

Executive Summary Report of the Advisory Committee on Ambient Air Quality

1 The Advisory Committee on Ambient Air Quality was formed in July 2010. It was tasked to advise on a set of air quality targets to adopt for Singapore in view of international air quality benchmarks such as Air Quality Guidelines of the World Health Organisation (WHO) that had been recently revised to safeguard public health.

2 The Committee was chaired by the NEA with representatives from Ministry of Health, Ministry of Trade and Industry, Economic Development Board, Energy Market Authority, Ministry of Manpower; Ministry of Community Development, Youth and Sports, Singapore Environment Council, Singapore Tourism Board, National Health Group, Singapore Health Services, National University of Singapore and Nanyang Technological University. The composition of the Advisory Committee and the Terms of Reference are at **Annex I** and **Annex II** respectively.

3 The Committee completed its work in July 2011 and recommended the adoption of the World Health Organisation Air Quality Guidelines (WHO AQGs) as they are internationally recognised and backed by scientific findings and health studies. The Advisory Committee noted that Singapore could meet the WHO AQGs for some of the pollutants. The Committee also advised that NEA should work towards achieving the WHO AQGs for all air pollutants in the long term. The 2020 targets recommended by the Committee are at **Annex III**.

4 In identifying the air quality targets for Singapore, the Committee was guided by the following:

- i) The air quality targets for Singapore should be benchmarked against international standards that keep abreast with global findings on the impact of air pollution on public health;
- ii) Research and scientific studies have not identified thresholds below which adverse health effects do not occur. The review of our air quality targets should take into account the availability of abatement measures and the cost to industry. The target must be achievable without prohibitive cost to industry and must at the same time adequately safeguard public health; and

- iii) Health benefits such as avoided hospital admissions and negative health impacts due to air pollution should also be considered when establishing air quality targets for Singapore.

5 The Committee also reviewed the various air quality indices adopted around the world to see if Singapore's adoption of the Pollutant Standards Index (PSI) was still relevant. As an internationally harmonised protocol for reporting air quality index was not available, countries adopted different index systems according to their needs and circumstances. Just like the PSI that NEA adopts, most index systems are based on Sulphur Dioxide, PM10, Ozone, Carbon Monoxide and Nitrogen Dioxide.

6 After reviewing the air quality indices in the US, Canada, the EU countries and in Asia, the Advisory Committee recommended retaining the PSI developed by the US Environmental Protection Agency (USEPA) as it was backed by health studies and still relevant to Singapore. The Committee also recommended that besides the PSI, information on daily PM_{2.5} levels should also be made available to the public together with health advisories. The Committee recommended that the 3-hour PSI issued by NEA during times of smoke haze be continued on an hourly basis to give the public the latest information on air quality.

Annex I: Members of the Advisory Committee on Ambient Air Quality

S/N	Name	Organisation
1.	Joseph Hui (Chairman)	National Environmental Agency
2.	Derrick Heng	Ministry of Health
3.	Goh Kee Tai	Ministry of Health
4.	Tan Shee Hian	Ministry of Trade and Industry
5.	Eric Chua	Ministry of Trade and Industry
6.	Liu Feng-Yuan	Ministry of Trade and Industry
7.	Jacqueline Chia	Ministry of Trade and Industry
8.	Chiu Wen Tung	Economic Development Board
9.	Teh Peijing	Economic Development Board
10.	Gan Siok Lin	Ministry of Manpower
11.	Yap Chin Siang	Energy Market Authority
12.	Jane Lim	Energy Market Authority
13.	Eugene Toh	Energy Market Authority
14.	Lim Feng Ling	Energy Market Authority
15.	Rebecca Lim	Singapore Tourism Board
16.	Shee Poon Kwee	Ministry of Community Development, Youth and Sports
17.	Tng Wei Ling	Ministry of Community Development, Youth and Sports
18.	Chee Yam Cheng	National Health Group
19.	Yang Kok Soong	Singapore Health Services
20.	Chia Kee Seng	Yong Loo Lin School Of Medicine, National University of Singapore
21.	Euston Quah	School of Humanities and Social Sciences, Nanyang Technological University
22.	Howard Shaw	Singapore Environment Council

Annex II

Terms of Reference of the Advisory Committee on Ambient Air Quality

- Recommend the air quality targets for Singapore for short term and long term, taking into consideration the need to protect public health and in line with sustainable economic growth
- Review the existing Pollutant Standards Index (PSI) adopted by the National Environment Agency and reporting frequency.
- Recommend the public messaging for the adoption of air quality targets/index.

ANNEX III

Singapore Ambient Air Quality Targets Recommended by the Advisory Committee

Pollutant	Singapore Targets by 2020	Long Term Targets
Sulphur Dioxide (SO₂)	24-hour mean: 50µg/m ³ <i>(WHO Interim Target)</i>	24-hour mean: 20µg/m ³ <i>(WHO Final)</i>
Particulate Matter (PM_{2.5})	Annual mean: 15µg/m ³ 24-hour mean: 37.5µg/m ³ <i>(WHO Interim Target)</i>	Annual mean: 10µg/m ³ 24-hour mean: 25µg/m ³ <i>(WHO Final)</i>
Particulate Matter (PM₁₀)	Annual mean: 20 µg/m ³ 24-hour mean: 50 µg/m ³ <i>(WHO Final)</i>	
Ozone	8-hour mean: 100µg/m ³ <i>(WHO Final)</i>	
Nitrogen Dioxide (NO₂)	Annual mean: 40µg/m ³ 1-hour mean: 200µg/m ³ <i>(WHO Final)</i>	
Carbon Monoxide (CO)	8-hour mean: 10mg/m ³ 1-hour mean: 30mg/m ³ <i>(WHO Final)</i>	