

**Harvest Fraser Richmond Organics
Air Emissions Permit Renewal (Permit No. GVU 1078)**

***Responses to
Public Comments and Questions***

March 23, 2016

This document addresses questions and comments that were submitted to Metro Vancouver in response to Harvest's application for an Air Emissions Permit Renewal, and that had been received by Harvest through March 18, 2016. Harvest has reorganized similar questions into topical categories.

A. Permitting Process & Metro Vancouver Regulatory Authority

1. ***Is there a venue for the public to request an updated or renewed environmental assessment before this application is approved?*** Harvest has already provided to Metro Vancouver considerable information including emission profiles and quantities from each source, documentation of data collection, and the reasoning behind requested limits. Members of the public may make suggestions to Metro Vancouver as to the nature of the information and studies it ought to request. Harvest is prepared to provide such additional information as Metro Vancouver may reasonably request in order to consider Harvest's permit application, so long as the information is within Metro Vancouver's authority to request.
2. ***Shouldn't Harvest Fraser Richmond Organics conducting such a large operation of recycling food waste and producing energy to the Power grid be subject to a Provincial Environmental Assessment?*** No. Harvest applied for its original Air Permit in 2012 at the time that it was planning the construction of the Energy Garden (anaerobic digester). Whether a project is subject to a Provincial Environmental Assessment is governed by the Reviewable Projects Regulation ("RPR") [B.C. Reg. 370/2002]. The RPR establishes criteria for which projects – deemed "major" – are reviewable and which are not. Neither at that time (2012) nor today does the Harvest operation meet the criteria for a major or reviewable project. However, the project did undergo a federal assessment – not because it triggered any size thresholds, but because Harvest had applied for federal loan monies, and an environmental review was required as a condition of the loan. That assessment was submitted to NR-CAN (Ministry of Natural Resources) and accepted.
3. ***Did Metro advertise that they are seeking feedback?*** As required by the BC *Environmental Management Act*, [SBC 2003], Public Notification Regulation [B.C. Reg. 202/94], and the Greater Vancouver Regional District Air Quality Management Bylaw 1082, 2008, Harvest advertised its permit application in various newspapers in October 2015. Further, at the request of Metro Vancouver, Harvest sent notice of its permit application to members of the public who had registered odour complaints with Metro Vancouver over the previous two years. Harvest repeated these notification steps when it scheduled the Public Informational Meeting, held in Richmond on March 3, 2016.
4. ***Will there be any public meetings to discuss this issue?*** Yes. Harvest's permit application was discussed at a Public Informational Meeting, held in Richmond on March 3, 2016. Also, information shared at that meeting has been posted at RichmondAirPermit.ca.
5. ***Since odours are detectable...far from the plant, how is it that no pollution is occurring? How is pollution defined here (so as to not include detectable odors up to 12 km away)?*** Under the terms of Harvest's existing permit, the determination of whether "pollution" is occurring is to be

made by the District Director of the Greater Vancouver Regional District (“GVRD”, one of the agencies that comprises Metro Vancouver). The District Director must make his determination within the confines of GVRD Air Quality Management Bylaw No. 1082, 2008, which states: “‘Pollution’ means the presence in the Environment of substances or contaminants that substantially alter or impact the usefulness of the Environment.” To date, the District Director has not made such a determination.

6. ***Harvest Power acquired Fraser Richmond Soil and Fibre in 2009, why wasn't the Permit issued to Harvest Fraser Richmond Organics?*** Harvest Power Canada, Ltd. acquired Fraser Richmond Soil & Fibre, Ltd. (“Fraser Richmond”) in 2009. Because the Fraser Richmond name was well known in the marketplace, Harvest took a slow, deliberate approach to rebranding. We continued to operate, both legally and commercially, under the Fraser Richmond name for several years and did not change the legal name of the company to Harvest Fraser Richmond Organics, Ltd until 2014, one year after the original air permit had already been issued.
7. ***The Permit remained in force until June 30th 2015. Does this mean Harvest is presently operating with an in-valid permit?*** No. Metro Vancouver has issued an amended permit (GVU 1078) that is valid until June 30, 2016
8. ***How many other companies are emitting toxins that are directly affecting the air quality in our neighbourhood?*** A list of air emissions permits issued by Metro Vancouver is available on-line at: <http://www.metrovancouver.org/services/Permits-regulations-enforcement/air-quality/apply-permit/Pages/default.aspx>. There are currently approximately 150 signed Air Emissions Permits issued by Metro Vancouver, of which 27 (18%) are issued to facilities in Richmond.
9. ***What other facilities are allowed to flagrantly violate the terms of their environmental permit with impunity despite widespread resident impact and complaint?*** Harvest has no information about the compliance records of other facilities, other than the permit listing cited in the preceding answer.
10. ***Do the cities in the Lower Mainland have limits on how much companies can emit into our air?*** Under the [BC Environmental Management Act](#), [SBC 2003] Ch. 53, Sec. 31 and GVRD GVRD Air Quality Management Bylaw No. 1082, 2008 (“Bylaw 1082”), the authority to regulate air emissions in the region is delegated to the GVRD District Director.
11. ***Why is Harvest allowed to have this level of irritant released into the atmosphere? Why [are composting plants that smell] allowed here?*** Under the terms of the *Environmental Management Act* and Bylaw 1082, any company may emit air contaminants into the atmosphere, provided that it does so under the terms of a valid air emissions permit issued by the GVRD District Director. The District Director determines what level of emissions will be acceptable and establishes limits and conditions in the permit deemed advisable for the protection of the environment.
12. ***Why is Metro Vancouver doing so little to protect local residents from Harvest?*** Metro Vancouver has pursued a vigorous monitoring, reporting, and inspection program with Harvest since the time of Harvest’s original application for an air emissions permit in 2012. Metro Vancouver publishes an annual [Caring for the Air report](#) provides information about air quality and climate change issues in the region, as well as programs that protect public health and the environment, improve visual air quality, and reduce greenhouse gas emissions.

