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A Global Overview and Outlook of Gasoline Quality, Vehicle Emissions and Fuel Efficiency

Stratas Advisors

This excerpt is from a report that is available to subscribers of [Stratas Advisors' Global Fuel Specifications services](#).

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The full report examines key developments in gasoline quality and Stratas Advisors' outlook for future specification changes, and updates a previous report (see Insights, [May 1, 2018](#)). The full report primarily focuses on developments and issues regarding sulfur and octane because of the legislative or regulatory developments occurring globally for them.

Stratas Advisors observes that sulfur reduction and increasing octane continue to be the two most dominant gasoline fuel quality issues being considered by governments and stakeholders globally. Octane is further discussed in three case studies for Bolivia, Egypt and Russia, including increasing ethanol levels to E12 in Bolivia, phasing out the production of RON 80 gasoline in Egypt, and the use of aromatic amines and metallic additives in Russia. In addition, a section on copper corrosion was newly added in this year's report focusing on a case study for Taiwan as a result of the production of non-compliant light gasoline blending component coupled with a discrepancy in the gasoline sampling methods used.

Other properties such as benzene, aromatics and olefins are important in determining gasoline quality as well as influencing the composition of emissions, but there is lesser legislative or regulatory activity for these parameters at this time. It is worthwhile to note that a worldwide benzene reduction to 1 vol% max still ensues in countries which have yet to set the limit primarily in developing regions.

A summary of lead phase-out status in the Appendix of the full report shows Algeria as the last standing country with leaded gasoline still available on their market. Deadlines to phase out lead in Algeria have been revised for a number of times from 2017, and later to 2018, and again to 2020 as the latest deadline, which is not likely to be met. As of 2016, Stratas Advisors learned from Iraqi government officials that Iraq is currently "conditionally unleaded", subject to local gasoline supply and demand conditions.

In analyzing the trends occurring in local, regional and global gasoline fuel quality, Stratas Advisors selected the world's top 10 gasoline markets for comparative analysis. As shown in the table below, the countries, by gasoline market size, are the U.S., China, Japan, Mexico, Russia, Canada, Indonesia, Saudi Arabia, India and Brazil.

Top 10 Gasoline Markets

Rank No.	Country	2016 Gasoline Demand* (thousand b/d)
1	U.S.	8,330
2	China	2,681
3	Japan	893
4	Mexico	820
5	Russia	805
6	Canada	746
7	Indonesia	574
8	Saudi Arabia	569
9	India	567
10	Brazil	539

Notes: Top 10 highlighted in blue in the charts of this report.

*Volumes include ethanol and other blending components such as ethers.

Source: *Stratas Advisors, January 2019*

This report also summarizes recent developments in vehicle emissions and provides a technology outlook for vehicles running on gasoline, i.e., motorcycles, passenger cars and other light-duty vehicles (LDVs). It is now common knowledge that maximum benefits will be achieved when fuel quality requirements are implemented together with stringent vehicle emissions requirements, which would in turn help countries or regions achieve their air quality targets and enable advanced emission control technologies on vehicles. This report shows that governments in some countries have taken this systems approach, particularly when it comes to sulfur reduction, but others either have not or have not been able to do so in a coordinated time line, hampered by such factors as refinery modernization costs.

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