Medicine

UNIVERSITY OF Southampton

A Health Impact Assessment of Air Pollution in Southampton: Dissertation Summary

My name is Fiona Davey and as a part of my dissertation for the MSc Public Health course at the University of Southampton, I have been conducting research into the health impacts of air pollution in Southampton and assessing potential interventions that could be implemented. Whilst my project is not 100% complete, I present to the Panel my preliminary findings and I am happy to share the full report once it is finished.

Methods

- A systematic literature search of the health impacts of air pollution and of evidence-based interventions that have been conducted in other regions and countries
- Qualitative research including a focus group with 5 members of the WDCF. Focus group discussion analysed with thematic analysis
- A comparison of Air Quality Action Plans (AQAPs) measures between Southampton, Bristol, Kingston-upon-Hull, Liverpool, Northampton, Oxford, Suffolk Coastal and Wiltshire.
- A scoring system to rate potential interventions identified from the literature search, focus group and AQAP comparison based on cost, safety, efficacy, public acceptability and the range of pollutants targeted.

Health Impacts

The literature review provided evidence that exposure to ambient air pollution has significant effects on the following: asthmatic mortality, heart failure, Ischemic Heart Disease, lung cancer, Sudden Infant Death Syndrome and children's cognitive function. Vulnerable people such as the elderly, children or those with existing co-morbidities experience worse health outcomes as a result of exposure to ambient air pollution.