13. ***When Harvest Power asked for higher emissions how could that even be considered after all the complaints from citizens over the last three years?*** Under the terms of the *Environmental Management Act* and Bylaw 1082, the GVRD District Director is obliged to consider on its merits any validly-filed application for a permit. The District Director is also obliged to consider comments from the public submitted in response to the application for permit.
14. ***If the above organic waste diversion back to conventional landfills or incineration requires amendment of the Metro Vancouver bylaw preventing this, then those changes this should be made immediately. You as Metro Vancouver's district director should provide a specific written definition of what "pollution occurring" is with respect to offsite order so that this can be more easily enforced by Metro Vancouver and, in future, other applicable agencies.*** The District Director's authority to regulate odours and the meaning of the term "pollution" have been established by provincial law and Metro Vancouver bylaws, and have been the subject of prior litigation. If the District Director wishes to update the Bylaw, any such change must be consistent with provincial legislation and go through the normal procedures for consideration and adoption of bylaw changes, including opportunities for public input. Should such a process be undertaken, Harvest would look forward to participating. In the meantime, the District Director's authority to regulate odours cannot, nor should it be, changed in the context of a permit application proceeding.
15. ***Unless Metro Vancouver is able to demonstrate immediate and continued progress toward reducing Harvest's emissions and impact to residents the handling of Harvest's operating and environmental permitting, compliance and enforcement should be transferred to a third party that is not potentially conflicted such as the provincial or federal environmental agencies. The permit amendment process should be cancelled or placed on hold until this transfer is complete.*** Harvest has every intention of achieving progress towards reducing any unpleasant odour impact on the community. There is no legal basis for undertaking the extraordinary step of removing from Metro Vancouver its delegated authority under the provincial *Environmental Management Act*.
16. ***Under no circumstances should Harvest's permit be amended to soften wording with respect to offsite odours or to increase their allowable emissions as this will reduce the ability of Metro Vancouver, and other agencies to protect local residents from Harvest's emissions.*** Harvest has not requested any softening or other change in the wording in its current permit with respect to offsite odours. The provisions in the current permit are consistent with existing law and with permits issued to other entities by Metro Vancouver.

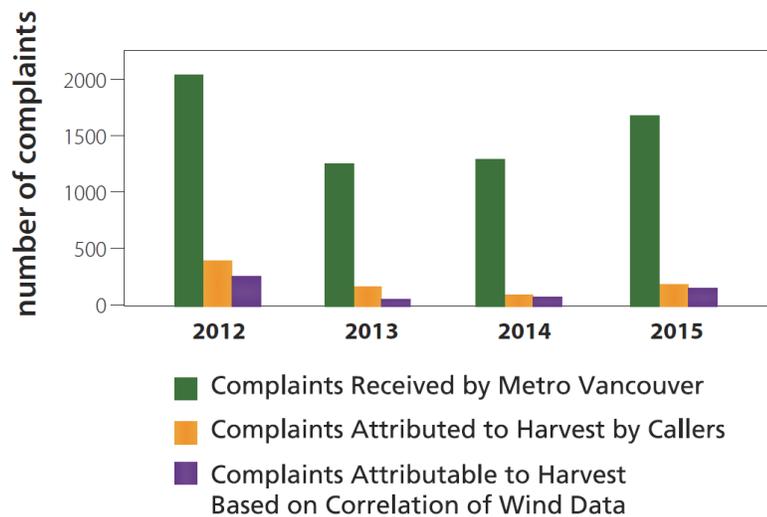
B. Compliance and Enforcement

17. ***If for three years [Harvest] exceeded the permitted amount of discharge, why not lower their permitted discharge for the next 3 years by the same amount they exceeded it? If the company's current emissions exceed the amount requested in its previous application, why are they not required to implement measures to decrease emissions rather than asking the city for an increase in allowable emissions? Actual emissions in the past have exceeded the permit estimates, by amounts [that] are not stated. By how much were the permitted estimates exceeded in the past and by which compounds?*** The original permit levels for VOCs were set based on estimates derived on the operating experience of other facilities and were not based on actual measurements from the Harvest facility. Therefore, the original permit also required Harvest to undertake an extensive measurement program to determine the actual VOC emissions

