

**Notes of the Advisory Council on the Environment
Public Forum on Review of Air Quality Objectives
held on 18 September 2006 from 2:00 to 5:30 pm
at Lecture Hall, Hong Kong Museum of History**

Present:

Prof LAM Kin-che, S.B.S., J.P. (Chairman)
Dr NG Cho-nam, B.B.S. (Chairman, Environmental Impact Assessment Subcommittee)
Prof HO Kin-chung, B.B.S.
Prof Paul LAM
Prof POON Chi-sun
Mr TSANG Kam-lam
Prof WONG Tze-wai
Mr Esmond LEE, J.P. (Secretary)

Absent with Apologies:

Mr James R GRAHAM
Prof Howard HUANG
Ms Goretti LAU
Mr Peter Y C LEE
Mrs Mei NG, B.B.S.
Mr Markus J SHAW
Ms Iris TAM, J.P.
Prof WONG Yuk-shan, B.B.S., J.P.

In Attendance:

Ms Anissa WONG, J.P.	Permanent Secretary for the Environment, Transport and Works (Environment)
Mr Roy TANG, J.P.	Deputy Director of Environmental Protection (3), Environmental Protection Department

Opening Remarks by the Chairman

The Chairman welcomed the guests and participants to the Advisory Council on the Environment's (ACE) Public Forum on Review of Air Quality Objectives (AQOs) and introduced the guests and members. He said that the forum would be co-chaired by Dr Ng Cho-nam (Chairman of the Environmental Impact Assessment Subcommittee of the Council) and himself. The ACE was the Government's principal advisory body on matters relating to environmental

protection and nature conservation. The Government would consult the Council on a wide range of related issues and major policy initiatives. The Administration proposed to launch a comprehensive study to be followed by a thorough public engagement process to support the review of Hong Kong's AQOs and development of a long-term strategy on air quality. The Council discussed and supported the proposal at its meeting in July 2006. The Council was pleased to see the Administration's determination to tackle air pollution in a comprehensive manner. At the same time, the Council urged the Administration to kick off the review as soon as possible and expedite the review process as well as to closely monitor the latest international developments. The Council considered that the review of AQOs should be accompanied by an overall long-term air quality strategy and aligned with complementary policies in other policy areas. A road map on implementing the initiatives and measures would be necessary to achieve the interim and long-term targets. Of course, the support and participation of the community as a whole were of vital importance in tackling the common challenge.

2. The Chairman said that the Council understood that it would be a great challenge for Hong Kong to comply with the set of proposed new World Health Organization (WHO) Air Quality Guidelines (AQGs). There were few countries in the world which could fully achieve the recommended AQGs at present. The achievement of the new WHO AQGs would require comprehensive, and possibly very stringent measures to be taken not only in Hong Kong but also in the Mainland. While the community had to be prepared for the economic costs, the extensive use of environmental-friendly, energy efficient and clean power generation technologies would have far reaching impacts on a wide range of policy areas and the people's way of life. Thus, the Council invited representatives of various sectors and members of the public to join the public forum to discuss and exchange views on the issue.

3. The Chairman explained the programme rundown and flow of the forum and informed the participants that the proceedings would be recorded and uploaded onto the website of the Council. Participants could also write down their views in the forms distributed if they would like to elaborate their views.

Module 1: Air Pollution in Hong Kong – Nature of Problems and Control Programmes

4. Prof Wong Tze-wai gave a short introduction on the subject area. Dr Ng Cho-nam invited views and comments from the participants which are summarized as follows –

- In view of the impact of air pollution on public health, the Government should take immediate action to tackle the problem for protection of public health and there should be no more trade-offs.
- As to willingness to pay under the revised AQOs, considerations should include not only the increased economic costs such as electricity charges but also the quality of life and health costs, such as health care expenditure, illness days, hospital admission and death.

