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For advice

Mandating the Use of Ultra Low Sulphur Diesel in Industrial and Commercial Processes

PURPOSE

This paper consults Members on the Administration's proposal for mandating the use of ultra low sulphur diesel (ULSD) or cleaner diesel fuel in industrial and commercial processes and allowing the use of other fuels and technologies as an alternative means to reduce emissions.

THE PROPOSAL

2. We propose to amend the Air Pollution Control (Fuel Restriction) Regulations (Chapter 311I) (the Regulations) to –

- (a) subject to sub-paragraph (b) below, provide that no liquid fuel with sulphur content higher than 0.005% by weight and viscosity more than 6 centistokes at 40°C should be used in any relevant plant in any industrial or commercial process in Hong Kong; and
- (b) allow the use of alternative fuels and technologies instead of ULSD in such process if the emission levels of sulphur dioxide (SO₂), nitrogen oxides (NO_x) and respirable suspended particulates (RSP) could be kept within the following limits, which are comparable to or lower than the emission levels below –

Air Pollutant	Emission Limit (kg/kl fuel)
SO ₂	0.864
NO _x	2.4
RSP	0.12

JUSTIFICATIONS

3. To improve Hong Kong's air quality, the Government has been implementing a wide range of measures over the years to lower the concentrations of air pollutants. In particular, we have been giving high priority to control emissions of SO₂, which results from combustion of fuels containing sulphur.

4. Since 1990, we have banned the use of high sulphur heavy fuel oil in industrial and commercial processes. The Regulations stipulate that only industrial diesel with sulphur content less than 0.5% by weight should be used. This measure has brought substantial reduction in concentrations of SO₂ in the vicinity of industrial areas such as Kwai Chung and Kwun Tong. SO₂ emissions from industrial and commercial processes account for 3.71% of the total emissions in Hong Kong in 2005.

Mandating the Use of ULSD

5. To further reduce air pollution, we have been promoting the use of cleaner diesel fuel which has a substantially lower sulphur content of less than 0.005% by weight than the existing industrial diesel. Since 2002, we have been mandating ULSD for vehicle use. The Government has also taken one step further by using ULSD in its marine fleet since 2001 and requiring all public works projects to use ULSD since 2006.

6. In the private sector, we understand some 48 corporations¹ have already been using ULSD in their operations on a voluntary basis. Our proposal to mandate the use of ULSD by all of the industrial and commercial sectors will have immediate benefits on the environment. It will reduce SO₂ emissions from the two sectors by 99%, thereby reducing Hong Kong's total SO₂ emissions by about 3,110 tonnes which is equivalent to about 3.67 % of the total SO₂ emissions in 2005 in Hong Kong. Moreover, the use of ULSD will have the additional benefit of reducing smoke and RSP emissions.

¹ Construction, engineering, catering and hotel are some examples of major industries involved in using ULSD on a voluntary basis.

Allowing the Use of Alternative Fuels and Technologies

7. Apart from ULSD, there are alternative fuels and technologies which could be used to reduce emissions from industrial and commercial processes at the same or even better standards than ULSD. For example, emission reduction devices such as flue gas desulphurisation units and low NO_x burners may be used by large fuel users. Other clean fuels such as biodiesel or Euro V diesel may also be used in certain processes to achieve the purpose.

8. Whether using ULSD or other alternative fuels and technologies to control emissions is more economical would be dependent on individual processes and the decisions of the operators. Nevertheless, in order to provide maximum flexibility to the trade, we propose to allow them to decide on the best options to be used as long as the set of emission limits in paragraph 2(b) above is met. Comparing to industrial diesel, the specified emission limits represent a reduction of SO₂ and RSP emissions by 90% and 50% respectively. NO_x emissions could also be reduced by as much as 17% depending on the size of the boiler used.

9. In the event that the business undertaking decides to achieve the reduction in emission levels by various emission control alternatives, we propose to require the business concerned to employ a competent examiner to test and certify, according to the testing methods to be stipulated, that the emissions could be controlled below the specified limits. This should be done before commission of the relevant industrial or commercial process and every 12 months thereafter. To facilitate enforcement, the business concerned should keep the certification records for at least three years for inspection.

IMPLICATIONS

Financial and Civil Service Implications

10. ULSD for vehicle use is subject to excise duty. If it is used for industrial and commercial purposes², no excise duty will be imposed. To protect government revenue and combat illicit fuel activities, ULSD for industrial and commercial uses is coloured with dye marker (i.e. marked-ULSD (MULSD)) for identification and a MULSD Verification Scheme on End-users (the Scheme) is administered by the Customs and Excise Department (C&ED). Under the Scheme, oil companies are allowed to supply MULSD to only those who have been verified as legitimate users and C&ED officers will conduct regular inspections to ensure their compliance with the law. If our proposal is implemented, C&ED has agreed to use existing resources for enforcing the Scheme even though the number of MULSD users will increase

² Industrial diesel is also not subject to excise duty.

substantially. The Environmental Protection Department will also conduct regular inspection for installations using alternative technologies, collect and test fuel oil samples and investigate complaints received using existing resources. We would review the resource requirements after the Scheme is fully implemented.

Economic Implications

11. At the macro level, the proposed measures will reduce air pollution, improve the image of Hong Kong, and thereby maintain the competitiveness of Hong Kong in the long run. It will also lead to a general improvement in public health, which will bring about economic benefits by raising labour productivity as well as savings in both public and private expenditures on medical and health care.

