

DEQ Response to Public Comments Draft Air and Solid Waste Permits Columbia Biogas

Summary:

On Friday October 15, 2010, the Oregon Department of Environmental Quality issued a joint public notice for the draft air and solid waste permits for Columbia Biogas. On Thursday November 18, 2010, DEQ held a joint Solid Waste and Air Quality public hearing to accept comments on the proposed permits for Columbia Biogas. In addition to the DEQ staff and Columbia Biogas representatives about fifty citizens attended the public hearing. DEQ received oral comments from nine attendees. The informational meeting began at 6:30 p.m. and the formal hearing began at 7:20 p.m. The hearing ended at approximately 8 p.m. The public comment period closed on Monday November 29, 2010 at 5 p.m.

During the comment period and public hearing DEQ received comments supporting the proposed Columbia Biogas facility and comments of concern with regard to the proposed operations. Written comments received and transcript of the verbal comments received are attached as an appendix to this document.

Summaries of all comments received are below with DEQ's responses following each comment.

Comments are organized according to the following topics:

- I. Draft Solid Waste Permit and Associated Operations**
- II. Draft Air Quality Permit and Associated Operations**
- III. Odors, Emissions and Hydrogen Sulfide (H₂S)**
- IV. Flare**
- V. Traffic**
- VI. Noise**
- VII. Stormwater/Water Quality**
- VIII. Rodents**
- IX. Electricity generated**
- X. Land use**
- XI. Columbia Biogas Comments and DEQ Response**

I. Draft Solid Waste Permit and Associated Operations

- 1. In the event of an emergency or power failure the applicant states that the facility will temporarily cease operation and that all facility doors will close in a "lock-down" mode containing the odors within the structures. There should be a contingency plan that includes a backup power source other than just using the flares to burn off excess gas.*

DEQ Response No. 1:

The current draft Columbia Biogas Operations Plan contains a contingency plan addressing safety and emergency procedures and equipment, worker safety, spill response and prevention measures, fire prevention and control and prohibited wastes procedures. The current draft contingency plan does not address power failures or outages. DEQ will work with Columbia Biogas to ensure adequate procedures are described in the contingency plan section of the Operations Plan and are in place to control odors during a power failure. Approved Operations Plans are enforceable extensions of the permit.

- 2. What is DEQ's policy regarding removal of fibrous fertilizer from the Columbia Biogas site? Will 8 trucks a day simply back up in front of the storage facility and have the soil transferred into the truck? Will DEQ request further details on this part of the operation?*

DEQ Response No. 2:

The solid waste permit requires Columbia Biogas to develop and implement an Operations Plan. This plan must describe facility operations including the storage and use of the fiber material produced as a result of the anaerobic digestion of solid and liquid food waste. The fiber material must be removed at sufficient frequencies to prevent odor, vector attraction, litter, impacts to the environment and speculative accumulation.

- 3. The site plan that Columbia Biogas submitted to the Bureau of Development Services is more expansive than the site plan that was submitted to Metro. Which facility will actually be built? If the expansion of this facility becomes a reality, DEQ should require a new permitting process since the facility basically doubles in size.*

DEQ Response No. 3:

The site plans submitted to DEQ, Metro and the Bureau of Developmental Services vary slightly. Differences include level of detail, additional tanks and biofilters, and a slightly differently orientation. It is anticipated the site plan may continue to be modified to meet the requirements of Metro, DEQ and the City of Portland. Columbia Biogas is required to submit engineering design documents including plans and engineering specifications, for the construction of the facility. These documents are required to be submitted to DEQ for review and approval 60 days prior to beginning construction. The facility must be constructed in accordance with the approved plans and specifications. If Columbia Biogas proposes to build a facility that significantly differs from the proposal in the submitted application, DEQ will initiate a public process as required by Solid Waste Rules, Oregon Administrative Rules (OAR) Chapter 340, Division 93.

- 4. I would request that any current permits that are approved be renewed every 2 years once the facility is operational, instead of every 5-7 years as currently noted on your DEQ report, with a process that allows for public input at the time of renewal.*

DEQ Response No. 4:

Oregon Revised Statutes (ORS) 459.245 provides DEQ the authority to issue solid waste permits for up to ten years. The proposed solid waste permit is scheduled to expire in seven years. OAR 340-216-0025 limits the permit term of Air Contaminant Discharge Permits to five years. Both air quality and solid waste rules require public notice and an opportunity for public comment for new permits, permit renewals and significant permit modifications. At the time of each renewal, DEQ will provide a process for public input.

- 5. Will there be a person on-site to monitor operations at all times? If a fire breaks out, a tank explodes or problem occurs within the system, what safety procedures are in place to protect the people in surrounding areas?*

DEQ Response No. 5:

Columbia Biogas is designing the facility to meet the requirements of the National Fire Protection Association Standard for Fire Protection in Wastewater Treatment and Collection Facilities. These standards provide requirements for ventilation rates, electrical, biogas handling systems and anaerobic digesters. The City of Portland Fire Marshall will inspect the facility to determine compliance per the local fire codes. DEQ requires that the facility notify local emergency responders such as the fire department and police of their operations and that emergency responders be able to access the facility at all times to respond to spills, fires, medical emergencies and other such incidents. DEQ also requires that the facility operator's emergency phone number be posted at the facility in case a passerby spots a problem while the facility is not open.

DEQ understands that Columbia Biogas intends to have personnel on site at all times that the facility is accepting waste and operating; however, after operating hours staff may not be onsite. Columbia Biogas intends to use computer programs commonly used at wastewater treatment plants and other anaerobic digestion facilities to monitor operations, equipment and the facility. The solid waste permit requires the facility be operated in compliance with a DEQ approved Operations Plan. DEQ will ensure Columbia Biogas' plan adequately address safety issues and procedures.