- Tap Mun was cited as an example in the Administration's paper which reflected that the Government admitted that nowhere in Hong Kong was the air safe enough to breath.
- The review of AQOs, if adopting the proposed new WHO guidelines, would have great impacts on the Environmental Impact Assessment (EIA) process. Most of the EIA reports might not be able to meet the stringent AQOs in respect of air quality impact and this might lead to non-approval of the projects.
- Using a set of stringent AQOs did not mean that development projects would not be approved. The Government could consider setting a set of temporary interim air quality targets for assessing the environmental acceptability of the projects in the context of EIA. The interim targets should be gradually tightened with a view to setting long-term objectives based on health protection. During the interim period, project proponents should be encouraged to participate in some schemes similar to emissions trading if the anticipated air quality impact of the project would exceed the targets.
- If the projects under the EIA process could not meet the AQOs based on WHO AQGs, this would mean that the projects could not live up to the standards which were linked to the effects of air emissions on public health.
- In terms of control programmes, the Government should consider implementing certification programmes, such as a clean production certification scheme as a prerequisite of export certificates to encourage clean production in the Pearl River Delta (PRD). The concept could be similar to prevailing certification programmes in controlling supplies in the region such as no hazardous materials in electronic components or child labour in the production process. The international exporters should have the capability and mechanism to comply with it. The existence of a certification scheme would provide businessmen with more security over their investments in the region.
- There were large corporations which already implemented the International Organization for Standardization (ISO) 14000 Scheme on their suppliers. Assistance had to be given to more companies to encourage the adoption of this scheme to promote environmental credentials and performance from their suppliers.
- Reference could be made to programmes like Social Accountability (SA) 8000 Standard to encourage large manufacturers and corporations to uphold their social accountability in the aspect of environmental performance and clean production.
- In respect of the Annual Inspection Scheme for commercially used vehicles in Hong Kong, the Government should consider more frequent inspection requirements, especially for the diesel vehicles, in view of their relatively poor maintenance and long mileage on the road.
- It was observed that there were fewer spot checks on roads than before to check smoky vehicles.
- More information about the emissions inspection mechanism for buses would

increase transparency and enhance the public's understanding.

- The inspection scheme of buses was more stringent than that of other commercially used vehicles. There was a set of repair and maintenance requirements for buses under the franchise and emissions control was only part of the package. On top of annual inspections, monthly spot checks were also conducted.
- The Audit Department revealed that the Transport Department was not using the latest technology of dynamometer to conduct the emissions tests for buses and there was no information on whether the Transport Department was following up the issue. The Transport Department should shoulder its responsibilities on vehicular emissions control.

5. Some Members responded to enquiries made by the participants –

- In response to an enquiry about the relative position of Hong Kong in terms of pollution emission loading per capita as compared with other developed cities, Prof Wong Tze-wai considered that air quality should be assessed in terms of objective standards such as pollutant concentration. Given different geographical and climatic characteristics of different places, it would be difficult to make a comparison in terms of emission loading per capita in different cities. Dr Ng Cho-nam said that based on a study conducted by the Economist Intelligence Unit on energy efficiency in terms of economic income, Hong Kong was ranked at the top end. Nonetheless, the air pollution in Hong Kong was a complicated issue in that Hong Kong was a typical compact city with the population crowded on a relatively small portion of lowland and was greatly affected by the regional air quality.
- In response to an enquiry about the dominating pollution sources, local or regional, on public health in Hong Kong, Prof Wong Tze-wai considered that it was difficult to segregate the pollution sources in studying the relationship between pollutants and health.
- In response to an enquiry about how the AQOs were used in the EIA process to influence the approval and non-approval of the project, Dr Ng Cho-nam explained that a project proponent had to submit an EIA report for a designated project for application of an environmental permit from the Environmental Protection Department (EPD) under the EIA Ordinance. The assessment of air quality impact of the project was based on established AQOs and remediation measures had to be considered if the anticipated air quality impact would exceed the AQOs.
- In response to an enquiry about the health effects of PM_{2.5} (particulate matters smaller than 2.5 microns) as compared with PM₁₀, Prof Wong Tze-wai said that there were some inconsistencies in the results in different studies. Based on the findings of a study commissioned by EPD on health effects of PM_{2.5} on community diseases, hospital diseases and death, it was shown that PM_{2.5} had more direct health effects than PM₁₀. The results were consistent with similar studies in overseas countries.

