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Air-related Legislative Proposals

PURPOSE

This paper briefs Members on the development of two air-related legislative proposals, including:

(I) amending the Air Pollution Control (Volatile Organic Compounds) Regulation (Cap. 311W) to tighten the volatile organic compound (“VOC”) content limits for regulated architectural paints and to extend the control to seven types of cleaning products; and

(II) making two pieces of subsidiary legislation under the Ozone Layer Protection Ordinance (Cap. 403) to further implement the control of hydrofluorocarbons (“HFCs”).

(I) Proposed Amendment to the Air Pollution Control (Volatile Organic Compounds) Regulation (Cap. 311W) (“the Regulation”)

BACKGROUND

2. The Government is committed to improving air quality. The concentrations of major air pollutants in the atmosphere decreased significantly in recent years. From 2004 to 2025, the annual average concentrations of major air pollutants, including respirable suspended particulates, fine suspended particulates, nitrogen dioxide and sulphur dioxide, in the ambient air have fallen by 45% to 88%, while those at roadside have fallen by 37% to 83%. The annual average concentration of ozone has also gradually turned steady in the past few years, but tackling regional ozone pollution in Hong Kong and the Greater Bay Area is still challenging.

3. VOCs are the key elements of the formation of ozone, while “non-combustion emission sources” (mainly through the use of VOC-containing products such as hairsprays and architectural paints) are the major sources of VOC emissions in Hong Kong. The Government introduced the Regulation in 2007 to control the VOC content of specific products imported into Hong Kong and manufactured locally. These measures have achieved notable results, with VOC emissions from non-combustion sources decreased substantially from approximately 29 090 tonnes in 2006 to approximately 11 080 tonnes in 2023, representing a reduction of around 62%.

PROPOSED AMENDMENTS

4. To further reduce ozone pollution, improve air quality and support the national green development strategy, the Government proposes to amend the Regulation as follows:

- (i) tighten the VOC content limits for 22 types of regulated architectural paints;
- (ii) extend the scope of control to seven types of cleaning products; and
- (iii) introduce an Alternative Compliance Permit system.

5. Upon full implementation of the above proposed amendments, it is estimated that about 790 tonnes of VOC emissions will be reduced per year, accounting for approximately 4% of Hong Kong’s total VOC emissions.

6. The core control proposals on (i) and (ii) remain unchanged since Members were consulted in July 2023 (vide ACE Paper 10/2023). To supplement these measures, an Alternative Compliance Permit system on (iii) has been newly introduced to the legislative proposal to provide flexibility to the trade on the condition that the actual VOC emissions arising from the product are equivalent to or lower than those products compliant with the statutory limits. Details of the complete three-part proposals are outlined below.

(i) Tightening VOC Content Limits for Regulated Architectural Paints

7. At present, the Regulation stipulates VOC content limits for 51 types of architectural paints. After consulting stakeholders including paint suppliers, trade associations, the Hong Kong Institute of Construction and government works departments, we confirm that the limits for 22 types can be tightened (see **Annex 1**). For these 22 types of architectural paints, about 70% of the existing products on the market already comply with the proposed new limits, indicating a sufficient supply of low-VOC products¹. Feedback from the trade also confirms that these products can meet current technical and performance requirements and are already in widespread use.

¹ Of the 22 types of regulated architectural paints, a total of 1 504 different products have been identified, of which 1 032 (approximately 68.6%) comply with the proposed new VOC content limits.

(ii) Extending the Scope of Control to Cleaning Products

8. We propose to extend the scope of control to seven types of cleaning products, including “general purpose cleaners”, “bathroom or tile cleaners”, “kitchen cleaners”, “toilet or urinal care products”, “glass cleaners”, “disinfectants” and “sanitisers”. The proposed VOC content limits for these cleaning products are set out at **Annex 2**.

