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Better Air Quality Improves Quality of Life

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- **Reducing sulfur in fuels is essential to lowering vehicular pollution**
- **Fuel and vehicles are parts of an integrated system and must be addressed together.**
- **Cleaner fuels are cost-effective.**

Air pollution persists as a threat to the environment and the health and quality of life of Asia's urban population. The World Health Organization estimates that more than 530,000 premature deaths in Asia are caused annually by urban air pollution.

Clean Fuels and Engine Technology Key to Better Air Quality

Vehicles are almost always a major source of air pollution in Asian cities. Key emissions include carbon monoxide (CO), particulate matter, nitrogen oxide (N_2O), sulfur dioxide (SO_2) and volatile organic compounds including unburned hydrocarbons. Emissions of these pollutants depend a great deal on the quality of the fuels used, the engine technology, and the emission control devices used on vehicles.

Vehicle emissions in many Asian countries are expected to increase over the next few decades, as the vehicle population increases. If no action is taken to clean up fuels and vehicles, urban air quality will continue to decline. A key first step has been the worldwide drive to eliminate lead in gasoline, which has resulted in more than 90% of the world's gasoline becoming lead-free. It is now time to address all fuel issues, including sulfur in fuel, additives, and other fuel components.

A regional road map for cleaner fuels and vehicles in Asia has been drawn with support from an ADB technical assistance for Better Air Quality Management in Asia.

How to Clean Up Fuels in Asia

Cleaner fuels are a critical component of an effective clean air strategy. This is the realization of pollution control experts worldwide over the past 30 years. Fuel quality is not only essential for directly eliminating or reducing pollutants such as lead, but also a precondition for introducing many important pollution control technologies (e.g., the lowering of sulfur content to enable use of diesel particulate filters). Asia must phase out leaded gasoline.

Fuels and vehicles are parts of an integrated system and must be addressed together. Cleaner fuels, coupled with advanced emission control devices, will improve overall air quality and reduce emissions.

Sulfur Levels in Diesel in Asia, EU and USA

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bangladesh							5000										
Cambodia					2000				1500								
Hong Kong, China		500					50					10[a]					
India (nationwide)	5000				2500					500					350		
India (metros)	5000				2500	500				350[a]					50[a]		
Indonesia	5000										3500				350		
Japan [b]	500									50		10					50[a]
Malaysia	5000		3000				500[c]			500[d]							
Pakistan	10000						7000[c]										
Philippines	5000					2000			500								
PRC (nationwide) [e,f]	5000						2000			2000 & 500							
PRC - Beijing	5000						2000		500	350			50				
Singapore	3000		500								50						
South Korea	500							430	100		30	15(10)[f]					
Sri Lanka	10000							5000[d]			500						
Taipei,China	3000			500			350		100				50				
Thailand	2500			500					350		150				50		
Viet Nam	10000											500					
European Union					500					50(10)[f]			10				
United States	500										15						

Notes: a - under consideration/ discussion; uncertain; b = nationwide supply of 50 ppm commenced in 2003 and for 10 ppm in 2005 due to voluntary goals set by the oil industry; c = marketed; d = mandatory; e = voluntary standard of 500 ppm, however formal standard remains 2000 ppm, product in the market nationwide varies 500-1000 ppm; f = various fuel quality available

Source: CAI-Asia. 2009. Current and Proposed Sulfur levels in Diesel in Asia, EU and USA. Available: http://www.cleanairnet.org/caiasia/1412/article-40711.html

State Environment Protection Administration, PR China. 2000. GB 252-2000 «Light Diesel Fuels» national mandatory standard. In Li Shuang. 2007. E-mail to Ms. Aurora Ables re: Fuel and Vehicle Standards in China. 09 Nov.

State Environment Protection Administration, PR China. 2003. GB/T 19147-2003 "Automobile diesel fuels" national recommended standard. In Li Shuang. 2007. E-mail to Ms. Aurora Ables re: Fuel and Vehicle Standards in China. 09 Nov.

«South Korea makes official 30-ppm diesel sulfur limit from Jan. 1, 2006 - Around the World of Diesel - Brief Article». Diesel Fuel News. June 9, 2003. FindArticles.com. 06 Dec. 2007. http://findarticles.com/p/articles/mi_m0CYH/is_10_7/ai_103382170

A program focused on cleaning up fuels and vehicles as a system can succeed. Because most Asian countries have adopted European vehicle (Euro) emission standards, European fuel parameters are an important reference point. Fuel quality and emission standards in Europe represent an integrated approach to reducing air pollution from the transportation sector.

Once lead has been removed, sulfur levels in gasoline and diesel fuels are the primary fuel parameter to be addressed in developing a country's fuel roadmap. High sulfur levels reduce the effectiveness of three-way catalysts for gasoline vehicles and clog particulate filters in diesel vehicles.

The cost associated with producing low sulfur fuels is relatively small compared to changes in the global price of oil, and the public health benefits are certainly worth the investment. The incremental costs of meeting the recommended level of fuel sulfur in Asia average $0.20–0.80 per liter for gasoline and $0.50–0.80 per liter for diesel. Further reductions to 10 parts per million or below would add about $0.60 per liter to the cost of diesel fuel.

For further information
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A Road Map for Cleaner Fuels and Vehicles in Asia: TA 6144 (REG): Better Air Quality Management in Asia
www.cleanairnet.org/caiasia/1412/articles-71194_roadmap.pdf