6. Mr Roy Tang clarified and explained the following –

- Given that about 70,000 factories in the PRD involved Hong Kong investments, the Administration had dialogues with major local and international business associations with bases in Hong Kong on the suggestion that investors impose basic requirements of clean procurement and production in their factory bases. This would exert pressure on the industrialists to improve their production process. The World Bank was also working towards a similar approach in their procurement activities.
- The Annual Inspection Scheme for commercially used vehicles, including buses, was a statutory requirement and inspection on an annual basis was considered appropriate. After the introduction of penalties on smoky vehicles and stepping up of enforcement actions, the number of prosecution cases of smoky vehicles had decreased by about 80% in the past five years. This also explained why resources allocated for spot checks for the purpose had been reduced.
- The example of Tap Mun quoted in the Administration's paper to the ACE was used to illustrate the pervasive influence of regional air pollution to Hong Kong. It referred to the imposition of the new WHO AQGs to Tap Mun at present. Even a place without industrial and vehicular emissions, like Tap Mun, could not meet the new WHO AQGs now.

Module 2: Regional Approach is Essential

7. Prof Ho Kin-chung gave a short introduction on the subject area. Dr Ng Cho-nam invited views and comments from the participants which are summarized as follows –As air pollution in Hong Kong was a regional problem, the tightening up of AQOs should not only be an issue for Hong Kong but similar reviews should also be conducted in the Mainland.

- Given that many of the factories in the PRD involved Hong Kong investments, there was tremendous potential leverage for social and moral pressure and even legislative process to require the factories to meet the minimum standards of emissions and energy efficiency.
- Given the large number of factories in the PRD, it would be difficult to approach each of them. The most effective approach would be for the Government to discuss with the large manufacturers and corporations which would exert influence in the region.
- The Government should consider conducting a public hearing in the United States (US) and lobbying the Members of Congress directly in order to exert influence on the US buyers to lay down guidelines for their suppliers in the Mainland on their environmental performance and standards in the production process.
- One of the methods to put pressure on the production side to reduce emissions was that the Government could name the companies which caused serious emission problems, as this would have implications on the particular company's stock price.
- At present, industrial projects in the Mainland had to go through an EIA process. Moreover, the State Environmental Protection Administration had recently

introduced an environmental compliance regulation on electrical appliances. It was observed that industrialists in the PRD were increasingly concerned about environmental compliance of their production process. The key issue was whether the standards adopted in the Mainland were comparable to the standards in Hong Kong. It would be necessary to strengthen co-operation of the environmental protection authorities of the two governments and encourage the industrialists to achieve better environmental performance in the production process.

- The Government could consider setting up a regional air quality resources board as monitoring of the cross-boundary air quality would be a long-term issue and it would be useful to collect data and study the impact of emissions in the PRD and its relation to Hong Kong.
- The Government should encourage power companies, both in Hong Kong as well as in Guangdong, to participate in emissions trading so that they could make a profit out of emission reduction as certified by internationally recognized organizations.
- The western PRD was already heavily polluted as shown in the reports of the Regional Air Quality Monitoring Network. The building of the proposed Hong Kong-Zhuhai-Macao Bridge, which was specifically designed to promote industrial development in the western PRD region, would aggravate the problem. A rail link instead of a bridge should be built.

8. Some Members made the following responses to the comments –

- Inter-governmental co-operation between Hong Kong and Guangdong was important to tighten up and monitor the environmental standards in order to drive out industrial operations not meeting the standards.
- Based on an annual report of the Guangdong Provincial Government, about 65% of the polluting factories in the PRD involved Hong Kong investments. This reflected the importance of economic influence of the Hong Kong business community in tackling air pollution in the PRD.
- Based on statistics of the Guangdong Environmental Protection Bureau, about 86% of the factories complied with the emission standards. However, air quality in the region remained poor. This reflected that there was a need to tighten up the standards in the Mainland.
- Discussion with the business associations revealed that there were scopes for the manufacturing industries in the PRD to promote clean production and energy efficiency. As efforts from the business sector were beyond statutory compliance, appropriate incentives and mechanisms had to be put in place.