9. According to the Government’s consultancy study on consumer products, apart from the six major categories of consumer products that are already subject to VOC control under the Regulation (i.e. air fresheners, hairsprays, multi-purpose lubricants, floor wax strippers, insecticides and insect repellents), the VOC emissions of the above-mentioned seven types of cleaning products are the most significant, accounting for nearly 50% of the total consumer product VOC emissions. Therefore, extending the scope of control to these products can further reduce VOC emissions effectively. Market surveys also show that more than 80% of cleaning products on the market already comply with the proposed VOC content limits. The implementation of the proposed control is not expected to significantly affect product supply or prices.

(iii) Introducing Alternative Compliance Permit System

10. While the VOC content of certain new technologies and innovative products may exceed the current statutory limits, with technological advancements, the actual VOC emissions arising from these products may be equal to or even lower than those from products that comply with the current limits, if they are used in conjunction with appropriate pollution control equipment or in specific ways.

11. To ensure that the Regulation keeps pace with the times, we propose to introduce an Alternative Compliance Permit system, under which the import, manufacture and/or use of products for industrial use with VOC content exceeding the statutory limits may be permitted on the condition that there will be no actual increase in VOC emissions. Applicants for the Alternative Compliance Permit must submit detailed product specifications, technical particulars and emission calculations to demonstrate that the actual VOC emissions of the product concerned are equal to or lower than those of conventional compliant products. The Environmental Protection Department (“EPD”) may also impose conditions on the permit.

12. Introducing the Alternative Compliance Permit system provides flexibility to the Regulation, enabling the trade to adopt advanced products and technologies while striking a reasonable balance amongst environmental protection, trade competitiveness and development needs, thereby achieving a win-win outcome.

PUBLIC CONSULTATION AND TRANSITIONAL ARRANGEMENTS

13. On the two proposals to tighten the VOC content limits for regulated architectural paints and to extend the control to cleaning products, the Government conducted public consultation in 2022 to 2023, and consulted the Panel on Environmental Affairs of the seventh term of the Legislative Council in 2023. The revised proposal with the introduction of an Alternative Compliance Permit system was also presented to the Panel on Environmental Affairs of the current term of Legislative Council in May 2026. General support to the proposals was received from various sectors, the trade and the relevant committees.

14. Despite the already sufficient supply of products meeting the proposed limits on the market, and the limited impact of the amendment on operating costs and product prices, after taking into account the need for manufacturers to have sufficient time to reformulate the remaining non-compliant products and that cleaning products are newly brought under control, we propose that the proposals to tighten the VOC content limits for regulated architectural paints and to extend the control to cleaning products to take effect six months after gazettal. The trade has expressed support for this arrangement.

(II) Making of subsidiary legislation under the Ozone Layer Protection Ordinance

BACKGROUND

15. In 2023, the Government developed a proposal to regulate and progressively phase down the consumption of 18 types of high global warming potential (“GWP”) hydrofluorocarbons (“Scheduled HFCs”)² in Hong Kong, with the aim of achieving the target under the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer³ to reduce consumption of Scheduled HFCs by 85% from the baseline level by 2036.

16. To achieve this ambitious phase-down target, we formulated a three-pronged control strategy:

Strategy 1: Implementation of a licensing and quota system for import and export of Scheduled HFCs and prohibition on local manufacture of Scheduled HFCs;

² HFCs are primarily used in refrigerants of air-conditioning and refrigeration equipment and fire suppressants. The GWP of some HFCs can be up to 14 800 times that of carbon dioxide. These high GWP HFCs aggravate global warming significantly, which will cause serious problems such as extreme weather. There has been a consensus in the international world that the use of high GWP HFCs should be prohibited. The Kigali Amendment is based on this international consensus.

³ The Montreal Protocol was extended to Hong Kong in 1988.

Strategy 2: Regulation of the supply of products and equipment (“P&Es”) using high GWP HFCs (making of subsidiary legislation required for implementation); and

Strategy 3: Mandatory recovery of refrigerants and fire suppressants, and formulation of handling guidelines (making of subsidiary legislation required for implementation).

17. We consulted the Advisory Council on the Environment (ACE) on this three-pronged strategy in February 2024 (vide ACE Paper 3/2024) and we received the ACE’s support. Integrating the consensus reached with this Council as well as subsequent feedback from the trade, the Government introduced the Ozone Layer Protection (Amendment) Bill 2024 (“the Bill”)⁴ to the Legislative Council in late 2024. The Bill was passed in April 2025. Following the introduction of the above local legislation, we have fulfilled the relevant international obligations.

