May 21, 2020

Client Services and Permissions Branch

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135 St Clair Ave West  
1st Floor  
Toronto, ON  
M4V 1P5  
Canada

**Re: The Amended Environmental Compliance Approval (multimedia) for 2683517 Ontario (Optimum) for a waste disposal and transfer site, an open permit storage area, and biogas production in our area. ERO number 019 1446 Ministry reference number 2032-BKDP63**

**General comments**

I have worked on environmental issues for 35 years, and was involved in two detailed Environmental Assessments (EAs) carried out in our community, the first regarding odours from the Highland Creek Wastewater Treatment plant, and the second deciding the best alternative for dealing with biosolids.

I appreciate the opportunity to comment, and that the proponent has released all supporting documents for public viewing, except Appendix D of the ESDM file. There are serious questions and comments that I and the community have about this proposed major heavy industrial facility.

This submission is to state that a plant of this type and scope should be located away from a populated area. Other biogas plants in and out of Toronto that deal with much less source material have been sited near the 401 for truck access; and not at the edge of residential communities, and 5-6 kilometers from the 401. The proposed site is also in an environmentally sensitive area - close to a marsh, the lake and the Horgan water filtration plant, sources of Scarborough's drinking water.

Residents have valid concerns about the many ways this plant, plus waste haulage through our streets and roads; will change the livability and desirability of our community. The impact of 24/7 noise, light, odours, and air emissions will affect both the physical and mental health of residents in the area. Foremost is the very real potential for health effects for residents- especially those who are children, the elderly, and those with health conditions. This proposal needs close attention, and a health risk assessment before any decision on approval can be made. For example, the proponent's studies indicate that significant air emissions will be released from their operations; however there is no attempt to relate these emissions to the already critically high emissions present in the Coronation industrial area, as are highlighted in the recent ChemTRAC Study[[1]](#footnote-2), and shown on the study’s interactive maps.

The Amended Compliance Agreement (AEC) did not address the health and well-being of the community. That major issue was dismissed in one sentence in the supporting documents

Prior to any approval, Toronto Public Health should be asked to study the impact of the proposed plant air emissions on the health of the residents living in the areas surrounding the plant. In addition, ccompared to the previous agreement, the AEC has doubled the tonnage of source material the proponent may import each day to 2,500 tons. These factors warrant denying the Approval, and finding a safer location for this plant. The community deserves a longer comment period and a public information meeting when the COVID 95 restrictions are over.

**Specific comments**

**Noise**

Responding to a MECP questionnaire, the company claims that “*The plant is built in a heavy industrial area with multiple manufacturing and chemical plants nearby*.” However none of the plants on Coronation are operating night and day, or causing noise or odours. The community is made up single homes primarily, in quiet residential neighborhoods, with many homes very close to the proposed waste depot and transfer station. We understand this limited EH space is zoned for heavy industry, however the proposed facility will be much more disruptive than most manufacturing plants, and its operation extends beyond the EH zone and into the community via the large number of trucks using our streets. I am not aware of noise or noxious odors from the chemical companies or the Highland Creek sewage plant. In another document, the statement is made that local residents will not be affected because they are used to living in an area with heavy manufacturing, and trucks. This is not the case, as the Coronation /Beechgrove area is generally quiet, and we enjoy walking on the trails in the area.

The company notes 10 possible sources of noise from the plant, the most significant being “trucks idling or loading and unloading”. There are a few occasions when sleep can be interrupted by the continuous safety beeping of trucks backing up, and when work starts at 7AM . However this plant will be operating day and night and trucks will be backing into the buildings night and day. This noise will be ongoing and will interfere with residents’ sleep.

**Emissions to Local and Regional Ailr**

Seven emission sources are associated with the project. These emissions include a number of “criteria chemicals” regulated by the USEPA, and also considered “chemicals of concern (COCs). Nitrogen oxides (NOx), and sulphur dioxide (SO2), were added to the Canada’s list of toxic substances in 2002. The Canadian Environmental Protection Act Priority Substances List identifies SO2 as “*one of the principal precursors to PM10 which istoxic and constitutes a danger in Canada to human life or health*.”

