PRESS RELEASE

[For immediate release]

Fixing roadside pollution: Matching problems with solutions
18-district survey reveals priority areas and solutions

Hong Kong. June 22, 2010 . . . Public policy think tank Civic Exchange today announced the findings of a study on roadside air pollution covering all 18 districts in Hong Kong. The study reveals the key factors that determine roadside pollution levels and identifies that shipping emissions from the port can be an important source of roadside pollutants.

The survey, which was conducted by Professor Chak Chan and his team at the Hong Kong University of Science and Technology, using the Mobile real-time Air-monitoring Platform[1] (MAP), a specially designed van equipped with sophisticated equipment for making air quality measurements as it travels, showed that high roadside pollution levels are not restricted to Central, Mong Kok and Causeway Bay[2], but are found throughout Hong Kong.

Christine Loh, Chief Executive Officer of Civic Exchange noted that the output from the MAP was an invaluable new tool for interpreting, communicating, and countering the threats of roadside air pollution. In particular she noted that some of the control measures proposed by the Government could be assessed against the new data.

"Professor Chan's research lays out the anatomy of roadside pollution in the clearest terms. Now we know the principal contributing factors we can use this very detailed information to identify and fix specific problems. We see immediate application in the siting of low emissions zones, where to create more urban open space, and dealing with reducing shipping emissions at the Kwai Chung area," said Ms Loh.

Professor Chan's team used the MAP to cover a wide variety of streets, roads and highways and recorded substantial variations in roadside air quality within each district. These variations depend upon a combination of factors:

Volume of traffic
The more vehicles there are on the road, the higher the amount of pollution emitted. The Kwun Tong Bypass is a typical busy highway with high pollution levels.

Degree of congestion
The more that traffic stops and starts and the slower it moves (because of traffic lights, tight corners, merging lanes or other blockages) the more pollution is emitted. Nathan Road in Mong Kok is consistently congested.

Degree of ventilation
The more enclosed the road (by "street canyons" between tall and bulky buildings, and flyovers – e.g. Hennessy Road) the greater the concentration of pollution. Conversely where roads run through or alongside open spaces (such as the Kwun Tong Bypass), pollutants disperse more effectively, and concentrations are relatively lower. For example, we have learned that well-ventilated highways often show much lower pollution levels than roads in street canyons carrying many fewer cars," said Professor Chan.

He illustrated this by comparing the levels of traffic and nitrogen dioxide on the very busy but well ventilated Kwun Tong Bypass and Tolo Highway, with those on Hennessy Road and Nathan Road, which are used by many fewer vehicles, but ventilation is much worse, and as a result shows dramatically higher levels of nitrogen dioxide. "We can now show how pollution levels can differ dramatically in different locations, even when they are just about ten metres apart. Based on finding similar patterns across many districts, we can often explain why these variations by the degree of air ventilation.

[1] See Appendix 1
[2] The locations where the Environmental Protection Department monitors roadside pollution

His team also showed that sulphur dioxide (SO_2) emissions[3] from container ships at Kwai Chung Container Port have a measurable influence on roadside pollution levels in surrounding areas.

"By correlating shifting pockets of high SO_2 readings with changes in wind direction, we showed that when the wind blew directly from the port, SO_2 levels went up. As the wind shifted direction, so different stretches of road showed high SO_2 levels," added Professor Chan.

Ms Loh also noted that there were many ways to apply Professor Chan's research. She explained that Civic Exchange had shared Professor Chan's initial findings with Clean Air Network (CAN), which uses different new media tools to share information about air pollution with the public.

Joanne Ooi, Chief Executive Officer of CAN showed how the locations of every school and hospital in Wanchai, Central, Kwai Chung and Yau Tsim Mong District and the pollution tracks created by the MAP could be layered onto the Google Earth satellite image of Hong Kong.

"Plotting the locations of schools against the MAP's roadside pollution data underlines how vulnerable children are, regardless of their socioeconomic status. The same is true of those in hospital, many of whom are elderly. We hope that showing the exposure levels at these sites will help the public, legislators and officials to better appreciate the scale of the threat to public health and create a new urgency to reduce roadside emissions," said Ms Ooi.

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Appendix 1:

The MAP (Mobile real-time Air-monitoring Platform) is a mobile facility that was built, with a generous grant from The Hong Kong Jockey Club Charities Trust, in the Hong Kong University of Science and Technology in 2001 to make air quality measurements as it travels on roads. With the sample inlets for both gas and particles at a height of 3.5 m above ground, the MAP platform is designed to study the street-level air pollution. It has been used in air quality studies in Hong Kong and Macau since 2002 and has gathered more than 30,000 km of data. It has been used in studying the general air quality distribution in Hong Kong and Macau, in tracking plumes from power plants, in measuring longitudinal air quality in tunnels and in examining the dynamics of the gaseous and particulate pollutants in the atmosphere. MAP's mobility and maneuverability in streets and its ability to take measurements whilst on the move make it an ideal tool to map the air quality on busy roads/streets where space is limited, parking is normally not allowed and a power supply is usually not available.

MAP measures the concentration of the criteria gaseous pollutants and particulate matter, including $NO/NO_2/NO_X$, SO_2, CO, O_3, black carbon and others. It also records positional data with GPS (Global Positioning System) location, and meteorological information.

[3] Sulphur dioxide is a highly toxic gas that is especially harmful to children and the elderly. It is not associated with roadside pollution, as road vehicles use ultra-low-sulphur diesel or equivalent fuels.