- 6. The permit needs limits on incoming tonnages of feedstock, no tonnage information is provided. The gallons of process waste water generated and discharged needs to be supplied to commenters.*

DEQ Response No. 6:

DEQ solid waste permits do not typically set limits on incoming waste unless there is cause to do so to protect human health and the environment. Typically facility designs and operations set limits to the amount of waste a facility can properly manage. Columbia Biogas reports that their facility is designed to process 100,000 tons of food waste per year. Regardless of amount of incoming waste, the permittee must stay in compliance with all permit conditions and operations plans elements. This means that the facility must adequately address odor, vectors, stormwater, and emissions whether they accept one gallon or 100,000 gallons of waste per year.

Given that Columbia Biogas is not yet operating, information about the amount of process waste water generated and discharged is not available. This information will be part of the water quality permit application. After the facility begins operating, this information, as required by appropriate water permits, will be available in the corresponding DEQ or City of Portland files. The facility will be required to regularly report the amount of process waste water generated.

- 7. The permit does not describe odor control methods for shipments leaving the facility. Odorous materials might be stored outside awaiting shipment.*

DEQ Response No. 7:

Packaging and other waste removed from the incoming waste that is considered residual material will be separated into containers for off-site disposal. The containers of residual waste will be stored inside the receiving building. Trucks hauling the residual waste to the landfill or recycling facility will load inside the receiving building. The receiving building is under negative air pressure routing the air to biofilters for odor treatment. Columbia Biogas will not be storing materials outside of the buildings or tanks. All material storage methods will need to be addressed in the facility Operations Plan and approved by DEQ.

- 8. How will the H₂S scrubber media be handled; will it be a solid or liquid waste?*

DEQ Response No. 8:

Columbia Biogas will be using a product called SulfaTreat to reduce H₂S concentrations in the biogas. SulfaTreat is a black, odorless granular material. Once the SulfaTreat is spent, the media will be replaced and the spent SulfaTreat will be properly disposed of at an authorized landfill or recycling facility. Columbia Biogas will need to make a hazardous waste determination before the media is disposed. If the determination indicates the material is hazardous, it must be handled according to hazardous waste rules.

- 9. Why won't the existing soil contamination be cleaned up before this plant is installed?*

DEQ Response No. 9:

DEQ is aware contaminated soil and groundwater impacts exist at the property located at 6849 NE Columbia Boulevard. The information DEQ has to date indicates the impacts are from off-

site source(s). The source of the contamination is unconfirmed. With an unconfirmed source of the contamination DEQ is unable to determine the responsible party to mitigate the soil and groundwater impacts. Columbia Biogas is not currently considered a responsible party for the existing contamination. DEQ considers this site as a low priority for cleanup. If DEQ obtains additional information about contamination or about the source of contamination, DEQ will reevaluate the status of the site.

10. How much “recovered” unusable solid wastes will this facility generate?

DEQ Response No. 10:

At this time DEQ cannot say with certainty the amount of waste the facility will generate. The amount of waste Columbia Biogas will generate will depend on the tonnage of incoming liquid and solid food waste actually received and on the amount of contaminants removed from the incoming waste. Columbia Biogas estimates that approximately 10% percent of incoming waste will be considered residual material destined for disposal at an authorized landfill or recycling facility. DEQ allows facilities to properly dispose of residual material resulting from recycling and other solid waste activities. Storage and management of residual material must meet permit and Operations Plan requirements.

11. Containerized wastes may sit on site for lengthy periods and turn putrid. Will those container storage areas be 100% enclosed with any discharges scrubbed? Please describe the odor scrubber for that storage area. It should be described in the permit and odor control efficiency should be mandated.

DEQ Response No. 11:

Columbia Biogas will have a designated indoor storage area for the containerized waste. Waste will not be stored outside. The length of time the containerized waste will be stored indoors depends on the type of food waste and on the condition and type of packaging. The storage and processing areas are under negative air pressure drawing the air from these indoor areas to the biofilters for odor treatment. Odor control methods must be described in the facility Operations Plan. DEQ does not have the rule authority to establish odor control limits but instead requires that facilities to control and minimize odors. DEQ approves the Operations Plan and then the Operations Plan is an enforceable extension of the permit.

12. Columbia Biogas has no previous experience in operating this type of facility. What is the operating history of this type of plant in North America?

DEQ Response No. 12:

The Columbia Biogas facility will be the first facility to process only food waste through anaerobic digestion. Currently anaerobic digestion is used to manage and dispose of animal manures, sewage, sludges, food wastes, and fats, oils, and grease (FOG). Facilities that commonly use anaerobic digestion include municipal wastewater treatment plants and

agricultural operations. Wastewater treatment plants and agricultural operations commonly add food wastes, FOGs, and other waste to improve the digestion process and increase the amount of biogas generated.

II. Draft Air Quality Permit and Associated Operations

13. I feel that reports from Columbia Biogas should be made to DEQ on a monthly basis for the first year and that a DEQ inspection should occur within the first 2 months of their operation.

DEQ Response No. 13:

The permit contains weekly and monthly monitoring and recordkeeping requirements that must be included in the annual report submitted to DEQ. The permit also contains monitoring conditions that require immediate corrective action if the equipment operation parameters are exceeded. These requirements will ensure that compliance with the permit conditions is ongoing. DEQ performs periodic compliance inspections at all facilities in the Air Quality permitting program to ensure compliance and provide technical assistance. DEQ will conduct a site inspection at this facility after normal operations are established. A source test, while not an inspection, is required within 180 days of startup. The equipment must be operating at normal maximum operating rate for this test and results will be used to verify the accuracy of the proposed emission factors.

