Controlling Ship Emissions in the Pearl River Delta Region

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Motor Vehicle / Vessel Emissions Control Workshop

15 December 2016 | Hong Kong
Scientific research

- Ship emission inventory for Hong Kong
- 2007 as base year
- Activity-based approach
- Use of AIS data
- Ground-breaking research in Hong Kong
- First of its kind in Asia

Industry-led voluntary action

The Fair Winds Charter
2011 - 2012

As international carriers, we recognize the emissions from our ships affect air quality in Hong Kong and the Pearl River Delta region. As responsible businesses, WE VOLUNTARILY COMMIT TO:

• Switching to a fuel containing 0.50% sulphur content or less ("low sulphur fuel") while at berth (at the terminal or at anchorage) in Hong Kong, to the maximum extent possible;
• Undertaking this voluntary initiative between 1 January 2011 and 31 December 2012;
• Collaborating within our sector and with the Hong Kong SAR and Guangdong Governments to introduce regulation on ship emissions, consistent with international standards.

In support of the HKLSA FAIR WINDS CHARTER, WE:

• Urge the Hong Kong SAR Government to take a lead and work with the Guangdong Government to regulate the use of low sulphur fuel in the Pearl River Delta region by 31 December 2012. Urge the Hong Kong SAR Government to encourage broader industry participation by providing incentives, as it has done with other transport modes.
• Encourage the container terminals to support this initiative by offering advantages to participating ships, as well as by addressing emissions from cargo handling equipment, and the trucks and local craft that service the terminals.
• Encourage ocean-going passenger liners and other maritime users of the Port of Hong Kong to use low sulphur fuel while at berth in Hong Kong.
• Encourage cargo producers and buyers to favour participating shipping lines as a way of meeting their sustainable supply chain commitments.
• Welcome the support of end consumers who purchase the goods that the shipping industry carries.
Policy intervention

• Air Pollution Control (Ocean Going Vessels) (Fuel at Berth) Regulation became effective starting from 1 July 2015.

• Hong Kong is the first city in Asia to regulate ship emissions through marine fuel used by ocean going vessels

• The government extended the port facilities and light dues incentive scheme for ocean-going vessels until March 2018

• 12% of total SO$_2$ and 6% of PM$_{10}$ will be reduced
Ship emissions in Hong Kong

The need of a regional approach in PRD

- 3 of the world’s top 10 container ports in the PRD
- Significant impact on local and regional air quality, as well as on human health
- Currently, regional co-ordination far from satisfactory
- Little collaboration in ship emission inventory compilation, fuel standards and regulations, law enforcement, and synchronization in other ship emission control measures / initiatives
- Concerted effort in the regional is the best and only way to go for effective emission control
## Latest PRD ship emission inventory

<table>
<thead>
<tr>
<th></th>
<th>SO$_2$</th>
<th>NO$_x$</th>
<th>CO</th>
<th>PM$_{10}$</th>
<th>PM$_{2.5}$</th>
<th>VOCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRD</td>
<td>60,607</td>
<td>92,051</td>
<td>8,862</td>
<td>6,633</td>
<td>6,132</td>
<td>3,333</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>15,740</td>
<td>35,634</td>
<td>11,668</td>
<td>2,162</td>
<td>1,999</td>
<td>3,363</td>
</tr>
<tr>
<td>Total</td>
<td>76,347</td>
<td>127,685</td>
<td>20,530</td>
<td>8,794</td>
<td>8,130</td>
<td>6,873</td>
</tr>
</tbody>
</table>