from the facility, which Harvest has done at a cost exceeding \$250,000. With the benefit of these actual measurements, the original VOC estimates were shown to be inaccurate; the new permit will adjust the limits to reflect reality. When issuing permits, the District Director has no authority to set permit limits based on a notion of punishing a company for its prior performance. Instead, the sole question in setting a new limit is what conditions are necessary for the protection of the environment. With respect to VOCs, neither Metro Vancouver nor the Province have established general standards. However, in the permit previously issued to Harvest, Metro Vancouver utilized the strictest standard for VOC emissions from a compost operation adopted by any North American jurisdiction (California), which establishes a VOC destruction rate of 60% or greater removal efficiency. Measurements at Harvest's biofilters since the first permit was issued show that Harvest's biofilters regularly achieve efficiency rates exceeding 60%; recent measurements have shown rates exceeding 90%. Additionally, even at the levels requested in Harvest's permit application, overall VOC emissions would be less than 0.5% of total estimated VOC emissions in the area covered by Metro Vancouver, and less than 0.25% for the Lower Fraser River Valley airshed. Given the high levels of VOC control shown by Harvest's biofilters and the low contribution to regional VOC emissions, it is appropriate to set new VOC emission limits at the levels requested.

18. ***If the increase is granted, what will the city/province do to ensure that there is not a gradual 'creep' towards higher and higher emissions?*** Harvest cannot speak for governmental bodies. Harvest has and will endeavor to meet all terms and conditions of a validly-issued permit.
19. ***If there is no penalty for exceeding the permit what is there to stop them from again exceeding the new levels? Will there be punitive measures sufficient to change [Harvest's] behavior? Other businesses comply with regulations and guidelines. Why doesn't Harvest?*** Harvest is committed to operating in compliance with all applicable laws, regulations, and permits. We recognize that the ultimate viability and success of our operation depends on the good will of the communities in which we operate. Metro Vancouver has considerable enforcement authority under applicable law, including the power to issue fines and restrict operations. Both because Harvest wishes to preserve its reputation and to avoid any unnecessary enforcement actions, Harvest has considerable incentives to operate in compliance with the levels established in a new permit.
20. ***If this new Air Quality Permit is granted will another increase be allowed because Harvest might exceed these new limits?*** Harvest has requested limits that it believes in good faith – and based on data collection – that it can meet. Therefore, we do not at this time intend to ask for further increases.
21. ***How many complaints has GVRD received to odour emissions from Harvest and what is their geographical distribution?*** The table below shows total complaints received by GVRD, those attributed to Harvest by callers and/or by Metro Vancouver, and those that could possibly have been Harvest, based on analysis of wind direction at time of complaint. We do not have information on geographical distribution of total complaints received by GVRD. Information on geographical distribution of complaints attributable to Harvest will be provided in a supplemental filing.

**Figure 1:
Odour Complaints and Attribution**



22. *There are 10 Authorized Emission Sources contained in the permit. Source 1, 3, 5, 6, and 8 were all given a deadline to meet the specific requirement of VOCs discharges. Was this completed and submitted and if so could we have a copy?* Harvest’s understanding is that test results submitted to Metro Vancouver as a requirement of permits may be available subject to BC Freedom of Information and Protection of Privacy legislation.
23. *Has Harvest Fraser been meeting the requirements of the permit, if not please explain.* Harvest has not met all the requirements. As has been explained in response to [Question B.17 above](#), certain limits that were set were based on flawed and unrealistic estimates. In certain other cases, Harvest experienced temporary operating challenges that caused it to miss or exceed certain permit requirements such as deadlines for report submissions. In all instances, we have worked with Metro Vancouver to put into place plans to bring the facility into compliance.
24. *Is Harvest abiding by the CCME's Environmental Guidelines for controlling emissions of VOCs from above ground storage tanks?* The question presumably refers to the requirement contained in the existing permit “Standard Conditions” section that Harvest adheres to CCME Guideline CCME-EPC-87E. The scope of the CCME Guideline is for the control of VOCs from above-ground storage tanks holding Volatile Organic Liquids (VOLs), such as petroleum products. Harvest does comply with applicable regulations with respect to our storage tanks for the biogas, as well as for diesel fuel that we use for our mobile equipment.
25. *Was the final draft report for the whole facility submitted on or before June 30, 2013, if so could we have a copy?* It is unclear exactly which report the question refers to.

