

## Air Quality Objectives Review Survey

### Loud and Clear: Three-quarters Oppose Government's Air Quality Proposals

The Environment Bureau has commenced a three-month public consultation on the Air Quality Objectives (AQOs) Review. In light of this, Clean Air Network (CAN) and the AQO Review Concern Group commissioned the Hong Kong Public Opinion Research Institute (formerly the Public Opinion Programme of the University of Hong Kong) to conduct a phone survey on the Government's AQO proposal.

Most interviewees (73%) are unsatisfied with the government proposal to relax the "allowable exceedances" from 9 times to 35 times for PM<sub>2.5</sub> daily average level, although they also acknowledge the proposed level is tightened up progressively. More than half (59%) interviewees reject the selective scope of the review on tightening AQOs of PM<sub>2.5</sub> and SO<sub>2</sub> only.

The Concern Group hereby condemns the Government for avoiding true public consultation on the most controversial issue. "The non-negotiable proposal to allow more exceedances of the new PM<sub>2.5</sub> limit not only shows a blatant disregard for people's expectations but also shows a wilful neglect for the well-documented adverse public health impacts of such a move, as raised by academics and air science professionals," said Patrick Fung, the Concern Group Representative.

"The people have made their opinion loud and clear. Given the health risks associated with air pollution, the Government's conservative approach and the half-truths of its public consultation document are absolutely unacceptable," said Fung.

The Concern Group urges the Government to immediately revoke the proposal to relax the number of allowable exceedances and to amend the AQOs in accordance with WHO Air Quality Guidelines, in line with its own guidelines on prioritising public health.

Below we summarise the survey results and offer analysis as to why 35 exceedances is a poor public health choice; why it lacks ambition; why the EU is no "role model" as claimed in the public consultation document; and why comparisons with the EU are misleading.

#### Summary of Contents

- **Background to public consultation**
- **Survey Results**
- **Comment / Analysis**
  - Misguide and Seceive: "35 Exceedances" and Public Health
  - A Failure to Listen
  - Lacking Ambition: *Practicability Over Everything*
  - EU is no "Role Model"
  - Painting the Wrong Picture: "Apples and Oranges" Comparison with EU
  - Conclusion

## Background to Public Consultation

### *Government Proposal*

Pollutants	Averaging Time	Current Concentration limit ( $\mu\text{g}/\text{m}^3$ )	Proposed Concentration limit ( $\mu\text{g}/\text{m}^3$ )
SO <sub>2</sub>	24-hour	125	50
PM <sub>2.5</sub>	24-hour	75	50
	Annual	35	25

Pollutants	Averaging Time	Current No. of allowable exceedance	Proposed No. of allowable exceedance
PM <sub>2.5</sub>	24-hr	9	35

Table 1: The amendments proposed by the Environmental Bureau for the AQO review

Out of the six AQOs that have yet to meet the ultimate targets of the World Health Organisation Air Quality Guidelines (AQGs), the Government's proposal concerns only with SO<sub>2</sub> and PM<sub>2.5</sub>. Three AQOs will be tightened to the next higher interim target level of the WHO, including the 24-hour average limit of SO<sub>2</sub> from 125  $\mu\text{g}/\text{m}^3$  to 50  $\mu\text{g}/\text{m}^3$ , the 24-hour average limit of PM<sub>2.5</sub> from 75  $\mu\text{g}/\text{m}^3$  to 50  $\mu\text{g}/\text{m}^3$  and the annual average limit of PM<sub>2.5</sub> from 35  $\mu\text{g}/\text{m}^3$  to 25  $\mu\text{g}/\text{m}^3$ .

On the other hand, the Government simultaneously proposes to significantly relax the number of allowable exceedances for the 24-hour PM<sub>2.5</sub> levels from nine to 35 times, meaning that once amended, Hong Kong's air quality monitoring stations would collectively be allowed 35 days a year where the highest recorded 24-hour average concentration limit exceeds the AQO limit.

The AQOs for other pollutants including Respirable Suspended Particulates (PM<sub>10</sub>) and ozone will be untouched in the current amendments.

### *Survey Results*

In June 2019, Clean Air Network (CAN) and the AQO Review Concern Group commissioned the Hong Kong Public Opinion Research Institute (formerly the Public Opinion Programme of the University of Hong Kong) to conduct a phone survey, inviting the general public to voice their thoughts concerning the AQO review, targeting Hong Kong Cantonese-speaking residents aged 18 or above with 574 samples and 58% response rate.