14. Since the overall goal is to reduce overall emissions and effects of pollutants to the environment, Carbon Dioxide (CO₂) should be monitored, reported, and minimized.

DEQ Response No. 14:

The company will be required to report CO₂ and other greenhouse gas emissions under DEQ's greenhouse gas reporting rule (OAR Chapter 340, Division 215). This rule does not contain any requirements to reduce CO₂ or other greenhouse gas emissions. This requirement is part of DEQ's broad environmental work and is administered separately from the permitting program. Regulatory rules for major sources of GHG's are currently being developed and adopted; because these rules have not been adopted yet DEQ is unable to determine if Columbia Biogas is subject to them. When the final rules are adopted DEQ will make a separate determination of the source's status.

15. Emission limits should be based on source testing not estimated emission factors. Estimated emission factors are often inaccurate and bear the risk of having little relation to the actual emissions at the site.

DEQ Response No. 15:

DEQ agrees with the commenter that source testing will provide more accurate information and verify the accuracy of the emission factors. Two sets of emissions factors are included in the permit: one for the generators, and one for the flare. The permit has been modified to include

emission factor verification testing for NO_x, CO, and VOC emissions from the generators. The manufacturers of the flare have conducted emissions testing on their equipment to develop the proposed emission factors. DEQ has found flare manufacturers' data to be reliable; however we have included a required combustion temperature condition to the permit to monitor the operational effectiveness of the flare.

The proposed emission factors for all but SO₂ are based on manufacturer's data. The emission factor for SO₂ is based on the maximum allowable H₂S content in the biogas stream (25 ppm). H₂S, through the combustion process of both the engine and the flare, will be converted into SO₂. This is the basis for the SO₂ emission factor. The permit already contains ongoing monitoring requirements for the H₂S concentration in the biogas stream.

16. The Plant Site Emission Limits (PSELS) should be set closer to the actual estimated emissions. The proposed PSELS should reflect actual emissions rather than an arbitrary limit.

DEQ Response No. 16:

The PSELS were set in accordance with Oregon rules [OAR 340-222-0040(1)]. Pollutant emissions have been demonstrated to have no adverse impact to the overall air shed up to certain levels. Oregon rules allow a facility to emit individual pollutants up to one ton below these rates.

17. Columbia Biogas will be processing waste and combusting biogas which will result in strong odors. Although the facility plans to equip exhausts with biofilters for odor, to ensure that this facility does not become a nuisance, best efforts should be made to monitor odor at least the first year. DEQ, Columbia Biogas, and the local community should work together to keep an odor log during the start-up and at least the first year of the facility's operations.

DEQ Response No. 17:

DEQ agrees that DEQ, Columbia Biogas, and the community should work together to monitor the impact of potential odors on the surrounding community. The company is required to keep a log of odor complaints and to investigate such complaints. This is a standard permit condition and was included in the draft permit (Condition 7.3). The permit also contains a requirement that Columbia Biogas submit summary of complaints received and follow up actions taken with their annual report. Citizens may make complaints directly to DEQ, or the facility and may choose to keep odor logs to verify the frequency and intensity of any odors noted.

18. DEQ should honor its commitment to individually list hazardous air pollutants (HAPs) in public notices. DEQ failed to list specific HAPs in the Columbia Biogas public notice. The public notice generally states the facility will emit trace amounts of HAPs and the permit report contains a cursory discussion of HAPs. This is inconsistent with DEQ's goal to better alert the public about HAPs emissions in their area.

DEQ Response No. 18:

The permit application lists 26 HAPs, the complete list is:

Hazardous Air Pollutant	Tons per year*
1,1,2,2,- Tetrachloroethane	0.003
1,1,2, - Trichloroethane	0.002
1,2 - Butadiene	0.017
2,2,4 - Trimethylpentane	0.016
Acetaldehyde	0.528
Acrolein	0.325
Benzene	0.028
Biphenyl	0.013
Carbon Tetrachloride	0.002
Chlorobenzene	0.002
Chloroform	0.002
Ethylbenzene	0.003
Ethylene Dibromide	0.003
Formaldehyde**	0.91
Hexane	0.07
Methanol	0.158
Methylene Chloride	0.001
Naphthalene	0.005
Phenol	0.002
Polycyclic Organic Matter	0.005
Pyrene	0.0001
Styrene	0.001
Tetrachloroethane	0.0002
Toluene	0.026
Vinyl Chloride	0.001
Xylene	0.012

*Based on 48.1 MMBtu/hr; 8,760 operating hours per year; and 70% catalyst control

**Based on oxidation catalyst vendor, 95% catalyst control

19. The relief valves should vent to scrubbers to reduce H₂S before the gasses are flared. The permit should require H₂S CEMs on the incoming fuel gas, on engine exhausts, and on the flares to monitor the emissions of this powerfully acrid gas and insure that releases and emissions are below the odor threshold.

20. The relief valves on the digester processes do not, but should vent to scrubbers during malfunctions. The permit does not contain pollution removal efficiencies for digester tank vents or any of the biofilters. The permit should mandate periodic testing of emissions from each valve and pump and set limits for allowable leaks.

21. The membrane dome containing conditioned biogas will probably have vents and relief valves, but there is no explanation why those won't be vented to scrubbers. The permit review report does not explain whether the membrane dome or any of the storage tanks will have floating roofs or mandated leak control efficiencies for the roofs, vents, valves, pump seals and other potential emissions points.

DEQ Response No. 19-21:

The purpose of the relief valves/vents is to prevent explosions and dangerous pressure buildup in the tanks. Such vents and valves are not part of the normal operations and are not normally ducted to a control device. The biogas produced by this facility is produced, stored and used in gaseous form, not liquid form. The production, storage and piping systems are designed to prevent leaks so that the biogas is not lost before it can be used to produce power. This also has environmental and safety benefits. Floating tank roofs are used to store certain volatile liquids, such as gasoline, and would not be appropriate for the storage of gaseous products.