26. ***Top of page 25 states "For greater clarity the permittee is not required to implement the remedial actions or other improvements and procedures contained within this report." Please explain.*** This question apparently pertains to the requirement in the existing permit that Harvest prepare a "Progressive Odour Management Plan" that contains recommendations and options for odour mitigation strategies. The Progressive Odour Management Plan is intended to provide Harvest management with a menu of strategies to consider when dealing with the ever-changing operational conditions encountered over time. The quoted sentence is meant to clarify that "an idea worth considering" is not equivalent to a "mandatory action that must be taken."
27. ***Is Metro Vancouver willing to place air quality monitors in the affected areas to monitor the discharged air contaminants? Continuous air quality monitoring stations should be installed near the emission sources, the site property lines, along the Vancouver ridgeway and in other places where odorous emissions have been commonly observed to confirm Harvest's future compliance to their existing permit or to collect accurate, and objective, data on the extent of their violations to facilitate and expedite enforcement measures and future lawsuits.*** It is up to Metro Vancouver to decide whether and where it wishes to install monitoring stations. We note that, according to [Metro Vancouver's website](#), the agency currently operates a network of air quality monitoring stations in cooperation with the Fraser Valley Regional District, Environment Canada and other partners, and that air quality and weather data from the 28 stations in the regional air quality monitoring network are posted at [airmap.ca](#). In general, Harvest is supportive of any actions that would improve our, Metro Vancouver's, and the public's ability to precisely determine the source of unpleasant odours. There are multiple, large odour generators in the vicinity, and there is clear evidence that some callers to Metro Vancouver's complaint system misattribute odours to Harvest when the odours originated elsewhere. Any such system would need to be carefully designed to distinguish the various sources.
28. ***What recourse is there to limit the discharge so as to have a negligible effect on the public's right to clean air?*** Harvest shares the goal that its operations have a negligible impact on regional air quality.
29. ***If Metro Vancouver allows Harvest to continue operate in this harmful manner will Metro Vancouver and its citizens take on some or all of this liability?*** Harvest cannot answer this question on behalf of Metro Vancouver.
30. ***Once the new emissions control equipment is in place and fully operational, Harvest can then begin processing desired quantities and types of organic waste so long as it is able to maintain environmental compliance including having no significant offsite pollution as evidenced by odour. If Harvest does not fully cooperate with all of the above recommendations, Metro Vancouver, or the new future agency responsible for handling their permit and compliance should immediately begin to exercise all available enforcement options as aggressively as possible including escalating fines and full shutdown.*** Harvest intends to do its best to ensure compliance with both the existing permit and any new permit that is issued. We recognize the risk of fines and other enforcement actions that could be taken. We have every incentive and desire to avoid the need for Metro Vancouver or anyone else to take such measures.

C. Health Related

31. ***Are [these] VOCs anthropogenic? What are the effects of VOCs re: (a) long term exposure to low levels? (b) the effects on children, pregnant women, asthmatics, those hyper-reactive to other respiratory irritants, and those with glaucoma, corneal disease, and chronic respiratory disease? (c) whether there are synergetic effects from different combinations of VOCs?*** The VOCs from composting occur naturally as part of the biological degradation of the composting

process, whether the composting is done by individuals in their backyards or at a large commercial operation such as Harvest's.

With respect to health risks, Harvest does not claim expertise as health experts. We rely, as do all citizens, on the various government agencies involved with health and the environment, to study issues such as these and establish appropriate laws, regulations, and permits to protect public health and the environment.

According to Metro Vancouver,

The term VOC, or volatile organic compounds, refers collectively to the organic chemicals found as gases in the air. VOC can be man-made or natural and occur when solids or liquids evaporate. The scents you smell in a pine forest and when peeling citrus fruits are examples of natural VOC. Familiar man-made sources include the noticeable odours associated with visiting the gas station or painting your home. Some VOC are toxic, leading to health effects ranging from eye irritation to cancer risk. (Metro Vancouver, [Caring for the Air 2015](#), p. 12)

32. ***Volatile Organic Compounds – Has a study been done at Harvest to ensure no cancer causing agents are being emitted?*** Harvest has measured for emissions of a wide variety of potential substances, as directed by Metro Vancouver. Exposure to some number of these substances may, in large quantities, cause a variety of health impacts, which is why Metro Vancouver and other government agencies set limits on emission levels. Harvest takes seriously its obligation to control emissions to levels below those limits, precisely so that the risks of health impacts are minimized to what those agencies have determined are safe levels.
33. ***Who will advise you, or has advised you, on what VOCs are being emitted and whether 245 tonnes a year is safe for citizens to breathe over a period of many years?*** Harvest has previously performed tests that measure the types of VOCs being emitted. It is up to Metro Vancouver to determine which sources of advice and scientific literature to consult in setting permit conditions.
34. ***Is Harvest going to be held liable for any future health problems that will come up at some future date? How will we be compensated for poor health and the loss of enjoyment of our own homes?*** Metro Vancouver is the body that regulates Harvest, through the air emissions permit. Harvest's legal responsibility is to meet the terms in that permit as well as other applicable laws and regulations, and we are committed to doing that.

D. Emissions Technical

35. ***Is there a maximum cap for emissions, and if so, what is this cap?*** The maximum caps for emissions will be whatever limits are established by Metro Vancouver in the air emissions permit that it issues. Harvest has requested specific caps for specific types of emissions.
36. ***How much is known about which VOCs are emitted from this plant?*** Harvest has previously performed tests that measure and characterize the types of VOCs emitted. These data have been provided to Metro Vancouver.
37. ***How much is known about how concentrations in air vary over the city and over time?*** Since 2012, WSP (formerly Levelton Consultants) has performed a series of analyses known as "air

dispersion models” that predict how emissions from the Harvest facility disperse over the region over the course of a year, taking into account a variety of weather-related, geographic, and other factors. These air dispersion models are designed in consultation with Metro Vancouver’s professional staff and rely on widely-accepted scientific methods for performing such work. Metro Vancouver receives and reviews the results of these studies, often asking for modifications in approach or further analysis. Metro Vancouver takes these studies into account when setting the terms and conditions of Harvest’s permit.