9. Mr Esmond Lee clarified and explained the following –

- The Administration recognized the issue of emissions from factories in the PRD. EPD would soon initiate a pilot project to promote cleaner and energy efficient

practices for Hong Kong-owned factories in the PRD. Under the project, the consultant would visit factories in the region and recommend measures for adoption. Full support had been gained from the Guangdong Economic and Trade Commission. In the meantime, briefings were being arranged for major business associations to solicit their support for the pilot project.

- The business sector played an important role in tackling the problem and had been pursuing various voluntary programmes to promote cleaner production in the region, such as the One Factory-One Year-One Environmental Project organized by the Federation of Hong Kong Industries and the Clean Air Charter by the Hong Kong General Chamber of Commerce.
- The EIA study of the proposed Hong Kong-Zhuhai-Macao Bridge was being conducted. The EIA report would be submitted to the ACE for consideration and EPD would take into account views from various sectors carefully.

Module 3: International Development on Air Quality Standards

10. Prof Paul Lam gave a short introduction on the subject area. Dr Ng Cho-nam invited views and comments from the participants which are summarized as follows –

- Most of the countries with stringent air quality standards based on public health still could not achieve the standards at this stage. What they did was to set interim targets and implement appropriate measures to achieve the long-term objectives within a timeframe.
- There was a global trend for air quality objectives or guidelines to be updated as further information was made available about the health effects of air emissions. The WHO guidelines were regarded as the present state of understanding on the risk of air emissions on human health.
- With the latest health-based air quality data published by WHO, it would be an opportune time for Hong Kong and other countries in the world to review and update the AQOs having regard to the unique backgrounds of different countries. It would have to be a social decision by taking into account practicability and reasonable timeframe.
- On top of PM₁₀, there was a global trend for including PM_{2.5} in air quality standards or objectives in view of the health effects of particulate matters smaller than 2.5 microns.
- It was difficult to understand why the air quality objectives in terms of Respirable Suspended Particulates (RSP) 24-hour in Hong Kong (180 µg/m³) was even lax than that of the Mainland (150 µg/m³).
- There were different levels of RSP standards in the Mainland in the urban, rural and industrial areas. The RSP of 150 µg/m³ represented the cleanest level of air quality in the residential area. Thus, a direct comparison should not be made between the objective of 150 µg/m³ for residential areas in the Mainland and 180 µg/m³ in Hong Kong.

11. Mr Roy Tang clarified and explained the following –

- In the WHO report which published the set of proposed new WHO AQGs, it was stated that the standards set in each country would vary according to country-specific approaches towards balancing risks to health, technological feasibility, economic considerations, and other political and social factors. The working group thus advised that when formulating policy targets, governments should consider their own local circumstances carefully before using the guidelines directly as legally based standards.

12. Some Members made the following comments –

- While the proposed new WHO AQGs were quite stringent, there were countries, such as Australia, adopting a set of standards which were even more stringent than those of WHO. Thus, while achieving the WHO guidelines were difficult, it was not impossible.
- The country-specific approaches referred to in the report of WHO should refer to the differences in the implementation of control measures in different countries rather than the guidelines or standards which should be health-based as there should not be much difference among people in different countries.

Module 4: Reviewing Hong Kong's Air Quality Objectives and the Need for Public Engagement

13. The Chairman gave a short introduction on the subject area and invited views and comments which are summarized as follows –

- It would be important to define clearly the purpose of the AQOs in Hong Kong. Different countries had different purposes in setting their air quality standards or objectives. For example, the purpose of the air quality standards in the US was to protect public health. For Hong Kong's AQOs, there was no clear linkage between AQOs and public health.
- Hong Kong AQOs should be health-based. It should be a set of clear objectives for the public to understand what levels to be achieved for protection of public health. Not only for the health of this generation but also the health of the future generations.
- The reason for reviewing the AQOs was that they did not reflect the current understanding of the impact of air emissions on public health.
- The WHO AQGs should be adopted as the new Hong Kong AQOs in order to measure air quality in Hong Kong against these guidelines. This would let the public know the level of air quality on a daily basis in terms of health effects.
- While setting a set of AQOs which were too stringent would affect the development of industries, setting a set of AQOs which were too lax would be regarded as a license to pollute.
- It did not matter that some of the new AQOs could not be achieved at the present

stage. Even under the existing set of AQOs, some of the objectives still could not be achieved.