22. The permit lacks pollution removal efficiency requirements for the SCR/oxidation catalysts on the engines.

DEQ Response No. 22:

The emission factors included in the permit incorporate presumed control efficiencies. The stated removal efficiencies are 80% for NO_x, 90% for CO, and 67% for VOC. Source test requirements have been added to the permit to verify these emission factors for the generators and control devices. Additional information on these requirements is in the response to comment 15.

23. The permit lacks any limits on the frequencies of the start-up and shut downs, during which excessive pollution will be emitted.

DEQ Response No. 23:

The facility is designed to operate 24 hours day, 7 days a week. After initial start-up, any start-up or shut-down will be due to emergency (upset) conditions or scheduled maintenance. It is anticipated that these events will be rare.

24. The facility does not apparently have back-up power. That could cause uncontrolled releases during power outages because mechanical equipment including fans and pumps won't operate.

DEQ Response No. 24:

The company is in discussion with PacifiCorp about options to power the facility in the event of a power outage. It is assumed that any gas produced by the digesters would be flared in the event of an outage.

25. The permit review does not say why more than 87% of H₂S won't be removed from the fuel gas. The Los Angeles Hyperion Waste Water Treatment Plant removes 97% of its H₂S prior to emitting it to the air.

DEQ Response No. 25:

H₂S in the gas, before treatment, will be variable. The permit, rather than requiring a relative reduction in the H₂S, includes an absolute limit on the concentration in the gas stream. The maximum allowable H₂S content is 25 ppm. Any monitoring that shows levels above this concentration requires corrective action. H₂S is converted into SO₂ during combustion in either the engine or the flare; the H₂S concentration is the basis for determining the level of SO₂ emissions.

26. What chemicals, acids, caustics, enzymes will be added to anaerobic digestion process? Please name the polymers and other additives utilized in this process and provide MSDS sheets to the community.

DEQ Response No. 26:

The applicant has stated that there are no plans to add chemicals, acids, or caustics to the food waste substrate which is pumped into the anaerobic digestion process.

Columbia Biogas will add a polymer to the byproducts dewatering process. Per Columbia Biogas the polymer must be added to flocculate the solids in order to easily separate the water from the solids. The polymer will be supplied in a liquid form and will be diluted and mixed with the solids prior to entering the dewatering unit. The amount of polymer used depends on the amount solids. The polymer that will be used will be the same type of polymer commonly used at wastewater treatment plants. Columbia Biogas has yet to identify the specific polymer that will be used. Once this information is available DEQ will provide this information upon request.

The MSDS for the SulfaTreat media is attached at the end of this document.

27. Sulfa treat (the H₂S removal system) has a breakthrough point (at which the granular filter gets saturated with H₂S). Will the sulfa treat granules need to be regenerated (cleaned)? Are there two or more scrubber systems so a second system can be utilized while one is being regenerated?

DEQ Response No. 27:

The SulfaTreat system has two chambers which may be used in tandem or singly. When treatment media is being replaced, one chamber will always remain operational for H₂S removal. A condition has been added to the permit that requires all gas to be filtered through the H₂S treatment system prior to combustion.

III. Odors, Emissions, and Hydrogen Sulfide (H₂S)

28. According to Columbia Biogas the media absorption process should take 250-400 days to work. The DEQ application breaks this process down to about 33 days to accomplish detention in the hydrolysis stage and fermentation stage. Which is correct amount of time needed?

DEQ Response No. 28:

The two timelines refer to different aspects of the process. The 250-400 days refers to the anticipated active life of the SulfaTreat media. The 33 days refers to the anaerobic digestion period of process feedstock.

29. If 220 ppm H₂S is vented from the process vessels during upsets, even if the flare destroy 99.9% H₂S will still be emitted at 220 ppb, which is about 400 times the odor threshold, which is about 0.5 ppb.

30. The applicant states that they will reduce H₂S concentrations in the biogas from about 3,000 parts per million (ppm) in the biogas entering the conditioning system down to a maximum of 25 ppm in the biogas supplied to the engines. It appears that there will be some H₂S smell coming from the facility even if the facility is below the 22 ppm threshold that DEQ has set requiring corrective measures. Wind can carry smell quite easily into residential areas. Neighborhoods should be protected against additional exposure to air pollutants from industrial facilities. I suggest that DEQ's maximum level be quite a bit less than 22 ppm.

31. The hope is that there will be zero odor and respectfully request samples be taken every 24 hours rather than every 2 weeks if the odor exceeds 10 ppm rather than 20 ppm. The human detection of odor is at 0.1 ppm for the average person and it is recommended that emissions be kept to 0.2 ppm at the fence line.

32. The permit review report does not explain why there is a 22 ppm limit on H₂S in fuel gas going to the engines, or why it cannot be much lower. The permit fails to limit the concentrations of H₂S in the engine exhaust to well below the odor thresholds of about 0.5 ppb.

33. Releases of these elevated concentrations of H₂S will cause noxious odors in the nearby residential neighborhood. Emissions of H₂S that exceed the odor threshold should be considered excess emissions and must be reported and fined if continued.

DEQ Response No. 29-33:

DEQ wishes to clarify that H₂S is converted to SO₂ when it is burned in the facility's combustion devices (the engines and flare). It is not anticipated that H₂S will be emitted in the exhaust gas of the facility's combustion devices at appreciable levels. The reference to 22 or 25 ppm of H₂S is associated with the pollutant's concentration in the biogas prior to being combusted in a combustion device. The H₂S concentration limit and monitoring requirements of the permit are relied upon to determine SO₂ emissions. Sampling for H₂S in the gas prior to combustion helps to ensure that the facility does not exceed the emission limit for SO₂. The permit was changed to require immediate corrective actions when any reading of H₂S in the gas is above 25 ppm. The emission factor for SO₂ was based on a maximum 25 ppm of H₂S in the gas stream fed to the combustion units.

