

8.0 CONCLUSIONS AND RECOMMENDATIONS

Dispersion modelling of past, present and future emissions from the ABTP on the communities of South Riverdale and the Beaches was carried out with the aid of the US EPA CALPUFF modelling system. The modelled results are a function of the amount of emissions released, characterization of sources, as well as transport and dispersion of the emissions. The following findings were determined.

1. Changes to the processes at the ABTP have changed the emission profile of the facility; this is most noticeable once incineration is stopped.
2. The addition of the Pelletizer Building has changed the dispersion pattern around the ABTP, which has increased the impacted area around the plant.
3. The impact of the ABTP on the air quality of the adjacent neighbourhoods (South Riverdale and Beaches) is reduced once incineration is terminated and odour controls are in place (Scenario 4).
4. After 2002, when the incinerators are no longer in operation, the model shows that some of the chemicals that are associated with incineration, which include arsenic, cadmium, lead, PCBs and dioxins, no longer impact the air quality in the South Riverdale and Beaches community. In contrast, the levels of a few other chemicals (e.g. benzene, hydrogen sulphide) are expected to increase in the two communities once incineration ends and before odour controls are in place (Scenario 3), though the difference is not large.
5. Predicted Chemicals of Concern concentrations were compared with Ontario Ambient Air Quality Criteria, Point of Impingement (POI) standards, Health Benchmarks as well as ambient measurements of COCs within the City of Toronto. Of the 17 COCs, all chemicals (15) that were detected during monitoring met their appropriate AAQC/POI for all time-averaging periods and scenarios.
6. In both communities, most of the Chemicals of Concern that were detected during monitoring met their 24-hour Health Benchmarks in all scenarios with the exception of cadmium and hydrogen sulphide. Cadmium was above the Health Benchmark only when the incinerator was in operation (Scenarios 1 and 2). Hydrogen sulphide exceeded the lower Health Benchmark in Scenario 1, 2, or 3, but not the higher benchmark.
7. For Scenario 1 (Pre-1996) and 2 (2000-2002) in both communities, the predicted maximum 24-hour air concentrations of the COCs that were detected in the ABTP are below the measured air levels across Toronto. The ABTP typically represents a small portion of total pollutants in the air and the total concentrations (Toronto ambient air plus ABTP emissions) are below their respective Ambient Air Quality Criteria (AAQC)
8. Benzo[a]pyrene was used as a representative for all polycyclic aromatic hydrocarbons (PAHs) compounds. These chemicals were never detected in the monitoring at the ABTP. The modelling estimated that B[a]P could be above the 24-hour Health Benchmark for all scenarios in both communities. In addition, B[a]P was estimated to exceed the AAQC/POI except for the 24-hour and annual averages in Scenario 4 (Future). For Scenarios 1 (Pre-1996) and 2 (2000-2002), the estimated

maximum concentrations of B[a]P and PAHs were above the maximum air quality observations across Toronto.

9. Given the very conservative assumptions used, B[a]P and PAH emissions from ABTP were substantially over-estimated. This suggests that B[a]P and PAH are not likely to impact the communities to the extent predicted by the modelling. Future (Scenario 4) concentrations of B[a]P are lower, therefore, the expected cumulative impact in the two communities will be less once all the odour controls are in place.
10. The modelling shows that emissions released from elevated stacks tend to generate higher concentrations to the northeast of the ABTP due to the stronger winds from the southwest. These emissions therefore impact areas of the Beaches more than South Riverdale. In contrast, since lighter winds are from the southeast, emissions from the low elevation sources (e.g. open tanks) tend to have greater impact on areas of South Riverdale to the northwest of the ABTP.
11. There is little difference between the maximum predicted concentrations due to the ABTP on South Riverdale and the Beaches. Small differences in concentrations are likely due to the meteorological pattern around the facility. Although the ABTP is a large source of emissions, its contribution is relatively small when compared to the Ontario AAQC, Health Benchmarks and City wide air quality measurements.

The following recommendations are proposed to improve the modelling results.

1. The ABTP continue to monitor effluent into and released from the plant to gain a better understanding of potential emissions from the plant.
2. Testing for PAHs in air emissions at large release points (e.g. stacks) should be carried out to confirm that these emissions are indeed insignificant.
3. The emission inventory should be periodically updated to reflect new information on on-site new and existing equipment or changes to the wastewater.
4. The potential emissions from the Final Clarifiers should be tested using an appropriate and approved method to determine the flux of sulphur bearing substances.
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