Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Submission on

Cleaning Our Air

Public Consultation to inform the development of a National Clean Air Strategy

From

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Submission from HSE Public Health

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National Clean Air Strategy- an important public health measure

The development of the first National Clean Air Strategy is welcomed and timely. During a lifetime, the average person breathes about 250 million liters of air. Breathing is a constant activity and in contrast to water and food, no one can choose the air they breathe. Setting national policy to improve and protect air quality is a very important public health measure for the years ahead.

Expanding evidence of the health impact of air pollution

The understanding of the health impacts of air pollution has expanded in recent years. This has been aided by improved air pollution monitoring and modeling; improved research methodology such as time series analyses; and the health improvements noted when air quality improves such as the effect of the smoky fuel ban in Ireland.

Air pollution is now considered the largest environmental risk to the public's health. The evidence for ill-health has expanded from the exacerbation of symptoms in those with existing respiratory disease (such as asthma and Chronic Obstructive Pulmonary Disease), to evidence of serious health effects from both short term and long term exposure for the whole population. In addition to the exacerbation of existing respiratory disease, there is now evidence that:

- Ultrafine particles can pass from the lungs into the blood stream and may cause many adverse outcomes including systemic inflammation.
- It can trigger events such as cardiovascular disease (CVD) mortality and non-fatal myocardial infarctions.
- Long term exposure can lead to the development of respiratory disease and CVD.
- Early exposure to air pollution can damage the lungs, and increase the risk of lung infections that may be fatal.
- Some pollutants, when breathed by the mother, can cross through the placenta to the developing baby. Particulates and heavy metals are two examples.
- Air pollution can affect growth of the unborn baby and may be linked to premature birth.
- There may be an additional effect on growth, intelligence, asthma, and development of the brain and coordination.
- Air pollution affects all and not just those with pre-existing respiratory disease.
- Air pollution has a disproportionate impact on the young and the old, the sick and the poor.
- There is no level of air pollution that can be considered to have no ill-health effect.
- Even in Europe air pollution can also be seen as a matter of social in justice. In England, the most deprived 20% of neighbourhoods have higher air pollution levels than the least deprived neighbourhoods.

Air pollution: modifiable risk factor for disease

Evidence that air quality is a modifiable risk factor in the development and exacerbation of disease, is well summarized in recent publications including "*Every Breath we Take*"(RCP 2016), *"Clean the Air for Children"* (UNCF 16) and "*Evolution of WHO air quality guidelines: past, present and future* " (WHO 2017). Many initiatives have demonstrated an improvement in health when air quality improves and vice versa.

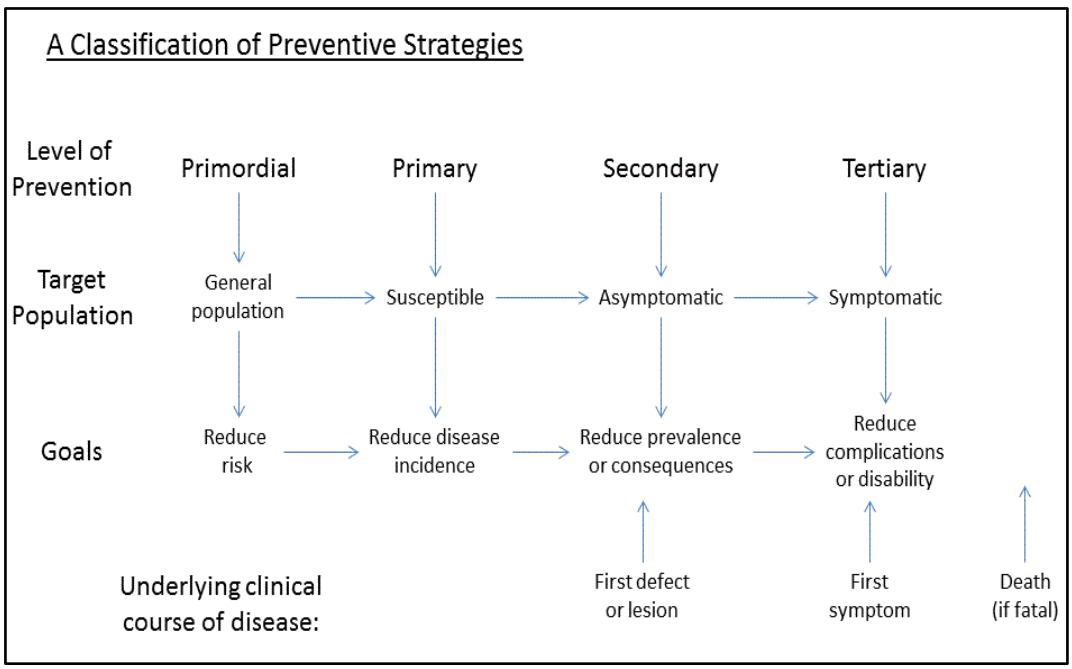
In May 2015 the World Health Assembly, the decision-making body of WHO, adopted resolution WHA 68.8 on health and the environment:

> "*Addressing the health impact of air pollution, urged Member States and WHO to redouble their efforts to protect populations from the health risks posed by air pollution."*

The resolution recognized for the first time the role of WHO air quality guidelines (AQGs) in providing guidance and recommendations for clean air that protect human health. Legislators in countries all over the world implement these guidelines according to local circumstances as resources allow. In Ireland this has been undertaken in accordance with the requirements of EU legislation. However EU legislation has not kept pace with evolving WHO guidelines where some of the limits are lower and which now recognise that *for some pollutants there is no lower limit at which adverse health impacts do not occur*.

