can be identified for the common air pollutants. This means that there are benefits to be gained from improving air quality, even below current EU and UK limits.

National Strategy

The profile of air quality has increased nationally in recent years with a number of policy and strategies supporting change to improve air quality including most recently the National Air Quality Plan 2017, Clean Air Strategy 2018 and Road to Zero 2018.

Air quality in Derbyshire

In Derbyshire County mortality and morbidity attributed to air quality is calculated as equivalent to 402 deaths and 4041 life years (Appendix 1 shows these figures by Borough and District).

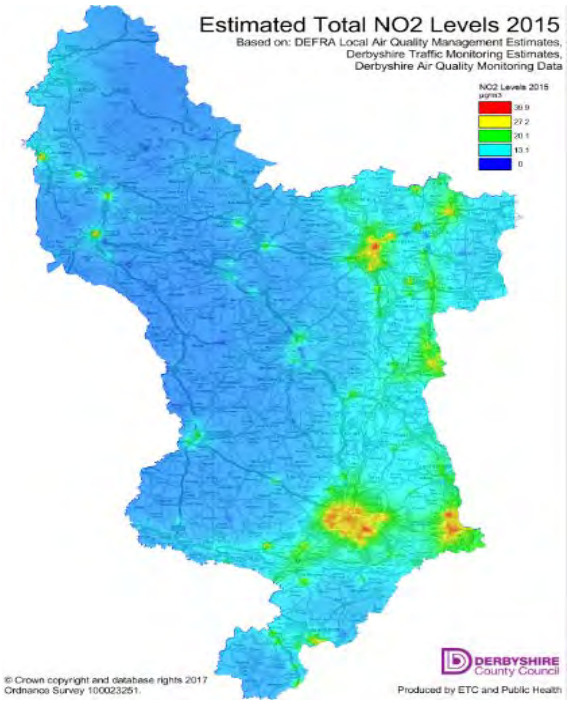
Under the Environment Act 1995, local authorities in the UK are required to assess air quality within their administrative areas and report annually. When potential breaches of the Air Quality Standards (AQS) occur, an Air Quality Management Area (AQMA) is declared and an Air Quality Action Plan (AQAP) developed. There are currently 6 Air Quality Management Areas (AQMAs) in Derbyshire which are geographical located next to busy roads, these include;

- Chesterfield, one AQMA on Church Street, Brimington;
- Erewash, two AQMAs East of the M1 Motorway in Sandiacre and Long Eaton
- Bolsover, one AQMAs in South Normanton (near A38), two in Barlborough close to the M1

High Peak Borough Council are currently proposing an AQMA along the A628 Woodhead Road, Tintwistle. Bolsover District Council are looking to revoke two of the AQMAs in Barlborough, with the possibility of Erewash also revoking its AQMAs following traffic easing measures on the M1.

NO_2 is the most widely measured air pollutant across Derbyshire. In recent years this monitoring data has been collated by the Chief Regulators Group and presented to the Health Protection Board on an annual basis. Medium term analysis (7 year range) shows improvements in air quality at all monitoring sites within AQMAs and 90% of sites outside of AQMAs. 10% of air quality monitoring sites outside of AQMAs have seen a deterioration in air quality, these include sites at Chesterfield, North East Derbyshire and Southern Derbyshire. The Air Quality Working Group in conjunction with Public Health has utilised local air quality monitoring data and modelled traffic data to develop a heat map of air pollution levels across Derbyshire (Figure 1).

Figure 1; Estimated total No2 levels in Derbyshire



In March 2018 as part of the UK plan for tackling roadside nitrogen dioxide concentrations, the government directed 33 English local authorities including Bolsover District Council, ("the third wave local authorities") to carry out studies to identify measures to reduce NO2 air pollution in their areas in the shortest possible time.

Local Strategy

Following a paper to the Health and Wellbeing Board in 2016, the Derbyshire Air Quality Working Group was established across Derbyshire County and City. The group aims to agree drive progress on air quality, receive assurance on progress, facilitate strategic relationships between stakeholders, and support action based on best available evidence. The group chaired by the Director of Public Health for Derby City, is formed of a range of stakeholders including Borough and District Environmental Health, Public Health, Highways, Planning, Sustainable Travel, voluntary sector, and health representatives, and acts as a sub group of the Health Protection Board.