Unit: tonne

## Ship emission by city

<table>
<thead>
<tr>
<th>City</th>
<th>SO$_2$</th>
<th>NO$_x$</th>
<th>CO</th>
<th>PM$_{10}$</th>
<th>PM$_{2.5}$</th>
<th>PM$_{2.5}$</th>
<th>VOCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guangzhou</td>
<td>23,425</td>
<td>36,139</td>
<td>3,492</td>
<td>2,573</td>
<td>2,378</td>
<td>1,480</td>
<td></td>
</tr>
<tr>
<td>Shenzhen</td>
<td>21,659</td>
<td>29,254</td>
<td>2,394</td>
<td>2,382</td>
<td>2,193</td>
<td>1,033</td>
<td></td>
</tr>
<tr>
<td>Zhuhai</td>
<td>2,624</td>
<td>4,877</td>
<td>582</td>
<td>277</td>
<td>259</td>
<td>178</td>
<td></td>
</tr>
<tr>
<td>Foshan</td>
<td>3,309</td>
<td>5,502</td>
<td>594</td>
<td>360</td>
<td>335</td>
<td>209</td>
<td></td>
</tr>
<tr>
<td>Jiangmen</td>
<td>1,208</td>
<td>2,393</td>
<td>295</td>
<td>126</td>
<td>118</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Dongguan</td>
<td>3,252</td>
<td>5,202</td>
<td>542</td>
<td>357</td>
<td>331</td>
<td>199</td>
<td></td>
</tr>
<tr>
<td>Zhongshan</td>
<td>981</td>
<td>2,097</td>
<td>273</td>
<td>100</td>
<td>94</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Huizhou</td>
<td>3,757</td>
<td>5,624</td>
<td>555</td>
<td>419</td>
<td>388</td>
<td>214</td>
<td></td>
</tr>
<tr>
<td>Zhaoqing</td>
<td>392</td>
<td>963</td>
<td>137</td>
<td>38</td>
<td>37</td>
<td>32</td>
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### National policy and implications to PRD

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<th>Date</th>
<th>Requirements</th>
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<td>From 1/1/2016</td>
<td>Ports in the DECAs, if condition allows, may implement the requirement for the use of marine fuel with 0.5% m/m Sulphur content or lower when ships are at berth or at anchor</td>
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<tr>
<td>From 1/1/2017</td>
<td>Core ports in the DECAs should implement the requirement for the use of marine fuel with 0.5% m/m Sulphur content or lower when ships are at berth or at anchor</td>
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<tr>
<td>From 1/1/2018</td>
<td>All ports in the DECAs should implement the requirement for the use of marine fuel with 0.5% m/m Sulphur content or lower when ships are at berth or at anchor</td>
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<td>From 1/1/2019</td>
<td>Ships entering the DECAs should use marine fuel with 0.5% m/m Sulphur content or lower</td>
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</table>

- Concrete timeline for PRD to follow
- Co-ordination between Guangdong/Shenzhen and Hong Kong/Macau
YRD’s approach

• YRD has taken a collaborative approach with neighbouring ports
• Mandatory 0.5% sulphur fuel rule in Shanghai, Ningbo-Zhoushan, Suzhou and Nantong since 1 April 2016, ahead of MoT’s implementation schedule
• Better environmental performance, while providing a level playing field for competing ports and businesses
• Shenzhen also made 0.5% sulphur fuel rule mandatory since 1 October 2016
Policy recommendation for PRD (1)

- To push for the mandatory use of 0.1% sulphur fuel in the PRD, instead of 0.5% sulphur fuel according to MoT’s plan, on or before 1st January 2019
- It will bring additional emission reduction and public health benefits to PRD
- PRD will outperform the rest of China based on the DECA implementation plan, in doing so resume its leading position in ship emission control in China
Policy recommendation for PRD (2)

• To synchronise the incentivisation and implementation of other ship emission reduction measures in the PRD
• This should include the use of onshore power, LNG and NO\textsubscript{X} reduction technologies
• These control measures, advanced technologies and financial tools could first be introduced in the core ports in the PRD (Guangzhou, Shenzhen, Hong Kong and Zhuhai), and then further promoted to other ports in the region
Policy recommendation for PRD (3)

- To strengthen regional collaboration and co-ordination in ship emission control strategy and implementation planning by setting up a special regional task force on ship emission prevention and control
- This is the best means to achieve consistent standards and requirements, and to put together an implementation plan with reasonable timetable, within the same, regional port network
Thank you