Public policy decisions taken many years ago in areas such as home heating, transport, agriculture and industry have affected the health status of current Irish residents. It follows that decisions taken in 2017 will continue to impact on their health in future years. This evidence based confirmation of potential adverse health impact requires a broad-based appraisal of the options available to the Irish State in protecting the health of current and future citizens. Against that background, the assessment of options needs to take account of recognised frameworks for disease prevention as described in Box 1 below.

Box 1



Examples of primordial prevention measures might include improved/subsidised public transport networks targeted at entire populations - susceptible groups such as those working or studying in cities could benefit from primary prevention policies which reduce the likelihood of air pollution episodes within high traffic zones such as Low Emission Zones, congestion charges etc.

Secondary and tertiary prevention are largely the responsibility of health services as they aim to slow disease progression (e.g. use preventive medication for asthma) and to minimise the consequences of established disease e.g. treatments for symptomatic cardiac disease such as stents. Primordial and primary prevention areas may be more simply described as "upstream" interventions outside the influence of health services but which impact on the numbers of patients presenting for care.

The 2016 Census demonstrates the continuing upward trend both in total population and in numbers in older and younger age groups who are most susceptible to adverse air quality. This will lead to an increased number of people being particularly vulnerable to the health effects of poor air quality. On this basis the Irish health services can strongly support the initiative of the Irish Government towards developing a strategic approach to implementing upstream policy through a Clean Air Strategy.

The Clean Air Consultative Paper

The Consultative policy paper, whilst a good review of the main drivers of air pollution in Ireland and the regulatory interventions appears to concentrate on emission legislation and technology advances as the way forward. Major changes in the mechanisms of modern day life which take account of changing demography and human behaviour are also needed to prevent the inevitable worsening of our air quality as demonstrated by significant episodes of poor air quality in London and Paris this winter.
The following recommendations are suggestions as to how this balance may be achieved:

Recommendation One

The international evidence (and indeed common sense) tells us that a multi-pronged approach is needed to improve the quality of the air in Ireland.

It is recommended that a national policy includes actions and policies to:

- Avoid/Prevent emissions to air that cause air pollution
- Reduce the level of harmful emissions where prevention is not possible
- Remove the pathway between the emissions and the receptors such as humans/ plants/ soil etc, where prevention or reduction are not possible
- Protect the exposed receptors (eg humans) when prevention, reduction, and exposure cannot be avoided.

These actions and policies are needed at:

- International level
- National level
- Local Level
- Individual level

Recommendation Two

In addition to the remit under the Air Pollution Act and Air Quality Regulations, there is a major role for the Local Authorities in air quality management through the planning and development function. A National Clean Air Strategy should promote this role and make it a major element of all areas of Local Authority work.

Living or going to a school on a major traffic road is associated with exposure to poor air quality. Yet it is remarkable how many housing developments are alongside major roads in recent years in Ireland. Separation of residential areas, schools, hospitals and day to day living from pollution hot spots like heavy traffic roads and sitting them on good public transport networks will reduce exposure to air pollution. Low emission zones have been introduced in other countries that have been shown to improve air quality.

Reducing congestion reduces air pollution. Congestion on our roads is increasing rather than decreasing. A number of countries have introduced a congestion tax and this has been shown to reduce pollution. Several cities such as Paris, Stuttgart, Athens, Brussels and Madrid are trying to reduce pollution by proposing bans, fines and restrictions on diesel vehicles. New York and some London boroughs have introduced fines for drivers who don't turn off the ignition at traffic lights.

Avoiding busy roads as a pedestrian or a cyclist will reduce exposure to air pollution. Creating routes that avoid pollution hotspots can reduce exposure and make active travel more attractive as an option.

Active travel such as cycling and walking will help reduce emissions that cause air pollution. Recent publications in the British Medical Journal have added to the body of evidence that active commuting is beneficial to health (Celis-Moralis et al, 2017; Andersen LB, 2017). Spending two hours commuting to work in motorised transport is not good for anyone's health. Walking and cycling are good for our mental and physical health. Switching more journeys to active travel will increase physical activity, reduce weight gain, and help people connect with their community as well as being good for the environment and air quality.