Survey Question	Feedback (DK/HS = Don't know / hard to say)			
	Satisfi- ed	Unsat- isfied	Half-half	DK/HS
<b>Question 1</b>				
Are you satisfied with the current air quality in Hong Kong?	23%	52%	24%	1%
<b>Question 2</b>	For	Against	Half-half	DK/HS
The Government intends to amend the AQOs, but decides against tightening them to meet the levels of safety suggested by the World Health Organization. Do you agree with this decision?	27%	54%	5%	15%
<b>Question 3</b>	For	Against	Half-half	DK/HS
The Government intends to amend the AQOs, but out of the seven types of monitored air pollutants, only the limits for PM <sub>2.5</sub> and SO <sub>2</sub> will be tightened. The tightened limits also do not meet the levels of safety suggested by the World Health Organization. Do you agree with this decision?	24%	59%	4%	14%
<b>Question 4</b>	For	Against	Half-half	DK/HS
The Government intends to amend the AQOs. On one hand, the limit for PM <sub>2.5</sub> will be tightened, but on the other hand, the number of allowable exceedances will be relaxed. The proposal allows each monitoring station to record an exceedance of PM <sub>2.5</sub> levels up to 35 times every year, a significant increase from the current nine. Do you agree with this decision?	13%	73%	2%	12%
<b>Question 5</b>	Improve	Deteriorate	No impact	DK/HS
Do you think the Government's proposal will improve, deteriorate or have no impact at all on the air quality in Hong Kong?	17%	46%	27%	10%

Table 2: Results of the survey conducted by the Hong Kong Public Opinion Research Institute

Comment / Analysis

1. *Misguide and Deceive: “35 Exceedances” and Public Health*

Question from the Government Consultation Document			
The review proposes tightening the 24-hr AQO for PM <sub>2.5</sub> to 50 µg/m <sup>3</sup> while increasing the number of allowable exceedances to 35 times. Is this more lenient than the prevailing AQO set at 75 µg/m <sup>3</sup> with 9 allowable exceedances?			
Question 4 of the survey	For	Against	Others
The Government intends to amend the AQOs. On one hand, the limit for PM <sub>2.5</sub> will be tightened, but on the other hand, the number of allowable exceedances will be relaxed. The proposal allows each monitoring station to record an exceedance of PM <sub>2.5</sub> levels up to 35 times every year, a significant increase from the current nine. Do you agree with this decision?	13%	73%	14%

Table 3: Excerpts from the Government consultation document and the survey

The survey by the Hong Kong Public Opinion Research Institute shows a big majority (73%) of interviewees are against the proposal to loosen the number of allowable exceedances for PM<sub>2.5</sub> to 35 times even when its limit will be tightened. Furthermore, out of the interviewees who are against this proposal, three-thirds said they are “extremely against”. The responses show that the public have not mistakenly believed the Government is proposing to loosen air quality control – they understand the limit is to be tightened. What people are particularly against is the proposal for more exceedances to be allowed under the tighter level of daily average of PM<sub>2.5</sub>.

The first guiding principle of the AQO review provided by the Government explicitly states the AQOs are to be set with a view to protect public health. But do the proposals achieve this health protection? Analysis shows the proposals loosen health protection, and are clearly in opposition to the guiding principles of the AQO review.

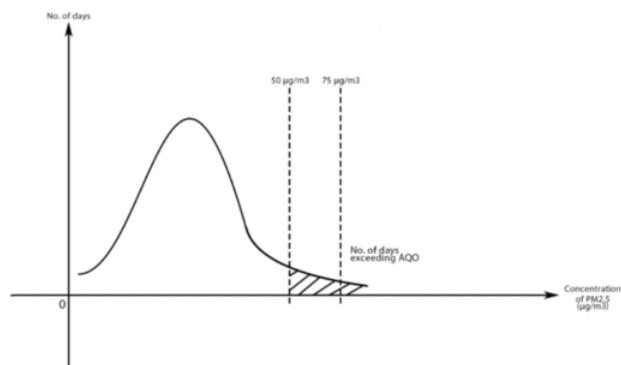
The justification put forward by the Government in support of the amendment is its data suggest the proposed new 24-hour limit is more stringent than the currently prevailing one. Nevertheless, if protecting public health is truly what the proposal aims to achieve, then the true questions the government needs to answer are why the number of allowable exceedances has to be increased, why increase it up to exactly 35 times and most importantly, how will the public health be impacted by this increase. The Government does not address any of these issues, particularly on the health impact assessment.

In fact, what the Government fails to mention is that by relaxing the allowable exceedances to 35 times, public health could be adversely impacted. Local research is able to correlate and quantify such a relationship. Results suggest that without any allowable exceedance, an additional health gain of 24% would be realized under the same level of air pollutant concentration limit, compared with the scenario with 9 allowable exceedances. [1] If the Government insists on having allowable exceedances, there must be overriding reasons other than the protection of public health.

