



Understanding Vehicle Emission Control System Tampering in Alberta

PROJECT BACKGROUNDER

Background & Context

- The transportation sector is one of the largest sources of nitrogen oxides (NO_x) emissions in the province, second only to industrial emissions, and is responsible for approximately 30% of Alberta's total NO_x emissions. Management of NO_x emissions is needed to support achievement of air quality objectives and standards.
- CASA's Roadside Optical Vehicle Emissions Reporter (ROVER) III project used remote sensing to measure vehicle emissions in municipalities and at vehicle inspection stations throughout the province. The data showed that about 30% of Alberta-registered heavy-duty diesel vehicles measured in the study had NO_x emissions that were at least 10 times what is expected based on the emissions control systems they have installed. ROVER III did not include vehicle inspections, but the team assumed that emission control systems were either tampered or malfunctioning in the vehicles with emissions that were 10 times or greater the expected benchmarks.
- An outcome of ROVER III was a recommendation to establish a new project team to gather information on the reliability factory-installed vehicle emission controls and the magnitude of vehicle emission control tampering in Alberta, which became the Understanding Vehicle Emission Control System Tampering in Alberta project.

Project Goal & Scope

- The project's goal was to complete a comprehensive study that:
 - identified the magnitude and sources of vehicle emission control system tampering, including information gathered about manufacturers, sellers, and installers of defeat devices
 - included an assessment of the economic impact of vehicle emission control system tampering
 - improved understanding of the reliability of factory-installed emissions control devices
- The scope of the project included:
 - compilation of data and information from existing sources on vehicle emission control system tampering and its economic impacts, and reliability of factory-installed emission control systems that are applicable to Alberta's environmental, economic, and regulatory contexts
 - collection of new data and information on vehicle emission control system tampering, economic impacts, and reliability via stakeholder engagement
 - advice on future data collection to address gaps that could not be addressed through this project due to time or resource constraints
 - advice to support the Government of Alberta in their identification of actions or programs to reduce vehicle emission control system tampering that take Alberta's context into consideration

- While the project scope included both on- and off-road and heavy-duty and light-duty vehicles, the focus was on-road heavy-duty diesel vehicles as these are larger contributors to air quality than other vehicle types.
- Collection of vehicle emission data or conducting vehicle inspections, and formal regulatory or policy recommendations were outside the scope of the project.

Project Outcomes & Potential Next Steps

- The project team compiled existing information on vehicle emission tampering and reliability in Alberta, and identified the following major areas as information gaps:
 - number and profile of tampered vehicles in Alberta
 - economic impacts of tampering for those who own or operate tampered vehicles
 - emission control system effectiveness and vehicle performance
 - perceptions and beliefs around tampering
- The project team hired Alberta Motor Transport Association (AMTA) to engage with mechanics in the province to help address the information gaps. The results of their engagement are detailed in their report.
- Based on the existing information compiled by the team and the work completed by AMTA, the project team identified several areas that should be considered for any future work on tampering and emission control reliability in Alberta:
 - This study focused on heavy-duty diesel vehicles, but other vehicle types are also tampered and contribute to excess air emissions, and information on them was not collected through this work.
 - The impact of emission controls (either their presence or removal) on vehicle performance, and the performance of emissions controls under different conditions (e.g., extreme temperatures) was not assessed in this work and remains an information gap.
 - Stakeholders engaged through this project were mechanics and shops that provide services to Class 8 vehicles. Vehicle owners and operators may have different experiences and viewpoints on tampering and emissions controls that were not captured through this work.

Funding

- This project was made possible through a financial contribution from Canadian Fuels Association.

Copies of the reports and more information on CASA and the Dust Project Team can be found at <https://www.casahome.org/past-projects/best-practices-guide-dust-management-alberta-61/>

The Clean Air Strategic Alliance is a partnership composed of representatives from industry, government, First Nations, non-government organizations, and Métis Settlements. We provide strategies to assess and improve air quality for Albertans using a collaborative consensus process. Every partner is committed to a comprehensive air quality management system for Alberta.

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