



## STAFF REPORT ACTION REQUIRED

### Assessment of Air Quality in the Vicinity of ML Ready Mix, 29 Judson Street, Toronto

<b>Date:</b>	August 24, 2015
<b>To:</b>	Etobicoke York Community Council
<b>From:</b>	Medical Officer of Health
<b>Wards:</b>	Ward 6
<b>Reference Number:</b>	

#### SUMMARY

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At the request of the Etobicoke York Community Council (EYCC) and Toronto City Council, Toronto Public Health (TPH), with the assistance of Public Health Ontario, undertook an air quality assessment study in the vicinity of ML Ready Mix, located at 29 Judson Street, in the City of Toronto. The objective of the study was to assess air quality in the vicinity of the facility and determine impacts, if any, from its operation.

ML Ready Mix is a concrete batching facility located in the south-west end of Toronto. The concrete batching operation consists of mixing of raw materials such as cement, sand and gravel that are stored on site and delivery of the concrete product to construction sites. The community concerns that have been raised about the facility mainly pertain to dust and potential air quality impacts. Particulate matter was identified as the primary pollutant of concern related to the batching operations.

The air quality assessment study consisted of air quality monitoring, meteorological data collection, and qualitative observation near ML Ready Mix. Air quality monitoring was conducted for PM<sub>2.5</sub> and PM<sub>10</sub>, both considered to be good indicators of emissions from such operations. PM<sub>2.5</sub> is a term to describe air particles that are 2.5 millionths of a meter in diameter or smaller. Likewise PM<sub>10</sub> describes air particles that are 10 millionths of a meter in diameter or smaller. Air particles of this size are a concern because they can reach deep into the lungs and are associated with adverse health outcomes.

Collected data was combined with site-specific meteorological information such as wind direction, wind speed, temperature and relative humidity. Furthermore, during the monitoring period detailed notes were made by Toronto Public Health staff about conditions and activities that could have resulted in particulate matter emissions that in

turn could have contributed to localized air quality impacts. Amongst others, those include visible dust events, vehicular traffic and rail traffic.

For analysis, the results of the air quality monitoring were compared to the general background levels of particulate matter in Toronto, the concentration of PM<sub>2.5</sub> at the Ministry of the Environment and Climate Change (MOECC) Kipling monitoring station (considered to be representative of the ML site) and the applicable health-based guidelines. The guidelines chosen for comparison were considered to be appropriate for the monitoring duration and to be protective of sensitive receptors, such as children and the elderly.

All air quality monitoring results were below health-based guidelines for both PM<sub>2.5</sub> and PM<sub>10</sub>. The monitoring results were also consistent with the air quality measurements taken at the MOECC Kipling research station. The average 24 hour PM<sub>2.5</sub> concentration near ML Ready Mix was slightly above the MOECC annual mean for Toronto, however, care should be taken when comparing the average 24 hour PM<sub>2.5</sub> concentrations near ML Ready Mix to the MOECC annual mean as the monitoring near the facility was only conducted over a fairly short time period. As there were several limitations associated with the study design, the study could not determine the actual contribution of the facility to the monitored concentrations.

In general, the air quality in the vicinity of ML Ready Mix is similar to that in other parts of the City and it appears to meet the relevant health-based guidelines. As the air quality in the vicinity of ML Ready Mix is acceptable and not appreciably different from other parts of Toronto, no further air quality testing is needed.

## **RECOMMENDATIONS**

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### **The Medical Officer of Health recommends that:**

1. Etobicoke York Community Council receives the *Assessment of Air Quality in the Vicinity of ML Ready Mix, 29 Judson Street, Toronto* report (see Attachment 1).

### **Financial Impact**

There are no financial implications arising from the adoption of this report.