18. Strategy 1 came into effect on 1 December 2025 following the passage of the Bill. Through import and export licensing and quota control, Hong Kong fulfils the requirements of the Kigali Amendment and ensures that the production and consumption of Scheduled HFCs follow the phasedown schedule set out in the Kigali Amendment.

19. Strategies 2 and 3 are not requirements under the Kigali Amendment but can help accelerate Hong Kong’s transition to low-GWP alternatives and enhance safety. Having regard to the latest developments after the passage of the Bill, we also propose to fine-tune the two control strategies. Details are set out below:

FINE-TUNING PROPOSAL FOR STRATEGY 2

20. Regulating or prohibiting the supply of P&Es using high GWP HFCs can effectively reduce local HFC consumption at source. We had earlier proposed to prescribe appropriate GWP limits for 10 categories of commonly used P&Es using high GWP HFCs, and to prohibit the manufacture, import and supply of those P&Es exceeding corresponding limits in phases starting from mid-2026. However, to align with “the National Implementation Plan on Fulfilling the Montreal Protocol on Substances that Deplete the Ozone Layer during the 2025-2030 Period” announced in April 2025 (after passage of the Bill), and considering the maturity of low-GWP alternatives in the market, we will adjust the implementation timetable and roll out the measures in two phases to ensure the trade has sufficient time for transition.

⁴ Legislative Council Brief of the Ozone Layer Protection (Amendment) Bill 2024 for the Ozone Layer Protection Ordinance (Cap. 403) (December 2024): https://www.legco.gov.hk/yr2024/english/brief/eebebc915049_20241204-e.pdf

21. Phase 1 will commence in Q4 2027 to regulate three categories of products that have already been highly mature and popular in Hong Kong, whereas Phase 2 will commence in Q1 2029 to regulate the remaining seven categories of products. As low-GWP alternatives for these products are not yet prevalent at this stage, alignment with Chinese Mainland's timetable will help ensure a more stable supply of low-GWP alternatives on the market and reduce the burden on the local trade. Details of the product categories, GWP limits and proposed effective dates are set out at **Annex 3**.

FINE-TUNING PROPOSAL FOR STRATEGY 3

22. We anticipate that the local trade will accelerate the switch to low-GWP refrigerants and fire suppressants following the implementation of Strategies 1 and 2. This will lead to an increase in work involving the handling of refrigerants and fire suppressants. Since certain refrigerants and fire suppressants, if not being handled properly during installation, maintenance and decommissioning, may affect the environment and have occupational safety risks, we propose to promote recovery and recycling, and to formulate handling guidelines. We also propose to require relevant technicians to complete recognised courses before carrying out works involving refrigerants and fire suppressants, and to set out handling guidelines for works involving refrigerants with certain hazards, clearly defining the legal responsibilities of equipment owners and refrigerant/fire suppressant handlers to ensure the works are conducted safely and properly.

23. Regarding mandatory recovery of refrigerants and fire suppressants, we have further reviewed the requirements such as those for owners of the Regulated Equipment⁵ to register their equipment with the EPD, and for refrigerant/fire suppressant handlers to submit annual handling records to the EPD.

24. To reduce the administrative burden on the trade, especially small and medium enterprises, and to ensure a prudent use of public resources, we propose not to stipulate equipment registration and annual reporting requirements at this stage. Instead, registered handlers are required to keep records and submit them to the EPD when requested. The EPD will conduct regular spot checks and offenders will be prosecuted.

25. A comparison of the responsibilities of relevant parties in respect of Regulated Equipment before and after the proposed fine-tuning is set out at **Annex 4**.

⁵ The Regulated Equipment here refers to any air-conditioning and refrigeration equipment with HFCs/Ozone Depleting Substances (ODSs)-containing refrigerants charge over 50 kg, or any fire extinguishing equipment with HFCs/ODSs-containing fire suppressants charge over 30 kg.