- It would be worthwhile to note that the WHO had conducted an exhaustive review by investing a huge amount of resources and taking a very long time with the participation of the best experts available from different parts of the world. All the health data from Hong Kong were also considered by the independent reviewers. Some professionals in Hong Kong were involved in appraising the reviewers. Thus, the AQGs had taken into account the health effects of the ambient air quality of Hong Kong.
- The crucial thing was for Hong Kong to set a clear, achievable, reasonable and effective long-term environmental protection strategy, including that for air quality management. For example, a fuel mix and quality requirement for power generation and various industries, incentive and disincentive schemes to motivate different sectors to achieve the objectives or standards, a set of tolerable emission levels, etc. Close dialogues with stakeholders would be necessary.
- The revised AQOs should be reasonable and achievable. Close dialogues should be maintained with stakeholders to work towards the objectives.
- In setting the new AQOs, the Government should consider applying the same emission standards for the public utilities to the manufacturing industries so as to ensure the sustainability of the manufacturing industries in Hong Kong.
- It would be important to distinguish air quality “objectives” which should be longer-term targets to be achieved in the future and “standards” which could be attained now. As the focus was on setting “objectives”, it was understandable that the levels set could not be achieved at the present stage.
- No matter whether “objectives”, “standards” or “guidelines” were set, it did not mean that these levels were safe for our health but they were only the best estimates at which we could and should set. They did not represent clear cut-off points and thresholds.
- The introduction of the Air Pollution Index (API) had increased public awareness of air quality in the past decades. However, if too much emphasis was placed on the practicability of the new AQOs, it could not serve the purpose of enhancing public awareness.
- API did provide some general knowledge in a single figure for people to understand the general condition of the air quality.
- The Government should scrap the API as it was totally meaningless and misleading which could not tell the public what the outdoor health effects would be at any one time. To increase transparency, the level of concentration in terms of absolute values should be used for the public’s information.
- The public was rather confused under the current AQO and API systems as there might be conditions under which air pollution was serious but the API was low or when the air quality improved but the API still maintained high. One of the reasons was due to the 24-hour averaging. For the public’s clear understanding

and education, only one set of figures should be used. The air quality should be compared against the WHO AQGs in terms of various pollutants.

- By adopting a single figure under the API, it would be important that the figure should not be misleading. Review should be conducted to rescale the API so that it could be health relevant in order to truly inform the public about the ambient health effects at any one time.
- Many local studies had already been conducted and no more time should be wasted for waiting another series of local studies in view of the seriousness of the problem.
- A wider scope of pollutants which affected health, such as mercury, should be considered in deciding the components of the new set of AQOs.
- There was not much progress in setting a clear set of building code, especially for public places, for compliance by the industry. The code would be very useful in enhancing green construction and energy conservation by means of improving air ventilation, green building materials and design, etc. While it would be difficult to change the old buildings, the construction of new buildings should follow a set of building code to be established as soon as possible as it would affect the overall air quality in the future.
- It would be important to identify clearly the responsible parties for generating air pollution, implementing the control measures and achieving the AQOs.
- The responsibility for tackling air pollution and improving public health should not only fall under the purview of EPD but also other policy bureaux and departments.
- In the Administration's paper to the ACE, it was striking to find out that the focus was on the problems and difficulties in tackling air pollution and achieving the WHO AQGs. What was absent was an attitude to face and solve the problem. Leadership and creativity were required to address the problem.
- To facilitate and encourage public participation, more information and knowledge about air quality, such as what were PM10 and PM2.5, were required to enable the public to understand the issue for constructive inputs.
- The forum was a good step to kick off the public engagement process and it was hoped that more opportunities would be provided for the public and stakeholders to participate and exchange views throughout the review process in order to enhance transparency and work towards the same goal.
- Public engagement was important to let the public understand the nature of the problem and why it was difficult to set objective standards for air quality.
- In considering public engagement, it would be necessary to segregate the setting of AQOs and planning of control measures to achieve the objectives. The former focused on scientific data which should involve experts for constructive inputs. The latter should involve the public and stakeholders.
- While the Government had put efforts on public education, more could be done to focus on the responsibility of individuals to improve air quality, such as encouraging citizens to report cases of air pollution. Penalties should be imposed

on the polluters.

