

**NPRI Road Dust Subgroup
Inclusion of Particulate Matter Emissions from Unpaved Road in the NPRI
Reporting of PM Emissions**

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Background

In 2000, Environment Canada (EC) and the Ontario Ministry of Environment (MOE) initiated a Pilot Working Group (PWG) to harmonize the administration and reporting requirements of the National Pollutant Release Inventory (NPRI) and Ontario's Airborne Contaminants Discharge Monitoring and Reporting Regulations (O.Reg 127/01). A Joint Stakeholders Group (JSG) was subsequently formed, composed of some members of the NPRI WG and O.Reg 127/01 Stakeholders Work Group with a mandate to make recommendations on the steps to harmonize the two programs. One of the issues to be addressed was the reporting of particulate matters (PM, PM₁₀, and PM_{2.5}) from road dust resulting from vehicular traffic, within facility roads.

Particulate Matter – Health and Environmental Issues in Brief

Particulate matter (PM) includes many different substances originating from a myriad of different sources. PM₁₀ refers to particles with a diameter ≤ 10 micrometers (μm), while PM_{2.5} refers to a subset of PM₁₀ representing particles with diameters ≤ 2.5 μm . Particles up to 100 μm in diameter are called total suspended particulate or TSP.

PM is directly related to broad issues of environmental concern, such as smog, acid deposition, decreased visibility and climate change. PM has the potential to cause unnatural biochemical interactions, soil effects, the smothering of leaves by blocking stomata, and reduction of visibility in wilderness as well as urban environments. PM may also cause degradation of inorganic materials resulting corrosion, erosion, soiling and discoloration and contribute to degradation in visibility.

PM has been linked to serious health impacts including asthma and premature deaths. Recent scientific evidence indicates that there is no apparent lower threshold for the effects of PM on human health.

Elevated concentrations of PM are found year-round in all regions. As a result, PM₁₀ was declared toxic under CEPA 1999.

Road Dust – Source of PM

Road dust represents one of the sources contributing to the generation and release of PM into the environment. Significant atmospheric dust arises from the mechanical disturbance of granular material exposed to the air. Dust generated from these open sources is termed as "fugitive" because it is not discharged to the atmosphere in a confined flow stream. Unpaved roads are common sources of fugitive dust.

The impact of a fugitive dust source on air pollution depends on the quantity and drift potential of the dust particles injected into the atmosphere. Fugitive dust contains both the large and fine particulate matters. Generally, particles larger than 100 μm settle out

near the source typically within 20-30 feet from the edge of the road or other point emission, while smaller particles (PM₁₀ and PM_{2.5}) are dispersed over much greater distances from the source.

Analysis of Particulate Matter from MOE Road Dust Data

In 2002-4, estimated emissions of PM, PM₁₀ and PM_{2.5} from road dust represented approximately 24%, 15% and 7% of total facility emissions respectively (MOE data)¹. Notably, emissions of PM, PM₁₀ and PM_{2.5} from road dust associated with facilities in urban areas were estimated to be in the order of 60% or more of the total PM emissions.

The majority of reporting facilities that reported PM emissions from road dust is located in urban or near urban areas. As a result, PM emissions from road dust in these areas can be a significant factor in considering the impact on the environment and human health and should be included from total facility PM emissions.

Environment Canada (EC) Proposal (supported by ENGOs)

Currently, facilities meeting the reporting threshold for PM, PM₁₀ and PM_{2.5} are required to report under the NPRI. The reporting thresholds for PM, PM₁₀ and PM_{2.5} are 20,000 kg, 500 kg and 300 kg respectively for both the NPRI and MOE.

EC proposed the inclusion of PM emissions from unpaved road dust in the estimation and reporting of facility PM emissions under the NPRI for the 2007 reporting year citing the following:

- PM₁₀ has been declared toxic under CEPA 1999
- PM is known to impact adversely to the environment and human health;
- Facilities should report all sources of emissions with no exemptions;
- This would allow for a more comprehensive understanding of total PM emissions from facilities; and
- Harmonize between O. Reg. 127/01 and the NPRI: The inclusion of PM emissions from road dust in the total PM emissions of an NPRI reporting facility would be linked with its removal from O. Reg. 127/01, to avoid double reporting.

EC proposed that reporting of PM emissions from unpaved roads be required for facilities that equal or exceed thresholds for PM emissions and exceed 10,000 vehicle kilometers traveled (VKT) on unpaved roads within the facility in a given year. This would be effective for the 2007 reporting year. EC would also provide emission estimation guidance on emissions of PM from unpaved roads.

¹For those facilities that reported PM, PM₁₀ and PM_{2.5} emissions from both road dust and process emissions, PM emissions from road dust accounted for a substantial portion of process emissions. For example, emissions of PM, PM₁₀ and PM_{2.5} from road dust were reported to be 30%, 17% and 7% of the process emissions respectively.

For the reasons cited above, ENGOs supported EC's proposal with the expectation that EC would provide appropriate guidance to facilities for reporting.