38. ***Is [245 tonnes of VOCs] the amount being emitted now? Or is 245 tonnes a fixed upper limit?***
Harvest has requested that 245 tonnes total VOC emissions be established as the fixed upper limit – in other words, not to exceed. Generally speaking, we have requested limits that slightly exceed anticipated emissions, in order to provide a margin for error.
39. ***[Are] the emissions...causing air pollution such as formaldehyde?*** The substances for which Harvest requests permission to emit are considered “air contaminants” as defined in the provincial *Environmental Management Act*. Harvest has not requested permission to emit formaldehyde. Although formaldehyde is classified as a Volatile Organic Compound, the most recent analysis characterizing the specific VOC types in Harvest’s emissions did not find detectable levels of formaldehyde.
40. ***How is monitoring of VOCs and other emissions carried out, where and how often?*** Under Harvest’s existing permit, monitoring of VOCs and other emissions occurs generally on a quarterly basis, though some emissions are measured annually. These measurements occur at the relevant emission sources and follow test methods prescribed by Metro Vancouver, using procedures reviewed in advance by Metro Vancouver, and frequently observed by Metro Vancouver personnel. The test methods prescribed generally follow widely-accepted standards established by the United States Environmental Protection Agency and other respected sources.
41. ***What are the corresponding equivalent measurements between the volume of pollutant emissions indicated on the existing permit and the volumes expressed in the request for increases? What these emissions are composed of?*** Please see the following table.

Total Authorized and/or Estimated Emissions from All Sources		
	Authorized Emissions (tonnes/year)	
Air Contaminant (name)	Current Permit	Requested
Sulphur Oxides (SOx)	1.56	3.98
Nitrogen Oxides (NOx)	19.45	19.52
Volatile Organic Compounds (VOCs)	22.93	245.28
Ammonia	-	10.58
Particulate Matter	-	0.10
Hydrogen Sulphide*	-	7.25
Total	43.94	286.71

* When Harvest filed the application permit in November 2015, it requested new permission to emit up to 7.25 tonnes/year of hydrogen sulphide. Subsequent emissions tests found no hydrogen sulphide being emitted. Metro Vancouver has requested Harvest to perform a new series of tests. If the re-test confirms no hydrogen sulphide emissions, Harvest anticipates withdrawing that portion of the request.

42. ***Did Harvest give any explanation as to the reason for increasing the VOCs emissions from 22.93 tonnes per year to 245.28 tonnes per year?*** Yes, Harvest did explain the reasons for the increase in the permit application submitted to Metro Vancouver. In brief, the original permit levels for VOCs were set based on estimates derived on the operating experience of other facilities and were not based on actual measurements from the Harvest facility. Therefore, the original permit also required Harvest to undertake an extensive measurement program to determine the actual VOC emissions from the facility, with the expectation that these data would inform the limits established in any permit extension. Harvest conducted the required testing, at a cost exceeding \$250,000. With the benefit of these actual measurements, the original VOC estimates have proven both inaccurate and unrealistic. It should be noted, however, that the original permit required Harvest to utilize VOC control technologies that would achieve a VOC removal efficiency of 60% or greater, consistent with the strictest standard for VOC emissions from a compost operation adopted by any North American jurisdiction (California). Measurements at Harvest's biofilters since the first permit was issued show that Harvest's biofilters regularly achieve efficiency rates exceeding 60%; recent measurements have shown rates exceeding 90%.
43. ***[Will] the volume [of emissions]... remain stable, increase or decrease?*** The volume of emissions requested in the permit is for an annual time period. Over the course of a year, the emissions volume will vary somewhat, based on operational changes and the weather, but we believe the annual numbers reasonably reflect the reality of our current and planned operations. We do NOT have any current plans for changes in operations or equipment that would lead to a significant change in emissions.
44. ***Ammonia emissions – How much is 10.58 tonnes per year in ppm?*** Approximately 25 ppm. Please also see our response to [Question 63 below](#) concerning ammonia emissions.
45. ***Sulphur Oxides – How much is 3.98 tonnes per year in ppm?*** Approximately 52 ppm.
46. ***Hydrogen Sulphide – How much is 7.25 tons per year measured in ppm?*** Approximately 9 ppm.
47. ***How many people will be affected by [emissions] in the offices/warehouse and houses around here, including all the truckers that come to the Container port and the hundreds of people that attend the auctions at Adesa auto auction every Thursday?*** Harvest does not have estimates for the transient population in the immediate vicinity. We do note that the area in which we are located has many warehouses, with thousands of daily diesel truck trips that contribute to significant air quality issues. According to Metro Vancouver,

In addition to common air pollutants such as fine particles (PM2.5), nitrogen oxides (NOx) and ozone (O3), the air we breathe contains tiny amounts of hundreds of other substances, many of which may be harmful to health. These pollutants are often referred

to as “toxic air pollutants”, and their potential health effects include cancer and a variety of non-cancer effects.