It is surprising that particulate matter (PM) is not considered a health hazard in the supporting documents from the proponent. Other emissions include carbon dioxide (CO2). The information that CO2 emissions will exceed the Ministry’s limit by 300 % is also of concern for air quality in the region, and human health. Also methane, a GHG 25% more potent than CO2 ,will be released.

The AEC notes that five of the six emissions have health risks; however there is also scientific literature on the health effects of particulates, especially the fine P2.5 type that collects deep in lungs. Chronic exposure to elevated levels to all six of these air pollutants can lead to adverse health outcomes, including respiratory symptoms, cardiovascular disease, and cancer.

**Total Reduced Sulphur (TRS) /Hydrogen Sulfide (H2S)**

TRS and H2S are sometimes used interchangeably as referring to the same substances. Hydrogen sulfide is extremely poisonous to humans and animals. The Ontario Ministry’s limit of 13 ug/ m3 is based on odour, not hazard, and on a ten-minute exposure only.The current California Ambient Air Quality Standard for hydrogen sulfide is 42 μg/m3 (30 ppb), averaged over one hour. – At this concentration the odour would be detectable by 83 per cent of the population and would be discomforting to 40 per cent of the population.The WHO recommended Air Quality Guideline is 150 µg/m3 (110 ppb) 24 hr average[[2]](#footnote-3), and in 1981 recommended that ambient H2S levels not exceed 5 ppb during a 30-min period ([WHO, 1981](https://www.nature.com/articles/7500313#ref-CR30)) . Ontario’s Air quality concentration limit is 7 ug/m3 for 24 hours, based on health [[3]](#footnote-4).

The ESDM Emission summary and Dispersion Report (page8) indicates: *The anaerobic digestion process generates hydrogen sulphide (H2S) which will be less that 500 ppm during regular operation of the digester.* Question: Will each digester generate close to 500 ppm H2S at peak levels? Exposure and

The 2019 meeting in South Africa on hydrogen sulfide ( H2S) noted that almost any exposure has some negative effect.  The atmospheric residence time of H2S is typically less than 1 day in summer, but may be as high as 42 days in winter (resulting in prolonged [and increasing levels] of exposure. Background H2S air concentrations typically range between 0.11 ppb and 0.33 ppb, although concentrations in urban areas can be as high as 1 ppb. Re Chronic Exposures at < 1 ppm, for at least days, effects of low-level or long-term exposure to ambient levels of hydrogen sulfide (< 1 ppm) in air are more difficult to estimate. At such levels and duration, expected symptoms of exposure could include visual complications, olfactory fatigue, nausea, respiratory irritation, and possible headaches due to the sensitivity of those systems to H2 S exposure. Hydrogen sulfide doses over more prolonged durations result in more serious symptoms.

AT the South Africa conference the following health effects of hydrogen sulfide were noted: *Strong CNS stimulation 530- 1000 ppm: hyperpnoea followed by respiratory arrest 520-330 ppm: Pulmonary oedema with risk of death 320-230 ppm: Loss of olfactory sense 100-200ppm: Serious eye damage 50-100 ppm:  Eye irritation 10-20 ppm: Odour nuisance 0.0005- 0.3 ppm:     (WHO office for Europe, Copenhagen  Denmark 2000*)

The cumulative health effects of these COCs in ambient air 24/7/365, as this proposed plant will emit, is rarely considered in risk assessments. However, this fact should be carefully considered re this site, and for the safety of local and regional air to surrounding communities and populations.

**Particulates** (PM)

These are identified in the Environmental Compliance Agreement and the company’s supporting documents as having an effect on visibility, but not a health effect. However the US Environmental Protection Agency (EPA) website states: *Exposure to such particles can affect both your lungs and your heart. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including: premature death in people with heart or lung disease. Non fatal heart attacks, irregular heartbeat, aggravated*[*asthma*](https://www.epa.gov/asthma)*, decreased lung function, increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing. People with heart or lung diseases, children, and older adults are the most likely to be affected by particle pollution exposure.*

Seven companies in the area of Coronation Drive report emissions of PM [[4]](#footnote-5). The Highland Creek Treatment Plant (HCTP) EA, Human Health Risk Assessment Report (HHRA 2015) found that two chemicals - particulates and hexavalent chromium, exceeded the reference benchmarks for 24 hour exposure in the area (p.82). The excessive exposure to particulates from current ambient air, plus the additional 21% of the ministry limit contribution expected from this plant must be considered for health safety in any decision regarding this proposal.

