

Auditing and Evaluating Air Quality Management Programs in the World's Megacities

Of the dozens of “megacities” in developing countries, most have extremely unhealthy air. Some cities have started to improve air quality by reducing emissions. A few, like Mexico City, started to earnestly address air quality in the early 1990s. While reports of progress are available, comprehensive and independent assessments are almost nonexistent.

As part of a Blue Ribbon Panel convened by the World Bank, ICF Consulting recently presented the results of a six-month independent audit of Mexico City's 10-year air quality management programs. The Mexico City metropolitan region (MCMA) accounts for 30 percent of Mexico's economic activity and is home to more than 22 million people and 3.5 million vehicles.



Ten years and \$10 billion for Mexico City produced real progress and opportunities for air quality improvement.

The air quality management audit, a new approach for assessing program effectiveness, produced mixed results and provided government agencies with findings and recommendations to improve the next air quality management program (ProAire III) for the MCMA. The audit methods and results may be valuable to other developing country “megacities” that are adopting programs to improve air quality; it may help avoid pitfalls and maximize limited resources.

Findings from the Mexico City audit include:

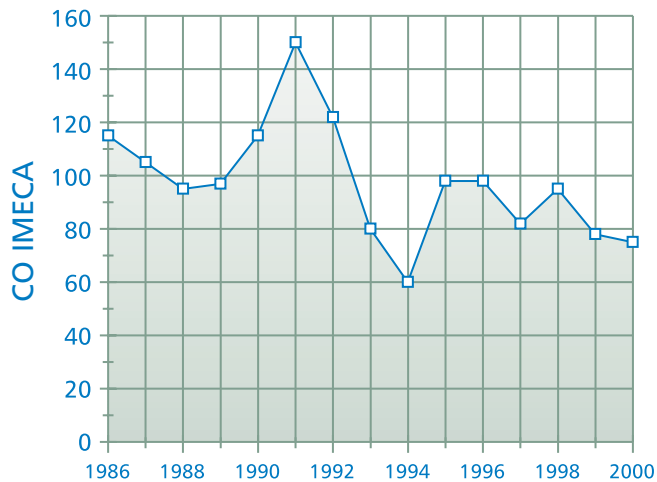
- Pollutant concentrations across the MCMA are lower today than they were seven to eight years ago. However, the audit also showed progress waning since 1995 and that inadequate inter-institutional coordination hampers both efficacy and continued progress.

- Newly installed vapor recovery systems at refueling stations tested on average 90 percent effective, exceeding the design goal. Benzene measurements showed that vapor recovery systems and cleaner fuels have lowered benzene concentrations by approximately 99 percent.
- The network of 32 air monitoring stations across the MCMA is showing the telling signs of reduced resources

and staff. To stretch resources, routine internal audits of the network are conducted by the same people who operate the system. Additionally, standard operating procedures and use of gas standards are often not employed. Performance audits indicated that some stations might be underreporting concentrations of carbon monoxide, sulfur dioxide, and nitrogen oxide.

- Ineffective coordination between institutions is causing debates and reduced public confidence. For example, the MCMA vehicle emission inspections performed at stations in the State of Mexico (SoM) and the Federal District are identical in design, procedures, and equipment. However, the vehicle failure rate reported by the Federal District is almost 75 percent higher than the failure rate reported by the SoM. As a result of fewer cars failing inspections at SoM stations, the number of inspections performed at these stations over the last three years has been steadily rising.
- Many air quality measures demonstrated the absence of clear and measurable objectives and indicators. Without quantitative goals and objectives, program evaluations and audits that measure progress and effectiveness (e.g., level of participation, behavior change, emissions reductions, cost, etc.) are difficult to perform and are filled with uncertainties.

Ambient CO Readings in the MCMA
Average CO IMECA—100 = Standard



Throughout the metropolitan region, lead, carbon monoxide and sulfur dioxide concentrations have declined and are below ambient health standards. For the first time in 10 years, ozone levels did not exceed alert levels.

Source: RAMA (Red Automatica de Monitoreo Atmosferico), 2000.
MCMA: Mexico City Metropolitan Area
IMECA: MCMA air quality index
CO: Carbon monoxide

- The scientific basis necessary for judging the efficacy of controlling emissions among alternative measures is lacking, or developing at a slow pace. Unresolved debates still persist about emissions inventories and air quality modeling methods for developing scientifically sound air quality management plans.
- Proactive urban development strategies that integrate air quality goals are lacking. For the most part, the development of land use, air quality, and transportation strategies and programs are done independently by each responsible agency in the MCMA. Land use and transportation planners do not endeavor to conform their programs to air quality objectives.

The full report is available in both English and Spanish from ICF Consulting.