34. The odor system is not designed yet, so how do you know its efficiency? The biofilters' description does not provide removal efficiency or adequate information for evaluation.

DEQ Response No. 34:

An odor control system is being designed specifically for the proposed facility. Final control efficiencies are unknown at this time. However, the system will be state-of-the-art, indicating that the efficiencies will be at the highest level possible. Regardless of the final design, the air quality permit contains best management practices, such as inspection of equipment components and weekly monitoring of pressure drop to ensure the highest level of operational efficiency.

Columbia Biogas is proposing to use biofilters to treat the collected air from indoor processing areas, tanks and storage areas. Biofilters are living systems using microorganisms to degrade compounds in waste gases. Biofilters are a bed of natural or manmade media. Waste gases are pushed through the biofilters where soluble compounds are, depending on the design of the system, adsorbed or absorbed to the moist layer attached to the media. The pollutants are biodegraded when in contact with the microorganisms in the moist layer.

DEQ does not have regulatory requirements for efficiency of the proposed odor systems a facility may use. DEQ requires a facility to use an odor system and to continue to make adjustments as necessary to control and minimize odors. The efficiency of the biofiltration system depends on the design of the system. The design of the system depends on several factors including the type of facility, the site, odor modeling, irrigation, leachate collection and treatment, enclosed or open air system, pattern of distribution, retention time, media used, etc. The efficiency of the system also depends on the maintenance and monitoring of the system. Through the solid waste permit, DEQ will be approving an operations plan for the system that will require that the biofilter be operated properly.

Biofiltration systems have been used in many applications to treat odorous air including wastewater treatment, composting, feed lots, foundries and pulp and paper. DEQ will work with Columbia Biogas as the facility is constructed to make sure the biofilter is functioning optimally and that odors are controlled and minimized.

35. Anaerobic digesters produce ammonia, what happens to that, won't it stink too? The permit should limit ammonia emissions.

DEQ Response No. 35:

DEQ regulates emissions of criteria and hazardous air pollutants. Ammonia is not defined as either a criteria pollutant or a hazardous air pollutant. DEQ has no regulations that address ammonia.

IV. Flare

36. Is there a maximum amount of time that a flare can be utilized? How much gas or pollution is being released into the air when a flare is being used?

DEQ Response No. 36:

Except as limited by the PSELS, there is no maximum amount of time that the flare can be used. The emissions from the flare must be calculated and reported using the emission factors in condition 14.0 and the equation in condition 6.1. Though not a limitation, the application states that "worst case" the flare would operate 3,504 hours per year. This is equivalent to 10% downtime for maintenance on each generator. Emissions from this operating scenario are estimated at 1.3 tons NO_x, 6.3 tons CO, 0.2 tons PM₁₀, and 4.2 tons VOC in one year.

37. The site developer claimed the flares would destroy 99.9% of the emissions during upset conditions. But the permit lacks any pollution removal efficiency requirements for the flare. Recent studies of refineries show that flares are generally not efficient so the 99.9% removal rate should be a permit condition. The permit needs start-up tests to prove up the flares' pollution removal rates.

DEQ Response No. 37:

Manufacturers conduct emissions tests before selling their equipment and, in general, DEQ has found manufacturer's data to be reliable. The manufacturer has certified a destruction efficiency of 99%. The application states that the flare will have a normal temperature of 1400° F. This is equivalent to DEQ's required operating temperature for an afterburner. A permit condition has been added to the permit to require the flare to operate at a minimum combustion temperature of 1400° F.

38. There is no indication that the flare will be required to remain on, in standby mode. This means that uncontrolled releases would continue until the flare is started and reaches an appropriate combustion heat. Additional flare controls could be applied, including mandatory retention times, additional H₂S controls, fuel gas filters, and knockout vessels to reduce flare emissions. Flare pollution removal efficiency should be proved up to the claimed 99.99% during start-up source tests.

DEQ Response No. 38:

The flare is equipped with an automatic ignition system. The permit requires the flare to be operated any time biogas may be vented to it. The permit also states that if any excess emissions occur due to flame ignition malfunction then the flare must be operated with a standing pilot light. The manufacturer has certified a destruction efficiency of 99%. The application states that the flare will have a normal temperature of 1400° F. This is equivalent to DEQ's required operating temperature for an afterburner. A requirement to operate the flare at 1400° F has been added to the permit.

V. Traffic

39. The proposed plant entrance is a bottle neck of only two lanes on Columbia Boulevard. Traffic is a major issue on Columbia Boulevard. Columbia Biogas anticipates having 58 trucks in and out per day, but what happens when the truck load increases to 75 or 100 trucks per day? An increase in traffic will create further traffic problems and potential accidents. A current traffic study is needed for this project.

DEQ Response No. 39:

DEQ does not have regulatory authority for traffic issues and is not able to address this concern. The City of Portland is the appropriate agency to communicate with about traffic concerns. Please visit the City of Portland, Bureau of Transportation website at <http://www.portlandonline.com/transportation/index.cfm?c=32360> for more information or contact Fabio de Freitas at (503) 823-4227.

Columbia Biogas will be applying for development permits from the City of Portland, Bureau of Developmental Services. Once their application is submitted to the City, City staff will review the information to ensure the proposal meets the applicable City requirements. Traffic will be one area reviewed by City staff. At this time it is unknown as to when the application will be submitted to the City. However, once the application is submitted, the City contact for traffic concerns related to Columbia Biogas is Fabio de Freitas. Fabio de Freitas can be reached at (503) 823-4227.