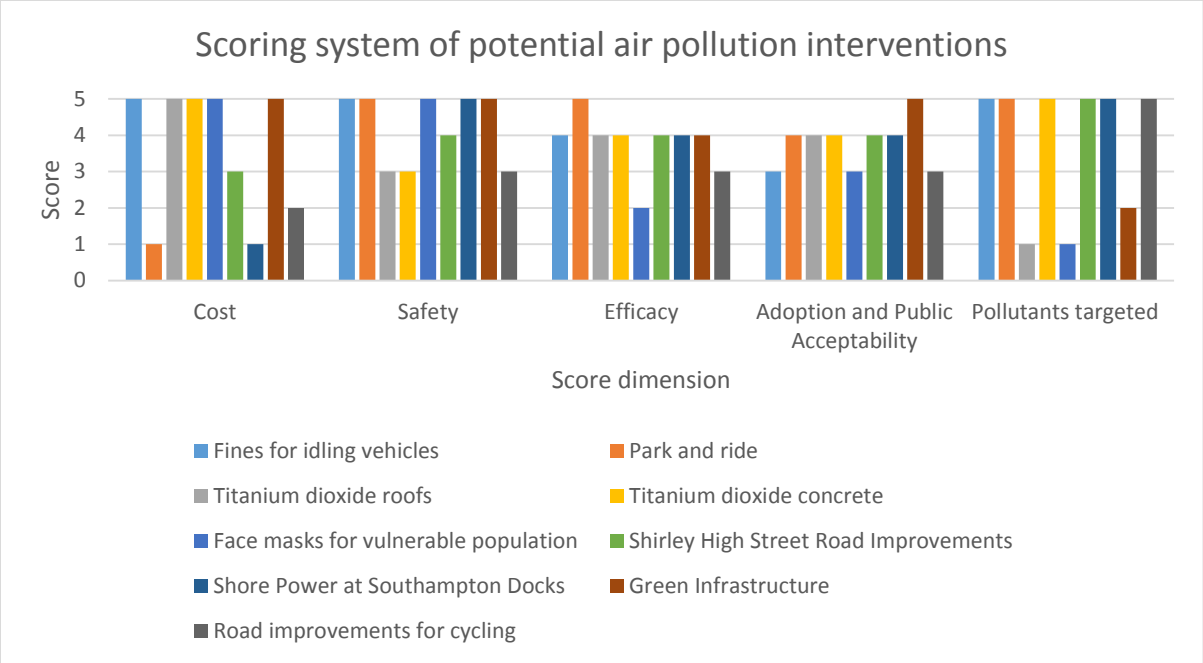

Figure 1 Ranking of the potential interventions by total score

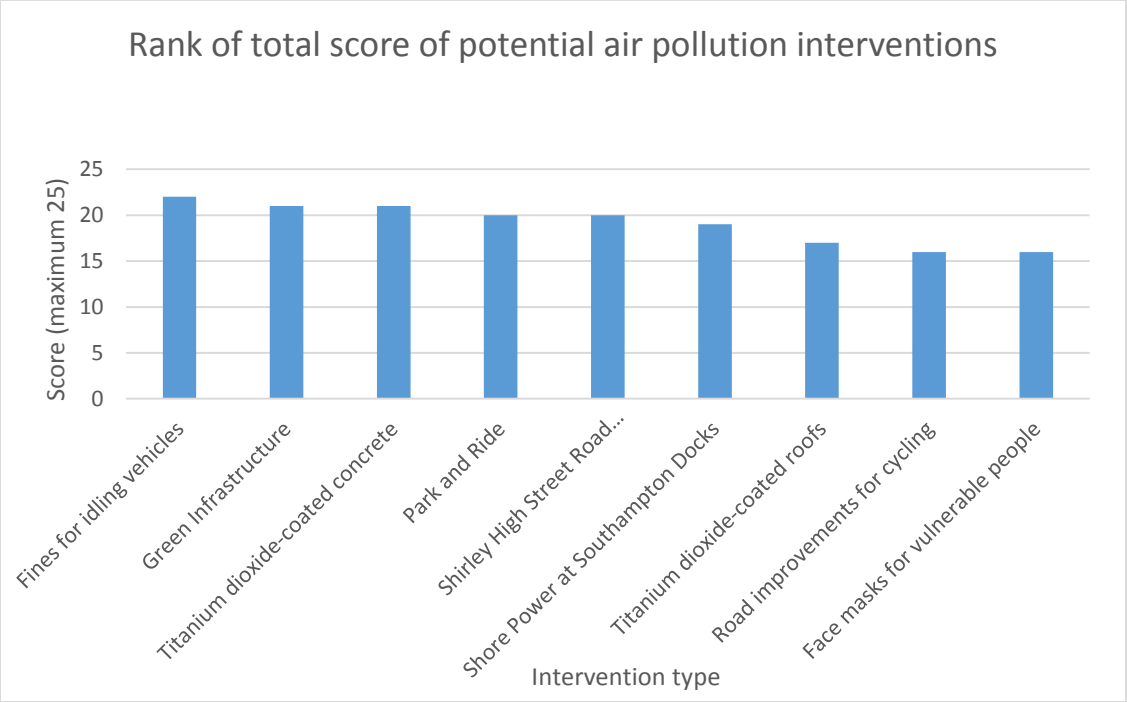

Figure 2 A comparison of potential interventions over the five dimensions

Summary of recommended interventions

Transport:

- Fines for idling vehicles (i.e. at railway crossings, taxis at taxi ranks, coaches, HGVs)
- Park and Ride

Docks:

- Green infrastructure (Silver Birch trees)
- Shore Power

Innovative Solutions:

- TiO_2 concrete
- TiO_2 roof tiles

Infrastructure:

- Shirley High Street road improvements
- City-wide road improvements for cycling

Decreasing vulnerability:

- Distribute face masks to vulnerable individuals signed up the Air Alert project

Public Relations:

- Lay summary of AQAP progress on Southampton City Council website

Detailed summary

Fines for idling vehicles

This has already been suggested in Southampton in a previous AQAP but was not taken forward. It remains a viable option. This is being implemented in Oxford as a part of their LEZ plan. Kingston-upon-Hull also have similar scheme but use fines as a last resort and instead use it as an education opportunity for drivers. At the focus group it was perceived as a good idea but they thought enforcement might be difficult, which could suggest that an educational approach is more appropriate.

Green Infrastructure

Green infrastructure would improve both ambient air pollution and improve resident's health, wellbeing and overall satisfaction with their living area. Silver birch trees are particularly effective at extracting NO_2 from the atmosphere and roads surrounding the docks could be lined with these trees to improve air quality in the surrounding roads. This could be implemented as a part of National Tree Week or a scheme run by local schools to involve schoolchildren in planting trees in their area.

Titanium Dioxide-covered (TiO_2) roofs and concrete

Innovatiive solutions such as applying TiO_2 were popular with the focus group. Concrete surfaces such as pavements can be covered with TiO_2 to extract NO_2 from the atmosphere. On concrete surfaces it can reduce NO_2 concentrations by up to 28.3%, although presently it wears off after 11 months so needs to be reapplied yearly. TiO_2-covered roof tiles are also being investigated and can reduce NO_2 levels by 88-97%, although the spray is not aesthetically pleasing. Roof tiles with TiO_2 in the actual material are available but at a cost of approximately 25% extra. The use of these roof tiles could be embedded within Planning Policy.

Park and Ride

Compared to the other 7 cities that were examined in this project, Southampton emerged as the only city without a Park and Ride facility. The focus group participants want to see a facility built and suggested the old Ford Worker's car park as a suitable site, but a site would also be required to serve the West side of the city.

Shirley Road

The design of Shirley Road is obstructive to free-flowing traffic. Pedestrian islands close by to bus stops mean that traffic gets stuck behind buses and cannot overtake. Shirley Road has the potential to be widened which could mean that lay-bys are built for buses or a continuous bus lane could be installed to ease congestion.

Shore Power at Southampton Docks

Shore Power at the docks would considerably reduce the levels of pollution. It is wanted by other docks (i.e. Felixstowe Docks) but as an expensive intervention it might raise the cost for ships, making the docks less competitive. Shore Power for all ports in the UK should be integrated into a national policy.

Road Improvements for Cycling

Participants at the focus group felt that cycling safety was a prohibiting factor for increased cycling rates in Southampton. Cycle lanes need to be considered with all new road developments and where possible, cycle lanes should be constructed on busy roads to keep cyclists safe.

Face Masks

Providing face masks for vulnerable people as a part of the Air Alert project could be an effective method of reducing individual exposure in the most vulnerable.

Public Relations

At the focus group it emerged that residents were dissatisfied with council public relations. They felt they did not have enough information on progress of air pollution action. A clear summary on the website (as seen on Suffolk Coastal's website) would be more user-friendly than a technical Progress Update report for the general public.