This finding is further supported by Professor Linwei Tian, who is Associate Professor from the School of Public Health of the University of Hong Kong, as well as a member of the Science and Health Subgroup of the AQO Review Working Group. The following graphs seek to illustrate that health benefits brought by the tightening the AQO limit will be compromised if more exceedances are allowed.

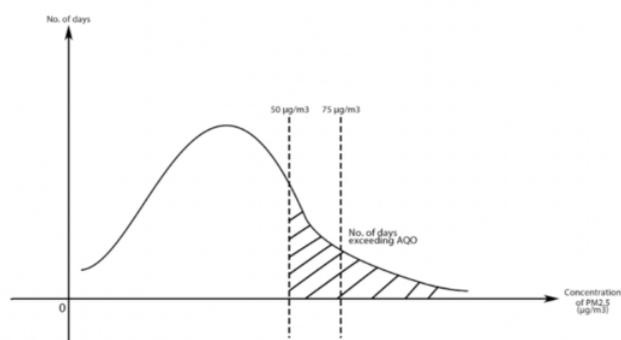
**Scenario 1 - Tightened AQO with 35 allowable exceedances**

PM <sub>2.5</sub> Concentration limit	Number of allowable exceedances	The time period in effect (estimation)
50 µg/m <sup>3</sup>	35	2020 if the bill is passed



**Scenario 2 - Tightened AQO with 9 allowable exceedances**

PM <sub>2.5</sub> Concentration limit	Number of allowable exceedances	The time period in effect (estimation)
50 µg/m <sup>3</sup>	9	2020 if the bill is passed



1 Lai, H. K., Wong, C. M., McGhee, S., & Hedley, A. J. (2011). Assessment of the health impacts and economic burden arising from proposed New Air quality objectives in a high pollution environment. The Open Epidemiology Journal.

The larger shaded area in the first graph signifies that by relaxing the allowable exceedances, throughout a single year, there will be more days where the recorded air quality is worse than the AQO limit, meaning that the public will be exposed to more harmful levels of PM<sub>2.5</sub>. On the other hand, for the second graph, a lower number of allowable exceedances coupled with the tightened PM<sub>2.5</sub> limit causes the whole distribution of pollutant concentration to shift left. The combined effect of such is there would be fewer days where the air quality exceeds the proposed AQO. The minimized number of high pollution episodes lowers the public's overall exposure PM<sub>2.5</sub>, meaning that citizens will be able to enjoy better health.

In an attempt to hide how conservative its proposals are, the Government has cited numbers and statistics to support its amendments, mentioning how premature deaths, clinic visits and hospital admissions will be lowered as a result of its proposals. Yet, these arguments serve little purpose other than misleading the public. The Government has sugar-coated its proposed amendments as something ideal for the benefit of public health and society, providing an appealing assurance to the public that their health will be improved as a result of the proposed amendments. However, had the number of allowable exceedances not been relaxed, the numbers and statistics would certainly be even more appealing. From a public health viewpoint, there is no justification for why we must allow more exceedances.

## ***2. A Failure to Listen***

Relaxing the number of allowable exceedances to 35 times has been the most controversial part of the entire proposal since it was first discussed back in 2018. The results of our survey have successfully captured the public concern. Yet the Government has continued to turn a blind eye and, even within the public consultation papers, no questions are specifically concerned with allowable exceedances. By treating the proposals as a package deal with the collective effect of tightening air quality control, the Government has in effect made it clear that there are only two options: either accept the package deal or maintain the same limit. Depriving the public of further options to reject relaxing the allowable allowances, and forcing citizens to compromise with their health, the Government's proposal clearly does not have the best interests of public health in mind.

We would call on the government to engage in a more participatory approach, where citizens are empowered to make genuine choices rather than being forced to rubber-stamp Government's ready-made decisions.

### 3. *Lacking Ambition: Practicability Over Everything*

Question 2	For	Against	Half-half	DK/HS
The Government intends to amend the AQOs, but decides against tightening them to meet the levels of safety suggested by the World Health Organization. Do you agree with this decision?	27%	54%	5%	15%

Table 4: Excerpted results of the survey

The results of the survey illustrate public pessimism on the effects of the current review, with 54% opposing the Government’s decision against tightening the AQOs to meet the levels of safety suggested by the World Health Organization.

It is clear that people expect the Government to make substantial moves to tighten the AQOs down to the safe levels prescribed by the WHO. On the contrary, the Government is more concerned with portraying itself as taking some action (with its public consultation) rather than enacting actual and ambitious changes.

