

Bills Committee on Air Pollution Control (Amendment) Bill 2013

Follow-up Actions by the Administration

Members requested at the Bills Committee meeting on 25 May 2013, and by a letter before the meeting, the following information.

1. In respect of the term "public interest" as stated in the proposed section 7A(2)(a)&(b) of the Air Pollution Control (Amendment) Bill 2013, the meaning of the term in the context of environmental protection and the Bill; and the Administration's stance regarding whether "public interest" should be replaced by "public health" or whether the term "public health" should be added to the relevant section.

The proposed section 7A of the Air Pollution Control (Amendment) Bill 2013 is a recast of the section 7(2) of the Air Pollution Control Ordinance (APCO) for better clarity. The Secretary for the Environment may from time to time review the air quality objectives (AQOs) for an air control zone to ensure that they are the objectives that should be achieved and maintained in order to –

- (a) promote the conservation of air in the zone in the public interest; and;
- (b) promote the best use of air in the zone in the public interest.

Protection of public health is already a public interest consideration because to do otherwise will not be in “public interest”. Other factors, such as social and economic considerations also form part of the public interest considerations and would also need to be taken into account when considering whether and to what extent the AQOs should be revised. This is consistent with the advice of the World Health Organization (WHO) in “WHO Air Quality Guidelines Global Update 2005” that –

“The standards set in each country will vary according to country-specific approaches toward balancing risks to health, technological feasibility, economic considerations, and other political and social factors.”

The stated aims of AQOs vary from country to country. In setting the AQOs, some countries, e.g., the United States, are required under the law to consider only the health protection factor^[1]. Other countries, e.g. the United Kingdom, New Zealand and the Mainland, prescribe in their legislation that cost effectiveness and economic factors also need to be

^[1] Under its Clean Air Act, US needs to establish air quality standards for protection of public health and public welfare, respectively.

considered. We do not recommend replacing “the conservation and the best use of air in the air control zones in the public interest” by “protection of public health” as it will narrow the scope of the purposes of the AQOs.

“Protection of public health” is already a key consideration in setting the AQOs and this has been demonstrated by the Administration's proposal to tighten the AQOs and to review the AQOs regularly. We do not consider it necessary to add this term specifically to the relevant section because the proposed amendment bill has addressed this need.

2. A list of items of legislation to which the new Air Quality Objectives ("AQOs") will be applicable to and the application does not require the said AQOs to be further implemented into the piece of legislation concerned, either by positive or negative vetting, after the new AQOs come into operation.

Apart from the APCO itself and the Environmental Impact Assessment Ordinance (EIAO), Cap. 499 which uses the AQOs as statutory criteria for evaluating air quality impact and hazard to life under Annex 4 of the Technical Memorandum on Environmental Impact Assessment Process, there is no other existing legislation to which the new AQOs will be directly applicable to, after the new AQOs come into operation.

3. Any plan of the Administration to enhance the current arrangement on measurement of AQOs, if so, details of the plan.

The Environmental Protection Department (EPD) operates a comprehensive air quality monitoring network comprising 11 general air quality monitoring stations (AQMS) and three roadside stations. The network aims to assist us to develop air quality management policies, assess compliance with AQOs, assess public exposure and inform the public of the current and forecast air quality. In determining the siting of the AQMS in the network, EPD needs to consider a number of factors, including the spatial distribution of the air quality monitoring network, the coverage in different types of development areas (e.g. urban areas, new towns and rural areas), local population, the distribution of traffic flow and pollution sources, the capability in monitoring regional air pollution, topography and meteorology. These considerations are similar to the best practices of other countries such as the US.

Hong Kong is a small and densely populated city with mainly economic activities in commercial and financial areas. As such, vehicle emissions are a key local source of air pollution. Given the similarity in pollution sources, the levels of air pollution in different districts are mainly determined by their

respective types and density of development. Against this background, the current air quality monitoring network has an adequate spatial distribution of general AQMSs covering different land uses (commercial, residential, industrial and mixed) of the urban, new town and rural areas. It is thus not necessary to set up an AQMS in each of the 18 districts. For those districts without an AQMS, the public can refer to the measurements of AQMSs in nearby districts of similar types and density of development. EPD has provided advice on the cross-district reference of the data from general AQMS.

Based on the review of the air quality monitoring network completed in late 2012, EPD plans to set up a general AQMS each in Tuen Mun and Tseung Kwan O to further enhance the coverage of our network. A new AQMS is being built in Tuen Mun, and is expected to come into operation by end of 2013. For Tseung Kwan O, we have started the site-search exercise.

For roadside AQMS, the existing three roadside AQMS in Central, Causeway Bay and Mongkok are built in the busy corridors of urban areas with high traffic and pedestrian flow and surrounded by high-density built environment. The data from these roadside AQMSs are hence representative of the roadside air quality of typical places with heavy vehicular and pedestrian traffic in the urban areas. As such, we consider it not necessary to increase the number of roadside AQMSs.

To ensure that the network can serve the objectives set out upfront, we will continue to review annually the adequacy of the network and the need for establishing new AQMS, taking into account the performance of our network and changes in land use, pollution sources and population coverage, etc.

4. Illustration with examples on how different levels of concentration of Sulphur Dioxide (SO₂) in air affect the health of people

With reference to the findings from international organizations, the health effects of sulphur dioxide at different levels of concentration are set out in the following table for illustration purpose.

	Concentration (µg /m³)	Exposure Duration	Health Effects	Note
1	6,700,000	1 hour	Median lethal concentration (LC50)	[1]
2	13,000	15 min	Short-term occupational exposure limit for workers	[2]
3	11,400 - 14,300	10 min	Reductions in mean lung function values among groups of normal subjects at rest	[3]

	Concentration (µg /m3)	Exposure Duration	Health Effects	Note
4	1,716	10-15 min	Reduction of about 15% of baseline forced expiratory volume in 1 second (FEV ₁) in exercising asthmatics	[3]
	1,144		Minimum concentration evoking changes in lung function (reduction of about 10% of FEV ₁) in exercising asthmatics	
	572		Small changes but not regarded as of clinical significance in lung function in exercising asthmatics	
5	250	One day	Lowest observed adverse effect level for short-term respiratory symptoms	[3]
6	40 or less	Mean Daily Level	Daily sulphur dioxide was associated with daily mortality	[3]

[1] LC50 value is the concentration in air that will kill 50% of the test subjects (for SO₂: rats) in a given time.

Source: National Institute for Occupational Safety and Health (NIOSH), US Centres for Disease Control and Prevention

[2] Source: NIOSH

[3] Source: World Health Organization, "Air Quality Guidelines – Global Updates 2005", pp.399-414

5. The number of government vehicles which are pre-Euro vehicles and details of those vehicles, including information which concerns to which departments or bureaux are those vehicles attached and whether those vehicles are currently in service.

All pre-Euro and Euro I diesel vehicles in the government fleet have been phased out. Amongst the 129,000 diesel commercial vehicles, about 19,000 and 13,000 are still in the pre-Euro and Euro I category respectively.