Columbia Biogas has conducted a traffic study. For more information about this study contact Columbia Biogas at (503)914-4630 or www.columbiabiogas.com.

40. I have a concern that the waste stream will be allowed to be trucked in from outside Oregon and the greater Portland-metro area.

DEQ Response No. 40:

DEQ received several comments supporting the Columbia Biogas facility that indicated the proposed facility will fill a need in the Portland-metro area for a location to manage food waste locally and avoid disposal at a landfill or through the sanitary sewer. DEQ does not have regulatory authority to restrict where waste to a DEQ regulated facility comes from. The

transportation of waste is regulated by the Oregon Department of Transportation which requires vehicles to be secured to prevent leaking, spilling or shifting during transit.

VI. Noise

41. There are concerns about the combustion noise for employees and the neighborhood. There should be greater emphasis on using engineering controls to mitigate noise hazards, as recommended by OSHA, rather than personal protective equipment and training.

DEQ Response No. 41:

Many of questions and concerns during the public comment period included noise control. DEQ no longer has the resources to carry out a noise program. In 1991, the Oregon Legislature directed DEQ to terminate the Noise Control Program as an agency cost-savings measure due to a reduction in General Fund support. This action rescinded all funding for DEQ to enforce, respond to complaints, provide advice, or interpret the State noise regulations. Upon termination, DEQ informed local governments and the public, and provided guidance on how the statutes and rules would continue to apply, should local governments wish to use them. Options available to local governments and the public include:

- Local governments may enact and enforce the State standards, or may adopt their own standards and enforcement, as long as the standards are consistent with or exceed the State standards.
- In some cases, a private citizen or local government may bring a nuisance suit through private legal counsel or local district attorney's office.
- A local government may submit evidence of a state noise violation to the local district attorney's office, and enforcement would be at the discretion of that office.

The City of Portland Noise Control Program is responsible for enforcing the provisions in the City of Portland's noise code (Title 18), helping to resolve citizens noise concerns and assisting with noise variance applications. They can be reached at (503)823-7350. Please see the City of Portland Noise Control Program webpage for more information at <http://www.portlandonline.com/bds/index.cfm?c=42438>.

Noise concerns can also be addressed by working directly with the facility operator, Columbia Biogas, at (503)914-4630. Columbia Biogas has also conducted noise studies. For more information on these studies, please contact Columbia Biogas; www.columbiabiogas.com.

VII. Stormwater/Water Quality

42. A maximum of 80,000 gallons of water per day could be produced, why is there not a defined disposal plan required by DEQ, especially when bioswales and holding ponds have been mentioned as a possible use?

DEQ Response No. 42:

The Columbia Biogas facility is designed to accept up to 80,000 gallons of liquid food waste per day. The liquid and solid food waste accepted will contain a large percentage of water and will be treated through anaerobic digestion process. The anaerobic digestion process will generate solid and liquid byproducts. The liquid byproducts will be treated through ultra-filtration and reverse osmosis. The water passing through the reverse osmosis membrane is the process wastewater and the water not passing through the reverse osmosis membrane is the liquid fertilizer; water containing ammonia, phosphorous and other nutrients.

Columbia Biogas proposes that the process wastewater will be reused in the facility's anaerobic digestion process, sold off-site for industrial uses, or discharged to the City of Portland's sanitary sewer. Discharges to the City's sanitary sewer require a pre-treatment permit and oversight from the City of Portland, Bureau of Environmental Services, Industrial Pretreatment Program. For more information about the City's Industrial Pretreatment Program see the City's website at <http://www.portlandonline.com/bes/index.cfm?c=31810&a=325124>. Columbia Biogas does not intend to discharge process wastewater to the Columbia Slough. If Columbia Biogas does want to discharge process wastewater to the Columbia Slough, the facility would need to apply for a Water Pollution Control Facility permit. The DEQ Water Quality Program would then review and process the application. For more information about the water quality permit programs please see <http://www.deq.state.or.us/wq/wqpermit/permits.htm>.

In addition to process wastewater, the facility will generate stormwater onsite. Stormwater is runoff from the roofs and paved areas of any facility. DEQ requires that facilities with stormwater runoff obtain a stormwater permit and monitor discharge to meet specific requirements. For ongoing stormwater discharges after the facility begins to operate, the facility must obtain a stormwater permit from the City of Portland. For stormwater generated during construction of the facility, Columbia Biogas must obtain a stormwater construction permit from DEQ. The facility intends to use bioswales and the existing holding ponds to ensure that stormwater meets appropriate water discharge permit requirements.

43. I have concern about stormwater management and the potential of harmful bacteria in the proposed stormwater holding ponds. Columbia Biogas should apply to DEQ for water quality permits.

DEQ Response No. 43:

Columbia Biogas is required to properly manage stormwater by the DEQ solid waste permit, section 10.8 and by other applicable local and state regulations. For stormwater discharges to the Columbia Slough, Columbia Biogas will be required to obtain a stormwater discharge permit from the City of Portland, Bureau of Environmental Services, Industrial Stormwater Program. The potential bacteria that may be contained in the stormwater runoff will be monitored by Columbia Biogas under oversight by the City of Portland.

44. Trucks leaving the facility will track out wastes until they get to the tire wash near the scale. Stormwater collected from these impervious surfaces will contain spilled and tracked-in garbage and contaminants. Water from washing that area is process water, not stormwater, and should not be discharged to the Columbia Slough.