In 2014, Metro Vancouver looked at the potential harm to health posed by 40 different toxic air pollutants that are present in our air. We found that diesel particulate matter (diesel PM) is still the largest contributor to incremental lifetime cancer risk in Metro Vancouver of any toxic air pollutant. There are also nine additional pollutants with estimated cancer risks that exceed Health Canada’s threshold of concern. The risks for these additional pollutants are 10 times less than diesel PM.... (Metro Vancouver, [Caring for the Air 2015](#), p. 14)

E. Public Notification & Communication

48. ***What steps have been and will be taken to notify residents of spikes in emissions?*** If Harvest experiences an emergency situation that has or could result in a spike in emissions, we have procedures in place to notify both Metro Vancouver as well as city and provincial authorities. There is a well-established system put in place by the provincial government for how these situations should be handled, and our internal procedures follow that by directing our staff to notify authorities as soon as possible. If, when, and how to notify the public is then a decision that lies in the hands of the various governmental authorities. During such a situation, Harvest staff efforts would be focused on bringing the operational situation under control to end any unplanned emissions or threats to safety.
49. ***Will an air quality warning be issued when Harvest releases their emissions?*** Composting and anaerobic digestion are biological processes and most of the emissions from Harvest’s operations are a byproduct of microbial action which occurs continuously. Therefore, most of the emissions covered by Harvest’s permit are continuous. So long as our emissions are within the levels required by the permit, we see no reason for public notifications. If there were an emergency release, we would rely on Metro Vancouver and other governmental officials to make a determination whether a public announcement is warranted, as described in the answer to the [preceding question](#).
50. ***When we complained why didn't anyone care about the health and well being of the citizens of Richmond by improving things when emissions got worse? ...the emissions and smell have gotten worse, our concerns have been ignored and that we have been paying the price with our health and well-being. Why didn't Harvest Power remedy the problem as they happened?*** Harvest takes its obligations as a neighbor and corporate citizen seriously. We regret that our operational record over the past months has not been up to the community’s desires or ours. We have undertaken several steps to remedy the situation; these have been partially effective, but more work remains to be done. We are currently implementing a new series of steps, including bringing in an outside consultant to work with our onsite management on a weekly basis to revise the site’s Standard Operating Procedures to incorporate industry-recognized Best Management Practices to mitigate and prevent migration of unpleasant odours off-site.

F. Harvest Operations and Odour Generation

51. ***What [is Harvest] rendering that causes that kind of smell?*** Harvest does not perform any rendering at its facility.

52. ***In 2012 Harvest was processing 190,000 tonnes of food waste, what is the volume that they are processing now?*** Harvest processes both food scraps and yard trimmings, the majority of which consisted of yard trimmings, from 2012 through today. In 2015, the total volume of processed food scraps and yard trimmings was approximately 225,000 tonnes.
53. ***What is actually being done to reduce the contaminants and hence the smell? Is there any way to stop the odour? We don't want the intolerable smell or pollution which is totally unacceptable and irresponsible so what is Harvest Power and Metro Vancouver going to do today to totally get rid of it?*** Composting is a process of controlled biological degradation and inevitably produces odours. With proper processes and controls, the occurrence of unpleasant odours outside the facility boundary should be rare, and not of such frequency, intensity, and duration to cause damage to the environment. Harvest has demonstrated over the past several years that it can achieve such operating conditions. At the present time, Harvest has committed to a series of operational changes that should substantially reduce the generation of offensive odours. This will be combined with an accelerated repair and maintenance program to get the physical plant operating at peak efficiency in terms of odour control. It should be noted that the compost-production process takes place over a period of months. Therefore, while the changes currently being implemented will start having an immediate effect, their full impact will be realized later in the year.
54. ***Why can't [Harvest] just emit during the night time?*** Both composting and anaerobic digestion are long-term biological processes that occur continuously and cannot be “switched off.” For instance, constant air flow is required to keep the initial Covered Aerated Static Pile (CASP) compost piles oxygenated. We must provide optimal temperature and moisture conditions for naturally-occurring bacteria to convert organic materials into earthy, nutrient-rich soil amendments. The CASPs are located outside and the biofilters are always operating to reduce emissions. That said, odours are more likely to be produced during certain operations on the site that are not continuous. Harvest utilizes a daily forecasting service from the University of British Columbia as well as real-time weather monitoring to try to avoid scheduling these activities when weather conditions suggest a higher risk of odour impact. During the night time, weather conditions are often relatively more stable than during the day time, which increases the risk of odour impact.
55. ***Dispersion modelling should be performed and Harvest should limit peak hourly emissions rate to levels that will not adversely impact the environment and local residents as evidenced by significant offsite odours regardless of allowable annual emissions rates.*** Dispersion modeling has been performed, and the results provided to Metro Vancouver. With respect to emissions: Most of the emissions of regulated substances (e.g., NO_x, SO_x, VOCs, etc.) are continuous and not subject to hourly manipulation. With respect to odour: Harvest relies on a daily, customized weather forecast to predict when and where there is a higher risk of off-site odour from non-continuous operations, such as opening and unloading a cell of the Covered Aerated Static Pile (CASP). Harvest adjusts its operations to try to avoid undertaking such non-continuous operations during high-risk hours. Any attempt to write specific operating hours into a permit for the attempted control of odour would likely fail.
56. ***Harvest should immediately begin the process to design, install and properly operate new environmental controls and other equipment to reduce emissions to currently permitted levels including the elimination of any significant odor offsite while processing the desired quantities and types of organic waste.*** Harvest is doing so, as has been explained in responses to other comments and questions.