The Government attempts to justify its proposals by raising studies from the WHO. However, the fact that tightening the AQO by one level could reduce the risk of premature death by about 6% does not provide an answer to the public as to why we should only tighten the limit by a single level. Obviously, public health goes hand in hand with air quality. In fact, according to the same study cited by the Government, further tightening the AQO down to the AQG ultimate target could reduce the risk by 15%. Using the Government’s logic, for the sake of public health, the AQO should be tightened to the AQG ultimate target in order to maximize health benefits.

Regarding the 35 allowable exceedances, on top the lack of public health considerations, the Government’s proposal makes even less when considering the environmental science and policy implications of allowing more exceedances. We see the Government’s desire to continue development, and ensure new projects on our side of the border would not be stalled by environmental considerations, as its primary goal in setting the number of exceedances so high. While there will always be “economic growth vs. environment” trade-offs, we prefer these decisions to be placed in the hands of the people, rather than forced upon us under a guise of concern.

Furthermore, the Government often places the blame on uncontrollable factors such as unfavourable meteorological conditions or regional air pollution. As protested by the Concern Group before, the Government boasts about improving public health, yet, after finding the 2025 air quality model would require 33 exceedances, the Government delivered an underwhelming proposal, setting the maximum number of exceedances at 35 (covering its model’s 33, plus two “buffer days”). This heavily implies that compared with public health protection, the Government is more concerned with the *status quo* of economic growth and development.

By fixing AQO standards to meet the air quality projections, it allows itself to be conservative and practical in policy making and avoids the need to explore implementing ambitious measures. This results in plans such as the complete replacement of petrol-fuelled public transportation into electric powered vehicles, as an idea, unexplored. Instead, the Government simply pushes forward the same policies such as replacing Euro 4 buses to Euro 5.

Such focus on practicability and steady progress forms the primary reason why the air quality of Hong Kong cannot be improved significantly and why the people of Hong Kong continue to face daily health risks from poor air quality.

#### 4. *EU is no “Role Model”*

Question from the Government Consultation Document

Are there any international precedents for allowing 35 exceedances?		The <b>European Union</b> and the United Kingdom allow 35 exceedances for the 24-hr PM <sub>10</sub> standard.	
Country / Region	24-hr average level of PM <sub>10</sub> (µg/m <sup>3</sup> )	No. of allowable exceedances per year	year if fully implemented (µg/m <sup>3</sup> )
<b>European Union</b>	50	35	1331
Australia	50	5	2806
New Zealand	50	1	3133

Table 5: Comparison across different regions on the relationship between allowable exceedances and expose reduction

The Government insists on relaxing the number of allowable exceedances to 35 times because of precedents, it says, in the European Union (EU) and the United Kingdom (UK). However, as illustrated by the table, the EU is far from being the best “precedent” available and it is rather inadequate to view it as a “role model” for Hong Kong to follow.

The takeaway from the above table is that under the same level of concentration limit, the number of allowable exceedances is inversely proportional with exposure reduction, which is the decrease of air pollutants exposed to the people if the AQO is fully implemented. Assuming there are no allowable exceedances, hard-capping the limit of PM<sub>2.5</sub> level at 50 provides the highest potential for emissions reduction, as measures then **have to be implemented** in order to keep the level of PM<sub>2.5</sub> constantly under the limit. This forces more innovation and environmental policy, rather than keeping the *status quo*.

On the other hand, by relaxing the number of allowable exceedances to 35, the Government is essentially providing itself with more leeway in mitigating pollution, damaging Hong Kong’s potential to have cleaner air and depriving the Hong Kong public of the better health within our grasp.

### 5. Painting the Wrong Picture: “Apples and Oranges” Comparison with the EU

Comparing policy against the EU or UK is problematic. Even with the same 35 allowable exceedances, the EU standard is stricter than the Government’s proposals, considering the vast differences in terms of the network of air quality monitoring infrastructure between the EU and Hong Kong. A “like-for-like” comparison is comparing “apples and oranges”: ill-advised and misleading to the public.

	Hong Kong	London
Number of general air monitoring stations	13	46
Number of roadside air monitoring stations	3	53
Set-up	16 meters above ground, commonly situated on rooftops	Roadside, 2 meters above ground

Table 6: Comparison of the air monitoring network between Hong Kong and London

For instance, the allowable exceedances in the UK apply to **roadside air quality monitoring stations**, whereas in Hong Kong, roadside monitoring stations are specifically excluded for the purposes of meeting AQOs. The exclusion of roadside air quality monitoring stations in Hong Kong means the system in place here clearly paints an inaccurate picture to the people that air quality is acceptable if AQOs are met, **while it underestimates the actual quality of air inhaled by people at street level.**

Also, allowing more exceedances, as is done in the EU, serves the purpose of mitigating extreme data measured by the monitoring stations. Compared with the 16 air quality monitoring stations in Hong Kong, there are 100 spread across London, for example. The proximity to traffic and greater numbers suggest that, on the balance of probabilities, the stations in London are more prone to record extreme exceedances. Once this context is provided, the Government’s decision to loosen the allowable exceedances appears to be even more unreasonable.