### **DECISION HISTORY**

On November 19, 2013, the EYCC approved a motion requesting the Medical Officer of Health to work with staff from Municipal Licensing and Standards and the MOECC on issues related to 29 and 145 Judson Street, and to report back to the Community Council. <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.EY29.46>

On April 8, 2014, the EYCC received a report from the Medical Officer of Health titled *Investigation of Impacts Related to ML Ready Mix*. The EYCC deferred the consideration of the report to its meeting on May 13, 2014. <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.EY32.40>

On May 13, 2014, the EYCC requested the Medical Officer of Health to retain an outside Air Quality Expert to commence air quality monitoring at sensitive receptors (residential properties) within 50 metres of the ML Ready Mix operation at 29 Judson Street <http://app.toronto.ca/tmmis/viewAgendaItemDetails.do?function=getMinutesItemPreview&agendaItemId=49941>

The Toronto City Council adopted the EYCC recommendation on June 10, 2014 <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.EY33.14>

## **ISSUE BACKGROUND**

Starting in 2012, TPH began receiving health related complaints about the ML Ready Mix facility related to dust and air quality. Additional concerns received by other city divisions pertained to noise, vehicular traffic, planning and construction, and esthetics. Various city divisions such as Municipal Licensing and Standards, Transportation Services, Toronto Building and City Planning responded to the community concerns and several community meetings were organized to discuss the issues.

ML Ready Mix is a concrete batching facility located at 29 Judson Street in Toronto, it has been operating at this location since the late 2000's. Raw materials, such as cement, cement supplement, sand and stone are delivered to the facility and stored in either elevated silos or aggregate storage piles. Measured amounts of cement, cement supplement, sand, gravel and water are fed into delivery trucks and concrete is mixed on route to the delivery site. Ready mixed concrete typically consists of coarse and fine aggregates, cement and water. Often, admixtures are added to improve the properties of the concrete.

Particulate matter is the primary pollutant of concern associated with concrete batching facilities. The majority of the emissions from such operations are fugitive in nature and are usually associated with the transfer of the aggregate materials, truck loading, mixer loading, vehicular traffic and wind erosion from the storage piles.

In Ontario, concrete batching operations, including ML Ready Mix, are regulated by the MOECC through the Environmental Compliance Approval (ECA) process. Existing Ready Mix facilities are required to obtain the ECA from the Ministry and demonstrate they meet all the relevant provincial regulations and guidelines. The ECA certificates regulate air quality, dust, and noise impacts through requirements such as acoustic audits, best management practices for fugitive dust and community complaint response plans.

**Figure1: Location of ML Ready Mix**



## **COMMENTS**

TPH requested the assistance of Public Health Ontario to conduct an air quality assessment in the vicinity of ML Ready Mix in order determine impacts, if any, from the facility's operation.

### **Assessment Methodology**

The air quality assessment methodology consisted of air quality monitoring, meteorological data collection and qualitative observation near ML Ready Mix.

Air quality monitoring was conducted for  $PM_{2.5}$  and  $PM_{10}$ , both considered to be good indicators of emissions from cement batching operations. Continuous sampling of  $PM_{2.5}$  and  $PM_{10}$  was conducted using a TSI DustTrak DRX Aerosol monitor during the time period of July 10-15, July 20-23 and July 25-28, 2014. Data was collected in two-minute increments and averaged over 24 hours in order to compare the results to the applicable standards and health guidelines. Furthermore, data were combined with site-specific meteorological information such as wind direction, wind speed, temperature and relative humidity.

During the monitoring period, detailed notes were made by TPH staff about conditions and activities that may result in particulate matter emissions and contribute to localized air quality impacts. These observations pertained to activities such as vehicular and rail traffic, as well as visible dust events.

## Findings

In general, the two-minute concentrations of particulate matter in the vicinity of 29 Judson Street varied over the sampling period. The two-minute PM<sub>2.5</sub> concentration ranged between 1.3 ug/m<sup>3</sup> and 131.7 ug/m<sup>3</sup>. The average PM<sub>2.5</sub> 24-hour concentration during the monitoring period was 8.0 ug/m<sup>3</sup>. The two minute PM<sub>10</sub> concentrations ranged from 1.3 ug/m<sup>3</sup> on July 10, 2014, to 359.8 ug/m<sup>3</sup>. The average PM<sub>10</sub> concentration during the monitoring period was 9.5 ug/m<sup>3</sup>.

Observations made by TPH staff during the air monitoring period reveal frequent rail traffic on all days measurements were being taken. In addition to the rail traffic, Judson Street is a busy east-west vehicular road that runs from Horner Avenue in the west to Royal York Road in the east. Staff observations indicate that traffic volumes are generally consistent with rush hour patterns. Specifically, more vehicles were observed during peak morning, noon and afternoon hours. With some exceptions, visible dust was observed everyday at different periods. These dust events usually coincided with the movement of trucks at or near the entrance of the facility.