57. ***As an additional local mitigation impact measure taller stacks should also be considered using results of dispersion modelling studies.*** Stacks have been considered, and rejected, as a mitigation measure. While a stack is in use (and effective) for the engine generator at the Energy Garden, stacks would not be appropriate for dispersing odours from the compost sources, for multiple reasons:

- Stacks are most effective when discharging emissions from an enclosed source. The compost production in the Covered Aerated Static Pile (CASP) and curing areas are not enclosed.
- A tall stack would provide no guarantee of a superior solution. The riskiest meteorological condition is when the air is fairly stable, at lower wind speeds, so the odour drifts in a fairly cohesive “cloud” without getting mixed and diluted by turbulent air. In this condition, a tall stack would simply toss the cloud up higher into the air, perhaps causing it to drift further, but would not necessarily result in better dissipation.
- Tall stacks may not be buildable on the Harvest site. The Harvest compost areas are situated atop a closed landfill, which itself sits atop soft, boggy soils. It is unclear whether a tall stack, which could weigh as much as 700,000 pounds, could be supported by the underlying terrain.

58. ***Did Harvest install a misting system with a deodourizer, if so does it function properly?*** Harvest had installed a system, but it was not operational during the winter of 2015-16. Repairs are now underway have been completed. That said, misting systems and deodourizers should be understood as a control of limited effectiveness. Harvest believes its efforts are best focused on managing the composting process to prevent unpleasant odours from being generated in the first place, rather than trying to mask them after they’ve already occurred.

59. ***Why are these facilities not moved away to other outlying areas where there are no residences?*** The Harvest composting business started at the Richmond site in 1993. The site is on Port Metro Vancouver land that, because of the soft underlying soils, has typically been used for low-intensity activities such as farming and warehouses. Harvest’s specific site had been used for various waste disposal activities prior to 1993, including a construction-and-demolition debris landfill. The location offered proximity to sources of green waste and markets for compost products, but was fairly distant from much residential or even commercial activity. Wherever a facility is located, whether in a relatively dense urban or less-populous rural area, it should be run in a responsible manner.

It should be noted that locating such organics recycling facilities far from population centers imposes an environmental cost of its own in the form of particulate matter emissions from the (largely) diesel trucks operated by municipalities and private haulers that would transport the green waste and food scraps to those areas.

In 2014, Metro Vancouver looked at the potential harm to health posed by 40 different toxic air pollutants that are present in our air. We found that diesel particulate matter (diesel PM) is still the largest contributor to incremental lifetime cancer risk in Metro Vancouver. (Metro Vancouver, [Caring for the Air 2015](#), p. 14)

60. ***Why does [Harvest] keep changing it’s (sic) name?*** The original composting business on the site was founded in 1993 as “Fraser Richmond Soil and Fibre, Ltd.” (FRSF). Harvest Power, Inc. purchased FRSF in 2009, and continued to operate the business under that name. In 2014, the

legal name of FRSF was changed to “Harvest Fraser Richmond Organics.” There has only been this one name change in the past 24 years.

61. ***It would be reckless of Metro to allow the application to be approved without a transparent plan for rectifying known technological problems. In the end nothing has been implemented. Is it (sic) because of cost or simply a lack of concern?*** Harvest is currently implementing a new series of measures that it expects will substantially reduce and, we hope, eliminate the problem of unpleasant odours off-site. While cost is one factor considered, the most important considerations are whether alternative technological solutions are technically feasible and likely to be effective. We have been, and expect to remain, in regular communication with Metro Vancouver as well as City of Richmond officials to apprise them of our progress. Also, in response to suggestions from the public, Harvest is taking steps to set up a Community Liaison Committee to better inform our neighbours of our operations and to hear their concerns directly. We look forward to continuing constructive and open dialogue with all these stakeholders.
62. ***Does Harvest have adequate funds or insurance in place to cover the liability associated with any potential short and long term health problems and widespread property value implications?*** Harvest does not agree with the implication that it is or should be liable for alleged health problems or impacts on property values. Harvest does carry liability insurance at levels that company management deems appropriate for its activities, which determinations were made based in part on advice from third-party insurance professionals.
63. ***How much more intense, frequent and widespread will their odorous, and potentially toxic, releases be if Harvest is allowed to increase their VOC emissions by more than 1000% and add to that the even more toxic and odorous compounds, hydrogen sulphide and ammonia? How much worse will [toxic and odorous compounds] impact on the quality of life and health as well as property values for thousands of Vancouver and Richmond residents be then?*** Harvest is not requesting permission to increase emission levels beyond what they have actually been over the past few years, with the exception of ammonia (discussed below). We therefore do not anticipate any increase in odour impacts, and instead anticipate that our current program of operating and capital improvements will reduce odour impacts.