PUBLIC CONSULTATION AND ANTICIPATED TRADE REACTION

26. The two control strategies were included in the Government's earlier public and trade consultation on the regulatory proposal for implementing the Kigali Amendment and wide support from the trade has been received. The current fine-tuning aims at facilitating a smoother transition for the trade to low GWP products and help reduce their overall compliance costs. We also presented these adjustments to the Panel on Environmental Affairs of the current term of Legislative Council in May 2026 and secured their support. We expect that the market will support the proposals.

WAY FORWARD

27. Regarding the above air-related legislative proposals, we are currently drafting the relevant proposed legislative amendments and new regulations, with a view to tabling them to the Legislative Council in 2027 for phased implementation starting within the same year.

ADVICE SOUGHT

28. Members are invited to note the above development.

Environment and Ecology Bureau
June 2026

Proposed New VOC Limits of 22 Types out of the current 51 Types of Regulated Architectural Paints

Item	Regulated Architectural Paint	Prevailing VOC Limit (g/L)	Proposed New VOC Limit (g/L)
1	Aluminium roof coatings	250	100
2	Below-ground wood preservatives	250	unchanged
3	Bond breakers	350	unchanged
4	Clear brushing lacquers	650	400
5	Clear wood finishes (lacquers)	550	400
6	Clear wood finishes (sanding sealers)	150	unchanged
7	Clear wood finishes (varnishes)	150	unchanged
8	Concrete-curing compounds	350	100/ 350 (for specific uses)
9	Dry-fog coatings	400	50
10	Extreme high-gloss coatings for metal	420	unchanged
11	Fire-proofing exterior coatings	350	150
12	Fire-retardant coatings (clear)	650	150
13	Fire-retardant coatings (pigmented)	350	150
14	Flat coatings	50	unchanged
15	Floor coatings	250	100
16	Granite look-alike coatings or textured undercoaters	100	unchanged
17	Graphic arts (sign) coatings	500	unchanged
18	High-temperature industrial maintenance coatings	420	unchanged
19	Industrial maintenance coatings	250	unchanged
20	Interior stains	250	unchanged
21	Japans or faux finishing coatings	350	unchanged
22	Low-solids coatings	120	unchanged
23	Magnesite cement coatings	450	unchanged
24	Mastic coatings	300	100
25	Metallic pigmented coatings	500	unchanged
26	Multi-colour coatings	250	unchanged

Item	Regulated Architectural Paint	Prevailing VOC Limit (g/L)	Proposed New VOC Limit (g/L)
27	Non-flat coatings	150	100
28	Other architectural coatings	250	50
29	Pigmented lacquers	275	unchanged
30	Pre-treatment coatings for metal	420	unchanged
31	Pre-treatment wash primers	420	unchanged
32	Primers, sealers and undercoaters	200	100/ 200 (for exterior uses)
33	Quick-dry enamels	250	100
34	Quick-dry primers, sealers and undercoaters	200	100/ 200 (for exterior uses)
35	Recycled coatings	250	150
36	Roof coatings (exposed)	50	unchanged
37	Roof coatings (non-exposed)	250	150
38	Roof primers (bituminous)	350	unchanged
39	Rust preventative coatings	400	350
40	Shellacs (clear)	730	unchanged
41	Shellacs (pigmented)	550	unchanged
42	Specialty primers	350	100
43	Stains	100	unchanged
44	Superior durability solvent-borne coatings for metal	420	unchanged
45	Swimming pool coatings (other)	340	unchanged
46	Swimming pool repair coatings	340	unchanged
47	Traffic coatings	150	100
48	Waterproofing concrete or masonry sealers	400	100/ 400 (for specific uses)
49	Waterproofing sealers	250	100
50	Wood preservatives (other)	350	unchanged
51	Zinc-rich industrial maintenance primers	250	unchanged

Proposed VOC Limits of Seven Types of Cleaning Products

Cleaning Product	Proposed VOC Content Limit (% VOC by weight in a ready-to-use condition*)	
	Aerosol	Non-aerosol
General purpose cleaners	8	0.5
Bathroom or tile cleaners	7	1
Kitchen cleaners	8	4
Toilet or urinal care products	10	3
Glass cleaners	10	3
Disinfectants	70	1
Sanitisers	70	1

* The VOC content in a ready-to-use condition shall be determined by Method 310 using the calculation methods as set out in Schedule 3 – Part 7 of the Regulation.