DEQ Response No. 44:

DEQ agrees that truck washwater is process water that must be properly managed. Discharges to the sanitary sewer must meet pretreatment limits for the Columbia Boulevard Wastewater Treatment Plant. If Columbia Biogas wishes to discharge process water to the Columbia Slough they will need to apply for an individual industrial water pollution control facility permit from DEQ. This permit will regulate the process water discharge to the Columbia Slough and would set benchmarks for pollutants. Columbia Biogas would also be required to regularly sample and analyze stormwater discharge for pollutants. Columbia Biogas is currently proposing to reuse the process water in its process, sell the treated process water for industrial purposes, or discharge to the City's sanitary sewer. Discharges to the sanitary sewer will require a permit from the City of Portland.

45. The permit review does not describe what kind of contaminants, at what concentrations, will be in the effluent discharged to the Portland sanitary sewer, and whether odors will be emitted from the sewer system under upset circumstances, or whether "sour" water (H₂S or sulfur contaminated water from the biofilters) will be discharged to the sewers, or the fate of the sour water.

DEQ Response No. 45:

The type of potential contaminants and the possible concentrations depend on the type of waste accepted and processed. Discharges to the sanitary sewer will require an industrial pretreatment permit from the City of Portland. This permit will regulate the contaminant concentrations discharged to the sanitary sewer. Any odors associated with the City's sanitary sewer will be regulated by the City. For more information about the City of Portland's Industrial Pretreatment Program visit the City's website at <http://www.portlandonline.com/bes/index.cfm?c=31810>.

VIII. Rodents

46. There is a concern about the facility generating a rodent nuisance condition. How will Columbia Biogas address a potential rodent problem? Dealing with extermination of rodents could be an increased cost for surrounding businesses.

DEQ Response No. 46:

Vectors such as rodents and mosquitoes can pose human health risks if not controlled. Both the Operations Plan and the permit address vector control. Permit Section 9.13, Vector Control, requires that the facility control vectors as necessary to prevent vector production and sustenance. Current measures include minimizing on-site storage and processing times for incoming waste, operations occurring indoors, and the facility must maintain site cleanliness. Columbia Biogas will clean the facility at the end of each operating day. DEQ will require

Columbia Biogas to modify their operations plan to include stronger vector control measures and other steps to take if their current controls fail to prevent vector problems.

IX. Electricity generated

47. More information is requested about the purchasing agreement with PPL (PacifiCorp/Pacific Power) or others for the energy generated. Who will buy this energy base load; BPA, a PUD, Pacific Power, PGE, Eugene Water and Electric? What's a fair price?

DEQ Response No. 47:

Columbia Biogas is working with PacifiCorp to secure an agreement for the electricity they will produce. DEQ does not regulate energy, prices of energy or associated agreements and is not able to address this comment. Utility services are regulated by the Oregon Public Utility Commission. For more information about energy production and sales please visit Oregon Public Utility Commission website at <http://www.puc.state.or.us/PUC/index.shtml>.

X. Land use

48. Most facilities of this type are located in the country, not in commercial/residential locations. The health risks from locating this facility in a commercial area need to be considered. What will happen in two to four years when someone becomes ill from exposures to these pollutants?

DEQ Response No. 48:

DEQ does not make decisions about where facilities locate. Local governments decide whether a facility meets zoning requirements. DEQ evaluated the proposed facility's operation and determined that the facility will meet DEQ's environmental and human health requirements.

The Oregon land use planning program, administered through the Department of Land Conservation and Development, requires that state agencies act in accordance with State land use planning goals and with city and county comprehensive land use plans. DEQ has adopted the State Agency Coordination Rules (Division 18), which contain the policies and procedures for assuring that DEQ land use related permit and approval actions are consistent with state goals and local land use plans. According to Division 18, the affected local government must review and approve the proposed land use, assuring that the proposed land use is compatible with the local land use plan before DEQ can process and issue a permit or approval.

As part of their DEQ permit applications, Columbia Biogas submitted a land use compatibility statement (LUCS) signed by the City of Portland indicating that the proposed land use is compatible with the City's land use plan. The LUCS was signed by the City on August 6, 2010.

DEQ permit conditions are intended to limit potential risk to the environment and human health. The permit evaluation for this facility examined such factors such as proximity to neighbors and nearby sensitive environmental areas and determined that the facility will meet DEQ's

requirements. Once the facility is operating, DEQ will conduct periodic inspections to determine that environmental requirements continue to be met.

XI. Columbia Biogas Comments and DEQ Response

49. Permit cover page and Section 1.6: John McKinney will not personally be the operator. CBG will operate the facility and may contract for some operation services.

DEQ Response No. 49:

DEQ will modify the permit to accurately reflect that Columbia Biogas LLC. is the operator of the facility not John McKinney. DEQ will modify permit section 1.6 to:

1.6	Facility owner/ operator	The property owner of this facility is: Oregon Fresh Farms Real Estate LLC 15201 SE Rivercrest Drive Vancouver, Washington 98683	The operator of this facility is: John McKinney¹ Columbia Biogas LLC 721 NW 9 th Avenue, Suite 195 Portland, Oregon 97209
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50. Permit Section 1.4 and 3.2: The permit term should be 10 years. We are not aware of any basis for setting the permit term for a period less than provided by ORS 459.245. Permit renewal is an expensive and resource intensive process for CBG and DEQ. We do not see any reason to incur those costs more often than necessary.

DEQ Response No. 50:

ORS 459.245 provides DEQ the authority to issue solid waste permits for up to ten years. DEQ may issue a permit for less than ten years for various reasons including management of finite DEQ resources, opportunity to evaluate facility processes sooner than once every ten years, etc. DEQ does not currently charge a fee for solid waste permit renewals. DEQ will retain this permit condition language and retain the permit term of seven years.

51. Permit Section 3.5: Consistent with 5.3, this section should refer to “plans” approved by DEQ, not any “documents” such as letter and reports. We hope that DEQ does not intend every letter and report it approves as somehow creating an enforceable permit conditions.

