

State of Oregon
Department of Environmental Quality

**Industrial Stormwater Advisory Committee
Meeting 3- September 15, 2009**

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Subject: National Research Council Recommendations for Industrial Stormwater Monitoring

This memorandum will provide the advisory committee with suggestions from the National Research Council (NRC) on improvements that should be made to improve the process of industrial stormwater monitoring.

Background:

The EPA sought advice from the NRC regarding affective approaches to regulating stormwater runoff. The committee was largely comprised of distinguished stormwater academics and consultants in addition to those with experience in regulatory agencies. In developing the report, the EPA requested the NRC consider: (1) mechanisms by which stormwater pollutants affect on water quality; (2) usefulness of monitoring in assessing water quality standards violations and adequacy of stormwater pollution prevention plans; (3) stormwater pollution prevention plans affect on water quality; (4) provisions in general permits that will ensure discharges will not cause or contribute to water quality standards violations, and (5) assess the design of the stormwater permitting program.

In October 2008, the NRC released the final report, Urban Stormwater Management in the United States. To a great extent, the report discusses issues involving municipal separate storm sewer systems (MS4s), reduction of stormwater flow as a means of stormwater management, watershed-based permitting, and goal based permitting and monitoring approaches. The report can be found at the following web address:

http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf.

Industrial Stormwater Monitoring Recommendations:

The section of the report on industrial stormwater monitoring includes a critique of data collected via the grab sampling method, suggested risk based prioritization of industrial facilities, and suggested collecting monitoring data that could be used to characterize stormwater in different industrial sectors.

Grab Samples

The report is critical of the current prescribed grab sample monitoring frequency and method. The NRC states that grab sample monitoring produces data of limited use. The data will not provide sufficient data quantity or quality to adequately characterize a facility's stormwater discharge. Due to the inherent variability of stormwater runoff characteristics during a single storm event, a grab sample yields only a snapshot of runoff water quality and does not provide a representative picture of the entire runoff event. Stormwater runoff characterization at the facility and industry sector scales requires a comprehensive monitoring approach to acquire a reasonable degree of accuracy.

To acquire high quality data, the report suggests more frequent monitoring using continuous, flow-weighted sampling methods. Continuous sampling requires collecting multiple samples, or aliquots, over the course of a runoff event. The aliquots can then be combined into a composite sample which will be representative the event mean concentration (EMC) of discharge pollutants resulting from a storm event. The amount and frequency of monitoring required to address goals such as characterization or BMP effectiveness should be dependent on the data variability in combination with the statistical analysis identified to be most appropriate to assess data relative to the monitoring goals.

Risk based monitoring

The report is critical of subjecting facilities to identical monitoring requirements regardless of their different levels of risk for discharging high stormwater pollutant loads. The NRC suggests that the level of monitoring correlate to the potential for a facility's stormwater discharge to pollutate the receiving waterbody. The report referred to three different methods that can be used to quantify a facility's site characteristics and evaluate its risk (see pages 242 and 440-441). The report also provides an example of a risk based monitoring approach (see page 246):

- Low-risk facilities or facilities with no exposure that do not store materials or waste products outside would only be required to conduct visual inspections. These facilities would also take part in periodic, random monitoring of sites within their category to verify that they are low-risk and their stormwater controls are adequate.
- Medium-risk facilities would be subject to site inspections and be required to conduct outfall monitoring to ensure compliance. These facilities would be required to conduct more intensive, stormwater characterization monitoring based on a statistically determined number of monitoring events. The report recommends that appropriate benchmarks be established that allow a small fraction of the monitored events to exceed the goals.
- High-risk facilities would be subject to site inspections and be required to conduct frequent monitoring, such as monitoring each storm event, to ensure compliance. This level of monitoring may be comparable to the NPDES monitoring requirements for wastewater facilities under Individual Permits.

Organized Monitoring Approach

The report suggests a couple of different methods to collect monitoring data with a high level of quality assurance. The MS4s could conduct composite sampling for a group of industrial facilities within certain sectors. The NRC states that utilizing a trained monitoring team through the MS4 would greatly reduce quality assurance issues. Also, the report suggests the creation of monitoring consortiums among industrial sectors. For example, scrap yards in the Los Angeles area created a consortium where members paid fees to a qualified contractor to conduct stormwater monitoring (see page 414).