12. The cost impact of the proposal on the industrial and commercial sectors should not be significant. Information on recent import prices of fuels (**Annex A**) shows that fuel cost would be raised by around 5% (or HK\$0.20 per litre) if ULSD is used in place of industrial diesel in industrial and commercial processes. As fuel expenses account for about 0.1% to 11% of the total operating expenses of the affected industries (**Annex B**), the overall maximum impact of the proposal on business operating expenses should be less than 1%. Moreover, as fuel users could choose to adopt alternative fuels or emission control technologies instead, they will have the flexibility in controlling their operating expenses in light of their own circumstances.

Environmental Implications

13. As noted from paragraph 6 above, the proposal will help cut the local SO₂ emissions by about 3,110 tonnes. It will have the additional benefit of reducing smoke and RSP emissions. For some appliances such as internal combustion engines, a reduction in particulate matters of about 10% could be achieved. The reduction of these emissions will help alleviate the visibility impairment, smog as well as acid rain problems in Hong Kong and its neighbouring region.

CONSULTATION

14. We have undertaken extensive consultation with stakeholders including major chambers of commerce, industrial and trade organizations. There is general support for our determination to improve air quality, although some trades have expressed concerns on the financial impact of this proposal. The proposal will also cover the power generation units and equipment in power plants.

15. We have also consulted and received support to the proposal from the Legislative Council Panel on Environmental Affairs on 17 December 2007.

IMPLEMENTATION PLAN

16. Subject to Members' views, we will prepare the necessary amendments to the Regulations with a view to introducing the amendment regulations to the Legislative Council in early 2008 for implementation around mid-2008.

ADVICE SOUGHT

17. Members' views are sought on the proposal.

Environmental Protection Department
January 2008

**Import Unit Values of ULSD and Light Diesel Oil other than ULSD
(October 2006 to October 2007)**

Month	ULSD (HK\$/litre)	Light diesel oil other than ULSD (HK\$/litre)	Price Difference (HK\$/litre)	% Price Difference
October 2006	3.799	3.561	0.238	6.7
November 2006	3.630	3.456	0.174	5.0
December 2006	3.638	3.466	0.172	5.0
January 2007	3.507	3.303	0.204	6.2
February 2007	3.605	3.466	0.139	4.0
March 2007	3.750	3.587	0.163	4.5
April 2007	4.047	3.951	0.096	2.4
May 2007	4.186	4.043	0.143	3.5
June 2007	4.262	4.049	0.213	5.3
July 2007	4.358	4.146	0.212	5.1
August 2007	4.317	4.162	0.155	3.7
September 2007	4.603	4.247	0.356	8.4
October 2007	4.843	4.65	0.193	4.2
Average			0.189 (< 0.2)	4.9% (<5%)

Source: Census and Statistics Department

Annex B

Percentages of Fuel Expenses in Operating Costs of Selected Industries

Industry	Total operating cost ⁽¹⁾ (\$ million)					Fuel expenses (excluding electricity) (\$ million)					% of fuel expenses in total operating cost				
	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
(a) Manufacturing															
Food, beverages and tobacco	16,970	16,903	14,314	15,429	14,999	186	212	185	185	290	1.1	1.3	1.3	1.2	1.9
Wearing apparel (except knitwear and footwear)	24,947	22,011	21,724	21,781	14,819	12	12	13	133	7	<0.05	0.1	0.1	0.6	<0.05
Textiles	24,139	20,751	19,866	17,954	18,876	276	258	233	478	174	1.1	1.2	1.2	2.7	0.9
<i>Of which:</i> Bleaching and Dyeing, and Textile Finishing, n.e.c.	2,290	2,401	**	**	**	233	204	**	**	**	10.2	8.5	**	**	**
Paper products, printing and publishing	29,383	27,907	26,172	26,312	23,647	91	93	113	348	154	0.3	0.3	0.4	1.3	0.7
Chemical, rubber, plastic and non-metallic mineral products	16,044	12,357	12,735	12,265	13,057	85	65	65	66	74	0.5	0.5	0.5	0.5	0.6

Industry	Total operating cost ⁽¹⁾ (\$ million)					Fuel expenses (excluding electricity) (\$ million)					% of fuel expenses in total operating cost				
	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
Basic metals, fabricated metal products, machinery and equipment	34,198	30,643	27,840	29,138	35,098	131	133	122	138	185	0.4	0.4	0.4	0.5	0.5
Electrical and electronic products	18,518	12,976	9,531	9,321	10,743	32	24	19	22	57	0.2	0.2	0.2	0.2	0.5
Other miscellaneous manufacturing industries	7,621	7,911	7,064	8,014	8,343	14	16	14	32	10	0.2	0.2	0.2	0.4	0.1
All manufacturing industries	171,819	151,459	139,246	140,215	139,583	827	814	764	1,402	951	0.5	0.5	0.5	1.0	0.7
(b) Restaurants and hotels and boarding houses	78,013	70,991	61,292	69,727	74,576	1,906	1,937	2,005	2,023	2,258	2.4	2.7	3.3	2.9	3.0
(c) Construction⁽²⁾	194,308	184,570	163,764	147,921	135,851	1,357	1,346	1,138	937	1,055	0.7	0.7	0.7	0.6	0.8

Notes:

(1) Total operating costs cover compensation of employees, purchases of goods for sale (or purchases of materials, supplies and industrial work/services), and other operating expenses.

(2) For construction sector, the fuel expenses cover all expenditure on fuels, electricity and water.

** Figures are not released so as to safeguard confidentiality of information relating to individual establishments.

Source: Census and Statistics Department