Increasing active travel in urban areas to the norm rather than the exception, would involve moving, what is essentially a car using population, towards walking and cycling as part of everyday life. It will involve a change in how we conduct our modern day life and requires planning decisions etc going forward. Local facilities and services should be accessible by low-polluting means. Cycling and walking should be safe and easy.

Cycling is a major mode of transport in countries such as Denmark, Sweden, and the Netherlands. In our cities commuting by bicycle is for the brave souls who can cope with the close proximity of cars, buses and trucks. Pedestrians have footpaths. Motorised vehicles have the road. For the most part there is no or very limited space on the road for the bicycle in Ireland.

Whilst there has been a development of a number of cycle ways around the country, cycling for the most part remains a leisure activity. It is not just a case of encouraging people to cycle. It is far more complex and requires a multi-factorial approach. Cycling is not a safe active transport option for most Irish people living in an urban environment.

Maintaining cycling momentum is important when commuting by bicycle.. The National Cycle Policy Framework and the National Cycle Manual have examined the issue for Ireland in detail and have many excellent suggestions.

The government has stated that it is committed to developing cycling as one of the most desirable modes of transport. Maintaining and improving the air quality, particularly in urban areas going forward is another strong reason for giving this far more attention.

A major change in thinking is required at a number of levels throughout our society from local planning, road and cycle path design, to the provision of secure bicycle parking for bicycles. It is interesting to note that apartment developments and workplaces in Ireland have no, or very limited, capacity for secure storage of bicycles. This is likely to discourage many adults and children from owning a bicycle.

The city of Curitiba (Brazil) invested heavily in cleaner modes of transport and integrated urban planning with green spaces, pedestrian walkways and bikeways. Despite a significant population increase, the air quality in the city is very close to WHO Guidelines levels, with a longer life expectance than the national average and a low infant mortality. These gains are attributed to the city's sustainable urban strategies (WHO 2015).

There is a major role for the Local Authorities in air quality management. A national policy should promote this role and make it a major element of all areas of Local Authority work.

Recommendation Three

Promotion of active travel and other measures to reduce polluting motorised transport (such as congestion charges) will require attention to the needs of those not able to avail of the active travel option.

The longer lifespan of current and future Irish people imply that a greater proportion of the population may be living with chronic disease and may be unable to avail of active travel. Health policy envisages a shift from institution–based health services for this group towards community–based services either at home or in local primary care centres/ day-care service. It is important that everyone can move and avail of services including healthcare.

Recommendation Four

As a country, Ireland has a number of special factors which require added attention within a Clean Air Strategy.

The following two areas require special attention within a Clean Air Strategy for Ireland:

- Private vehicle journeys – Public policy in recent years has resulted in increasingly centralized locations of employment, retail, education, and hospital services. This has not been matched with public transport infrastructure. The dispersed geography of Ireland along with population trends has caused further dependence on private vehicles.
- Agriculture and agribusiness sector - This business is a major driver within the Irish economy (Food Harvest 2020 and Foodwise 2025) and there are plans for the growth

and intensification of this sector. This will increase emissions that may not be as amenable to abatement policies as other sources of emissions.

Recommendation Five

The HSE PHMEG support the expansion of the Ambient Air Quality Monitoring Network and the review and enhancement of the EPA Air Quality Index for Health (AQIH) to include a forecasting function.

The HSE PHMEG recommendations included in a submission to the EPA during the recent consultation process on the National Ambient Air Quality Monitoring Programme, are also recommendations for the Clean Air Strategy.

Recommendation Six

Geocoding of healthcare data and individual health identifiers are necessary in order to link ill-health events to episodes of poor air quality and evaluate the effect of interventions to reduce air quality.

Research into the impact of air quality on health using routine morbidity and mortality data has been severely hampered in Ireland because of the absence of the following infrastructural supports available in most other European countries:

- Individual Health Identifiers which allow for accurate coding and linking of episode/s of healthcare to an individual
- Local geocodes (postcodes) which facilitate linking of healthcare episodes to a geographical exposure (e.g. asthma admissions , prescriptions etc)

The Individual Health Identifier Bill (December 2014) provides for introduction of the former within private and public Irish Health services on a phased basis beginning with newborn infants over the coming years which will give full population coverage over time. However the configuration of Eircodes, which were introduced for all Irish addresses in 2015, does not support geocoding of health care episodes as each address is unique without any linkage to its neighbouring locations. Without a substantial further investment in service code directory development to devise and implement these linkages for such data it will not be possible to evaluate the impact of interventions in an Irish Clean Air Strategy on health at local level i.e. below county level.

Recommendation Seven

The Clean Air Strategy should include a number of Key Performance Indicators (KPIs)

KPIs can be used to evaluate the impact of "upstream " interventions including population behaviour measures (mode of transport to school , work , shopping etc) and consider UN Sustainable Development Goal (SDG) Targets:

- Target 3.9, -"by 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination",
- Target 11.2, -"by 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding

public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons**".**

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