In addition to the vast differences between the network and set-up of monitoring in these two cities, their disparity regarding the regulation and law also renders the Government’s comparison false.

The UK and EU have provided express directions on the purpose and set-up and air monitoring stations. For instance, the EU Air Quality Directive in 2008<sup>[1]</sup> explicitly states that the monitoring stations should be situated in order to provide an accurate depiction of the highest concentration area in which the people is likely to be exposed to, as well as general areas where the levels measured represent the exposure by the people. It is clear that the EU model places great emphasis on demonstrating how exactly the people are impacted by the quality of air in the vicinity.

---

2 Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe OJL 152, 11.6.2008, p. 1–44.

On the contrary, Hong Kong provides no laws on the placement of air monitoring stations, nor were their purposes stated as to provide the public with information on the exact quality of the air they are currently exposed to.

The EU and the UK have clearly established themselves as ahead of Hong Kong in terms of their regulation on air quality monitoring. The system in place in Hong Kong is so underdeveloped that the Concern Groups believes that comparing Hong Kong to them as a means to justify their weak amendments is fundamentally inappropriate.

## 6. *Conclusion*

Overall, the Concern Group is appalled by the lack of flexibility and investment demonstrated by the Government. An inordinate amount of time has been channelled into a single exhaustive model, which has become the benchmark for all subsequent decisions; and while the model no doubt offers an accurate scenario based on its inputs and assumptions, it is just one set of assumptions, and inflexible to the subsequent will of the people. As our survey shows, the model's conclusion – 35 exceedances for PM2.5 – is rejected by the vast majority of the population. While it is too late for this five-year review, the Government may consider investing more in future AQO Reviews, such that faster computer modelling and a more flexible approach can be adopted.

For this review, official documents provide that the first guiding principle for the AQO review should be to protect public health. By aggressively tightening the AQOs, the Government could have provided itself with an aspirational policy target to work towards, showing its determination to reduce air pollution for the benefit of its people. Instead, after reading one set of 2025 air quality projections from a single consultant's model, the Government backed down and delivered an underwhelming proposal with a minuscule scope of tightening. This heavily implies the Government is more concerned with setting AQOs standards to meet economic and development goals, not public health.

It is apparent that the Government wants to give a false impression it is taking action to fight air pollution, while silently shifting attention away from the fact that such "action" has been massively watered down. At the end of the day, the truly important question remains unanswered by the Government: why allow as many as 35 exceedances in a proposal aiming to tighten air quality control?

As such, the entire consultation is an attempt by the Government to deceive the people into believing that its inflexible proposal is in the best interests of public health, while withholding the truth that its justification lacks a basis in public health. Yet again, our Government demonstrates a complete misunderstanding of what the people of Hong Kong expect.



Press Release

**Attended coalition members:**

Blue Skies China, Clean Air Network, Friends of the Earth (HK), Greenpeace, Green Power, Health in Action, Legislative Councillor Hon. Mr. Hui Chi-fung, Legislative Councillor Hon. Dr. Kwok Ka-ki

**The AQO Review Coalition** was established in July 2018; its members include environmental groups, medical organizations, Legislative Council members and lawyers, forming 16 units in total. The AQO Review Coalition petitions that:

1. The Hong Kong AQO be tightened to WHO standards;
2. The AQO Review be based on the protection of citizens' health, and a more progressive policy framework be established on such basis;
3. The air policy includes more thorough policies on emission control, transport planning which aims to reduce carbon emissions and pollution.

**Coalition member includes:**

350HK

Blue Skies China

Clean Air Network

Friends of the Earth (HK)

Greenpeace

Green Power

Health in Action

Hong Kong Doctors Union

Hong Kong Society of Paediatric Respiriology and Allergy

LegCo Chu Hoi Dick office

LegCo Dennis Kwok office

LegCo Jeremy Tam office

LegCo Kenneth Leung office

LegCo Kwok Ka Ki office

LegCo Tanya Chan office

LegCo Ted Hui Chi Fung office

– End –

Remark : The press release is jointly issued by The AQO Review Coalition formed by 16 groups and LegCo Members' Offices