## Interpretation of Findings

For analysis, the results of the air quality monitoring were compared to the general background levels of particulate matter in Toronto, the concentration of PM<sub>2.5</sub> at the MOECC Kipling monitoring station and the applicable health-based guidelines.

The guidelines chosen for comparison are considered to be appropriate for the monitoring duration and to be protective of sensitive receptors, such as children and the elderly. All air quality monitoring results were below health-based guidelines for both PM<sub>2.5</sub> and PM<sub>10</sub>.

Table: Comparison of Monitored Particulate Matter Data to Guidelines

PM Fraction	Average Monitored 24-hour Concentration (ug/m3)	Highest Monitored 24-hour Concentration (ug/m3)	MOE AAQC	CAAQS (24-hour)	WHO AQG
PM <sub>2.5</sub>	8.0	14.0	30	28 (2015) 27 (2020)	25
PM <sub>10</sub>	9.5	14.4	50	N/A	50

MOECC AAQC – MOECC Ambient Air Quality Criteria

CAAQS – Canadian Ambient Air Quality Standards

WHO AQG – World Health Organization Ambient Quality Guideline

The monitoring results were also consistent with the air quality measurements taken at the MOECC Kipling research station which is considered to be representative of the ML site. During the monitoring period, the average concentration of PM<sub>2.5</sub> near ML Ready Mix was 8.0 ug/m<sup>3</sup>, similar to that at the Kipling Research Station of 8.2 ug/m<sup>3</sup>.

The average 24 hour PM<sub>2.5</sub> concentration of 8.0 ug/m<sup>3</sup> was slightly above the MOECC annual mean for Toronto of 6.8 ug/m<sup>3</sup>. However, the concentration was well below the

average 24 hour maximum concentration at the four MOECC monitoring stations of 23.5 ug/m<sup>3</sup> and the average 90% percentile of 14.8 ug/m<sup>3</sup>. Care should be taken when comparing the average 24 hour PM<sub>2.5</sub> concentrations near ML Ready Mix to the MOECC annual mean as the monitoring near the facility was only conducted over a fairly short time period.

### **Limitations**

There were a number of other potential sources of particulate matter at the sampling site making it impossible to determine what contribution can be attributed to ML Ready Mix alone. These other sources include vehicular traffic, roadway dust, residential heating sources and transboundary pollution, amongst others.

There are also some uncertainties associated with the data being collected over a relatively short period of time as these data may not be representative of the actual air quality in the area averaged over the year given seasonal variation. Another source of uncertainty is the equipment itself. Equipment calibration challenges and other factors such as humidity can have a significant impact on the data that was recorded, either underestimating or overestimating the actual ambient concentrations. Typically, the DustTrak aerosol monitors are used for screening type air quality assessments.

### **CONCLUSIONS**

In general, the air quality in the vicinity of ML Ready Mix is similar to that in other parts of the City and the levels of particulate matter appear to meet the relevant health-based guidelines. All air quality monitoring results were below the health-based guidelines for both PM<sub>2.5</sub> and PM<sub>10</sub>. The monitoring results were also consistent with the air quality measurements taken at the MOECC Kipling research station located nearby.

There were several limitations associated with the study design, such as equipment and calibration. Furthermore, there were a number of different potential sources of particulate matter at the sampling site that included vehicular traffic, roadway dust, residential heating sources and transboundary pollution, amongst others. This study was therefore, not able to determine what contribution to air pollution can be attributed to ML Ready Mix alone.

Despite these limitations, the study was able to establish that the air quality in the vicinity of ML Ready Mix is acceptable and not appreciably different from other parts of Toronto. Based on these results no further air quality testing is needed.

## **CONTACT**

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## **SIGNATURE**

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Dr. David McKeown  
Medical Officer of Health

## **ATTACHMENTS**

1. Toronto Public Health - *Assessment of Air Quality Near ML Ready Mix, 29 Judson Street, Toronto*. Toronto: June 2015.  
<http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=1b5ade4c338fd410VgnVCM10000071d60f89RCRD>