As explained in the answers to several other questions, the levels established in the original permit were based on estimates of VOC emissions that proved inaccurate. Harvest believes that its operational practices have a more direct impact on odour performance than do VOC emission levels, as shown by favourable odour results in 2014 and early 2015 when VOC emissions were at similar levels to recent measurements. With respect to hydrogen sulphide, Harvest has withdrawn its request for such emissions to be included in the permit.

With respect to ammonia, Harvest has requested permission to emit a relatively small amount of ammonia that may be produced by pollution control equipment that Harvest plans to install in order to remove ammonia from wastewater. We anticipate that our biofilters will be able to destroy all but a tiny fraction of the amount we have requested. However, in order to avoid a repeat of the situation with VOCs where original estimates proved unreliable, we have made very conservative assumptions about the amount of ammonia to be discharged. Even at the requested levels, the actual rate of emission over the course of the year should be sufficiently low so as to avoid any odour or health risks.

64. ***...as the Green Can program continues to expand is it not reasonable to expect that the actual emissions will also expand?*** Harvest has requested emission levels consistent with its current

level of operations and intends to comply with the terms and conditions of the new permit to be issued. We have no plans to request increased emissions in the future.

65. ***Is our Green Can program just replacing one form of pollution for another? ...this facility takes biomass out of the landfill (which caused minimal odor) and has contaminated the air in Metro Vancouver. How can this be green, a step forward?*** The Green Can program keeps organic discards (green waste and food scraps) out of landfills. The environmental “costs” of landfilling organics include both the diesel emissions (especially, greenhouse gases and particulate matter) required to truck the materials to far-off landfills, plus the leakage of methane-rich landfill gas from landfills, even those with the most advanced landfill gas collection systems. Methane is amongst the most potent of a class of compounds known as “Short-Lived Climate Pollutants” and has a global warming potential 72 *times* greater than that of carbon dioxide when measured over a 12-year period. (See California Air Resources Board, [Draft Short-Lived Climate Pollutant Reduction Strategy Concept Paper](#), September 30, 2015, p. 22.) Therefore, programs such as the Green Can program that divert organic materials from landfills to composting and anaerobic digestion do offer a vital way of reducing a very dangerous form of pollution, which is why the California Air Resources Board states:

Landfilling of organic materials leads to the anaerobic breakdown of these materials into methane, which can work its way out of the landfill as a fugitive emission. Organic waste constitutes more than one-third of California’s waste stream, and as with dairy manure, a holistic approach is needed to effectively divert and manage it. This means not only keeping organics out of landfills, either by source reduction or diversion, but also improving the infrastructure for recycling organics, including composting, anaerobic digestion and other novel processes for energy recovery. *Ibid.*, p. 48.

While there are also air emissions associated with composting and anaerobic digestion, these are substantially less than those associated with landfilling of organic waste.

66. ***Harvest should immediately reduce the type and/or quantity organic waste being processing as required to allow them to operate within the constraints of their existing environmental permit including the provision against offsite odors. If Harvest cannot process any wastes without violating their existing environmental permit they should be completely shutdown until new equipment is installed that enables them to do so.*** Harvest has existing solid waste permits that govern the amount of material it can process. It is operating at well below the permitted limits. Harvest has demonstrated that it can successfully process the current volumes of material without causing problems, and should be permitted to implement operational and equipment changes that will enable it to return to the previous levels of performance.
67. ***Any organic waste collected in excess of what can be properly processed at Harvest or other authorized facilities without violating their existing environmental permits should be diverted to the regular landfill(s) or incineration plant.*** Harvest has no control over where materials not delivered to its plant are processed.

G. Regional Solid Waste

68. ***Is the reason that Metro Vancouver has been so lenient with Harvest that they rely on that facility to process the organic waste now collected separately by local municipalities in response to their own bylaw which prevents it from being disposed of in the regular land fill?*** Harvest disagrees with the implication that Metro Vancouver has been lenient with Harvest. The permit conditions imposed by Metro Vancouver originally in 2013 were far more extensive and

expensive to comply with those imposed on other composters. Metro Vancouver's inspectors and regulators have monitored Harvest's activities regularly, promptly raised concerns, and reminded Harvest of enforcement measures they may take if Harvest does not work to bring its facility in compliance. Harvest has attempted to address these issues and thereby avoid further enforcement actions. Additionally, District Director Ray Robb, head of Metro Vancouver's regulatory and enforcement wing, has consistently stated that his authority derives from the provincial [Environmental Management Act](#), exists independently of Metro Vancouver's solid waste management role, and he has acted accordingly.

69. ***Why are other Fraser Valley mayors and authorities not kept in the information circle as noted in Vancouver Sun news article on Nov 25/15 re incinerator story?*** The referenced newspaper story discusses communications between Metro Vancouver and its member municipalities. This question would be better addressed by Metro Vancouver.