The group has developed a multi-agency action plan based on NICE guidance which focuses around six key themes;

- Strategic vision and cross organisational working;
- Improve access and promote usage of sustainable travel;
- Increase awareness of air quality issues amongst the population and strategic leaders;
- Reduce exposure and harm for those with existing health conditions and vulnerable groups;
- Planning and Development Control
- Monitoring.

Specific actions from partners have included;

- The production of air quality heat maps
- Initiatives to raise the profile of air quality including participation in Clean Air Day, Low Emission events, attendance at Sustainable Travel and Planning Groups
- Annual report to Health Protection Board of trends and issues related to Air quality locally
- Evidence review
- Development of supplementary planning guidance for local planners
- Links to wider strategic plans including Cycle Plan and supporting the development of a Derbyshire County Low Emission Strategy
- Collaborative working around Derby City Clean Air Zone and assessment work on the A38 in South Normanton
- Links with Healthy Homes teams to examine evidence on reducing solid fuel usage across the County

Evidence and best practice

Even modest decreases in air pollution can lead to population impacts including increase in life expectancy. Similarly interventions to address air quality will likely deliver wider public health benefits including increasing active travel and reducing health inequalities.

A growing evidence base exists which examines the most effective interventions to reduce air pollution at a local level, including NICE guidance and soon to be published evidence review by Public Health England. There are also a range of toolkits to support organisations to examine the cost benefits of interventions.

Case studies

- The East End Quality of Life Initiative community group works with Sheffield City Council to run local monitoring using low cost diffusion tubes. This has built local understanding of air pollution and engaged local communities in assessing and taking action on local issues.
- A Zero Emissions Network (ZEN) has been established by local businesses in Shoreditch with the help of Hackney Council. The network offers advice to businesses who wish to reduce their emissions, free trials of electric vehicles and cargo bikes, consultation on reducing energy demand and on reducing emissions resulting from supply chains.
- Wandsworth Council reviewed all its Smoke Control Areas, merged them into a single borough-wide Smoke Control Area, and put in place a communications campaign locally to raise awareness of the rules.
- A number of councils have retrofitted some or all of their vehicles to run on gas fuels (LPG, CNG or biogas). These emit as little as 1/30th of the PM as diesel and can have positive impacts on NO2 emissions. It is also cheaper to run as the fuel costs less.
- Plymouth Hospital Travel Plan resulted in a reduction in staff arriving by car allocation, supplemented with improved Public Transport services, discounted Public Transport tickets and promotion of car sharing.

- California has introduced restrictions on where new schools can be sited in relation to the major sources of air pollution. Since 2003 state law prohibits new schools being sited within 500 feet of a highway. Guidance suggests how the siting of new schools, day care centres, and other public buildings needs to be considered to reduce the exposure of vulnerable young people to high levels of air pollution.
- Westminster City Council has introduced no pollution zones around Westminster schools. Measures include road closures, vehicle restrictions and no idling zones, replacing old boilers, planting gardens and green infrastructure.

Appendix1

Table 1; Fraction of mortality attributable to particulate air pollution $PM_{2.5}$ (2013): 3.01 Public Health Outcome

Local Authority	Attributable Fraction (%)*	Attributable Deaths (Aged 25+)**	Associated Life-Years Lost***
Derby UA	5.7	131	1425
Derbyshire County Council	5.4	402	4041
Amber Valley	5.3	67	656
Bolsover	6.2	46	440
Chesterfield	5.4	59	572
Derbyshire Dales	4.5	33	306
Erewash	5.7	61	647
High Peak	4.4	39	451
North East Derbyshire	6.1	55	529
South Derbyshire	5.4	42	439

Source; * The proportion of deaths estimated to be due to long term exposure to anthropogenic particle air pollution (2013) **Long term exposure to anthropogenic particle air pollution is estimated to have an effect on mortality risks equivalent to the number of attributable deaths. Air pollution is likely to contribute to a small amount to the deaths of a large number of exposed individuals rather than being solely responsible for the number of deaths equivalent to the calculated figure of attributable deaths (2011). ***The years of life lost to the population due to increased mortality risk associated with exposure to particle air pollution (2011).

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