Details of Product Categories and their GWP Limits and Effective Dates

Category of Regulated HFC Product	GWP Limit	Effective Dates for Prohibition of Import, Manufacture or Supply
1. Household air-conditioner ⁽¹⁾⁽²⁾	750	Q4 2027
2. Household refrigerator or household freezer (or combination of both) ⁽¹⁾	150	
3. Fire extinguishing installation	15	
4. Commercial stand-alone refrigeration equipment ⁽¹⁾⁽³⁾	2 500	Q1 2029
5. Commercial condensing unit refrigeration system		
6. Commercial multipack centralised refrigeration system		
7. Cold storage warehouse system		
8. Air-cooled chiller (for comfort cooling)		
9. Water-cooled chiller (for comfort cooling)		
10. Private car air-conditioner	150	Manufacture Year 2029

- (1) Categories 1, 2 and 4 are widely used in households, offices, retail stores or restaurants. To minimise impacts brought to the trade and the market, we will not set a date for prohibiting the supply of these three categories of products.
- (2) Category 1 refers to single package window type or single split type air-conditioner that has a rated cooling capacity not exceeding 7.5 kilowatts.
- (3) Category 4 refers to a self-contained plug-in refrigeration equipment, which is designed to be installed in premises other than domestic premises. It includes refrigerator, freezer, vending machine, ice machine and display cabinet.

Comparison on Responsibilities relating to (i) Air-conditioning or Refrigeration Equipment with HFCs/ODSs-containing Refrigerants Charge over 50 kg and (ii) Fire Extinguishing Equipment with HFCs/ODSs-containing Fire Suppressants Charge over 30 kg between Proposals Before and After Fine-tuning

Original Proposal	After Fine-tuning
Equipment owners*	
Engage registered <u>refrigerant/fire suppressant</u> handlers to conduct works involving using and handling of refrigerants/fire suppressants on Regulated Equipment	Remains unchanged
Prior registration with EPD on the equipment	Not stipulating the requirement at this stage
Refrigerant/fire suppressant handlers #	
Prior registration with EPD	Remains unchanged
Arrange certified technicians to conduct relevant handling works	Remains unchanged
Provide adequate and properly maintained tools and equipment	Remains unchanged
Establish policies and operating procedures	Remains unchanged
Recycle or dispose of recovered refrigerant/fire suppressant according to the Waste Disposal Ordinance (Cap.354)	Remains unchanged
Submit annual handling records to EPD	Properly maintain handling records and to submit to the EPD upon request

- * Regardless of the quantity of refrigerant charged, owners of air-conditioning or refrigeration equipment using refrigerants with flammability, higher toxicity or high operating pressure must (i) engage registered handlers to conduct relevant works, and (ii) operate the equipment safely and maintain the equipment in a safe condition. The regulatory work of these types of hazardous refrigerant is performed by the Electrical and Mechanical Services Department (“EMSD”). Director of Electrical and Mechanical Services will issue codes of practice on the safe operation and maintenance of the relevant Regulated Equipment.
- # If the refrigerants are with flammability, higher toxicity or high operating pressure, regardless of quantity charged, handlers must also be registered with

EMSD and comply with safety requirements, like proper refrigerant handling and use of associated equipment, avoidance of refrigerant leakage and accumulation, provision of refrigerant detection and personal protection equipment, proper refrigerant storage on-site, etc., that are to be set out in the codes of practice.

With a view to further safeguarding the safety of workers, the Government is actively considering the feasibility of amending the Ozone Layer Protection Ordinance (Cap. 403) to empower EMSD to impose legal liabilities on certified technicians who handle hazardous refrigerants. The Government is currently exploring the proposal with the trade to develop a comprehensive safety management system, and the trade's response has been positive.