- For the public engagement and education process to be successful, the right approach with easily understood information would be important. In consulting the public on willingness to pay, more information on the costs involved should be provided.

14. Some Members made the following comments –

- The Hong Kong AQOs should follow the philosophy of the US air quality standards which purely based on health effects of air pollutants.
- The revised AQOs should be practically achievable, reasonable and effective in implementation. In Hong Kong, the set of AQOs was used as an air management tool. It was important to take into account the baseline air quality in Hong Kong when considering the new AQOs.
- The long-term AQOs should be achieved gradually by phases.
- The review of AQOs should be based on scientific, independent and open-minded local research. Scientists in the field should be consulted. The WHO guidelines or overseas standards had to be carefully considered when being applied to Hong Kong.
- Many local studies were available and had been taken into account by the WHO working group. Back in 1998, the local studies were reviewed and summarized in a report by a working group for reference by EPD. No more time should be wasted and the WHO AQGs should be followed.
- The Air Pollution Control Ordinance was based on the philosophy of international best practices. Thus, the availability of technology to achieve the objectives should be considered in setting the new AQOs.
- Not all control measures required the availability of technology, administrative tools, such as control of vehicular population and flow, could be adopted.
- It was necessary to consider whether public interest in the context of air quality management referred to public health only.
- The value judgement of the public should be taken into account. Health might not be the sole consideration of the public in setting the new AQOs. While some might value a long life, some might accord the priority on other values.
- It should be the Government's responsibility to protect the health of the public, especially the under-privileged groups being affected by poor air quality.
- In Hong Kong, the set of prevailing data was air quality "objectives", not "standards".

15. Ms Anissa Wong thanked the participants for the valuable and constructive views. She highlighted that the proposal included two major parts – reviewing of the AQOs, which was set in 1987 by making reference to research

results done mainly in the US, and developing a long-term air quality strategy. While the introduction of the current simple reporting system of air quality had increased public awareness, there was a need for a review in the light of changes over time. The encouraging responses in the forum reflected the community's concern about air quality in Hong Kong and the need for the development of a long-term air quality strategy. The participants had discussed the issue from different perspectives, including environmental, public health, economic development, urban planning, energy and transportation. The public engagement process could also serve as a means for public education. She assured the participants that EPD would work closely with relevant bureaux and departments regarding the views and suggestions. The forum was only the first step of the public engagement process. The study would be commissioned in early 2007 and the duration of 18 months was considered appropriate as considerations from different perspectives had to be examined in depth. The review would take into account the WHO AQGs and international developments on AQO reviews. In developing a long-term air quality strategy, interim targets would also be considered.

Closing Remarks by the Chairman

16. The Chairman thanked the participants for the encouraging responses and valuable comments and suggestions. He highlighted that it was a very good opportunity for participants from different sectors with different backgrounds and different roles to have a fruitful exchange by sharing a common mission in solving a common problem. As pointed out by the participants, the issue of air pollution in Hong Kong was serious and complex. While we did not expect miracles, creativity was required in solving the problem.

17. Taking into account the views and comments, the Chairman concluded the discussion by the following –

- In setting the new objectives, standards or indexes, the study team should consider whether it would be necessary to consider issues of feasibility, practicability, reasonableness and the need for phased implementation.
- To achieve the objectives, an action plan and a monitoring system would be required.
- Managing air quality and tackling air pollution were not only the responsibility of EPD but it involved other policy areas, including transportation, urban planning, energy, regional development, etc.
- Co-operation with neighbouring cities and provinces was of vital importance. While there were limitations, there might be leverages and opportunities for exerting influence.
- In the public engagement process, the approach in consulting the public was important to ensure that the public could understand what was presented in order to have meaningful participation and feedback. The consensus of the community would be the basis for implementing any control measure. On top of willingness to pay, willingness to charge in the context of “polluter-pays principle” which

would involve legislative process was also an important part of the public discussion.

18. The Chairman wished that every organization, every household and every citizen could join hands for a blue sky in Hong Kong.