The HHRA assessments for particulates and other chemicals, used toxicity reference values (TRVs) for non-carcinogenic inhalation COCs, noting that the current limits for NOx and SO2 are not specifically health-risk based. Because of their effects on respiratory health, levels of these emissions should be monitored in stack and ambient air regularly. Pulmonary disease is an effect of TRS /H2S, and particulates. .

A study re early life (prenatal to age seven) exposure to PM2.5 found these small particles were detrimentally associated with fundamental cognitive abilities including working memory and executive function., with significant effects on working memory [[5]](#footnote-6). Health Canada’s website states *Overall, the epidemiology data and the limited results from controlled human exposure and toxicological studies are****suggestive of a causal relationship****between short-term exposure to the coarse PM fraction and respiratory effects.* The same point is made for cardiovascular effects.

**Emissions from use of the Emergency Biogas flare or Use of the Emergency Pressure Relief Valve**

PRV : Use of the emergency pressure relief valve (PRV) will emit hydrogen sulphide as total reduced sulfur and H2 S. The emergency PRV is a mandatory safety precaution as per Biogas Code Although it is stated that it is unlikely the PRV will have to be used, the document provides he worst case ambient conditions resulting from use of the PRV modeled using raw biogas that contains up to 500 ppm H2S. These numbers are not reassuring; 500 ppm of hydrogen sulfide to ambient air would be dangerous even for short inhalation exposures. There is also a PRV on both anaerobic digesters.

Flaring:   H2S is also called "sour gas", TRS and H2S are used interchangeably in some documents..

The use of the flare results in the combustion of methane gas to carbon dioxide, hydrogen sulphide to sulphur dioxide, and the destruction of volatile organic compounds. The use of the flare on emissions is presented only for point of impingement (POI) values, and not ambient air. For safety, ambient air levels of these gasses during and after flaring should be obtained.

**In conclusion**: The proposed Waste Disposal Site-Processing and Transfer Facility must not be situated close to these residential areas in West Hill for all the reasons given above. In addition this is an environmentally sensitive area - close to the lake, with the East Point Park, and the Ken Morrish Softball Complex, and the drinking water source for Scarborough, and the Horgan water filtration plant very close by. The six air emissions listed are all toxic and greenhouse gas substances, some of which are persistent in air, and hazardous to health at extremely low levels and at short durations of exposure.

If these plants are to be accepted because the land filling of organics will be banned in 2022, then there must be appropriate limitations on where they can be situated with regard to human health. Also regulations/standards must be in place to control the emissions from plants producing biogas, to protect the public, regional air quality, and the environment.

Respectfully submitted

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Barbara McElgunn RN

With copies to Minister Yurek, Ontario Minister of the Environment, Conservation and Parks

MPP Vijay Thanigasalam

Councillor Jennifer McKelvie

1. CChemTRAC (2000) City of Toronto [↑](#footnote-ref-2)
2. World Health Organization Hydrogen Sulfide, Chapter 6.6, WHO Regional Office for Europe, Copenhagen, Denmark, 2000 [↑](#footnote-ref-3)
3. Ontario’s Ambient Air Quality Criteria, April 2012 : STANDARDS DEVELOPMENT BRANCH ONTARIO MINISTRY of the ENVIRONMENT [↑](#footnote-ref-4)
4. NPRI reporting Excel spread sheet for Coronation Drive area [↑](#footnote-ref-5)
5. Rivas I et al. (2020) Early life exposure to fine particulate matter and working memory and attention. Abstract; International Society for Environmental Epidemiology (ISEE).  [↑](#footnote-ref-6)