In this same section, we are confused by how it refers to the CBG application as “applicable federal, state, or local laws or regulations.” We are not even sure what it means to comply with the application. The permit application should be deleted from this list. Possibly, you mean that the facility will be constructed and operated consistent with

¹ Permit language that is deleted from the specific permit condition is indicated by a strikethrough (~~the permittee must not...~~). Permit language that is added to a specific permit condition is indicated in italics and underlined (*the permittee must not...*).

the application, except as otherwise approved or required by DEQ, which could be a separate section.

DEQ Response No. 51:

DEQ will request information as required to comply with the solid waste regulations and permit. Depending on the information request or requested update to a document, a permittee may submit a letter, report, diagram, plan or some other document to show how a facility will be operated or requirement will be fulfilled. If DEQ reviews and approves a document the applicant is required to comply with the approved document. The term document will remain unchanged in permit section 3.5.

OAR Chapter 340, Division 93 requires persons to submit a permit application in order to establish and operate a solid waste facility. The permit and associated requirements are based on the information provided in the application and on any updates or additional information requested. Applications are a required document and are approved by DEQ issuing a permit. Permittees are required to comply with the information submitted in an application and to any updates and changes to the information. The reference to the permit application will remain in permit section 3.5.

52. Permit Section 6.4: The permit does not authorize CBG to accept source-separated recyclables such as bottles, paper, scrap metal and the like. So the purpose of this condition is unclear. Consultation with DEQ should not be required for every instance of rejected material. Also, please understand that CBG will generate processing residuals (packaging and other contaminants removed from food materials) that will be recycled or landfilled, as appropriate. Criteria for load rejection will be described in the operating plan to be approved by DEQ. We have suggested deleting the DEQ consultation requirement, but it probably makes most sense to delete this provision entirely given that the facility will not be authorized to accept source-separated recyclables that are the apparent target of this provision.

DEQ Response No. 52:

The solid waste permit does not prohibit Columbia Biogas from accepting source separated recyclables. This permit condition prohibits the disposal of source separated recyclable material and from mixing the source separated recyclable material with solid waste for disposal at a landfill.

Consultation with DEQ is required any time a permittee wants to dispose of source separated recyclable material instead of reusing or recycling the material. This permit condition does not require Columbia Biogas to consult with DEQ every time waste is rejected or residual waste is sent for disposal.

Even though Columbia Biogas is not currently accepting source separated recyclable material, DEQ will retain this permit condition language. If Columbia Biogas accepts source separated recyclable material in the future this condition will apply. This permit condition is a standard

condition in solid waste permits. Also, this permit condition is similar to section 5.4 in the Metro Franchise Agreement (F-131-10) issued to Columbia Biogas.

53. Permit Section 7.3: Incoming feedstock may include packaging that will be removed during the pretreatment process. The pretreatment process will also remove contaminants that could cause damage to the process equipment. Packaging may include recyclables such as aluminium and other metal will be removed and loaded into a container for hauling to a recycling facility. Residuals that cannot be practically recycled will be hauled to a transfer station or landfill for proper disposal. We suggest adding "Handling and removal of residuals" as s 4th bullet under Plan Contents to assure it is adequately addressed in the Operations Plan.

DEQ Response No. 53:

DEQ will add "handling and removal of residuals" to permit section 7.3. The list in this permit condition is a partial list of requirements that must be included in the facility Operations Plan. Under a separate cover, DEQ will provide feedback on and request additional information to the draft Operations Plan Columbia Biogas submitted to DEQ on October 7, 2010.

DEQ will modify permit section 7.3 to:

7.3	Plan content	<p>The Operations Plan must describe the methods of operation of the facility in accordance with all regulatory and permit requirements. Among other things, the Operations Plan must describe generally how the facility will be operated to protect human health and the environment including but not limited to:</p> <ul style="list-style-type: none">● Waste acceptance;● Waste unloading, staging and handling;● Handling and removal of unacceptable wastes;● <u>Handling and removal of residuals</u>;● Management of liquid by-product(s) and digested fibers;● Sampling plan for presence of pathogens, for off-site uses of liquid by product(s) and digested fibers;● <u>Description and management of byproducts</u>;● Procedures for handling putrescible materials to ensure no adverse environmental impacts occur including runoff, dust, odors, vectors or other nuisance conditions;● Management of transfer containers and vehicles;● Procedures for controlling and minimizing odors;● Washing equipment;● Maintenance of equipment and systems;● Managing wash waters and process waters;● Maintaining surface water control structures;● Maintaining tank integrity;● Screening procedures for detection of unauthorized wastes;● Handling and removal of unauthorized wastes discovered at the facility;● Establishing and maintaining the operating record;● Providing fire protection equipment;● Notifying the DEQ about emergencies and fires;● Procedures for dealing with cleanup of an oil or hazardous materials spill;● Procedures for reporting spills to the Oregon Emergency Response System (OERS) at 1-800-452-0311;● Site Safety Procedures; and● Employee training.
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54. Permit Sections 7.5 and 14.1: This condition calls for an updated operations plan within 60 days of commencing operations. CBG's processes require a gradual ramp up to cultivate bacteria and to acclimate the bacteria to the waste mix for the facility. Once the process has stabilized, it will go through performance testing. At that point, it will be ready for full scale regular operations. Up until the performance test is complete, CBG will be making adjustments to its operations. This is the schedule that will be in the Metro franchise for this same operations plan. Therefore, it will make the most sense to update the operations plan after the performance testing, which will be several months after operations actually commence. The process stabilization and performance testing period

will be described in the operations plan to be approved by DEQ before commencing even that level of operation.

DEQ Response No. 54:

DEQ will modify permit section 7.5 to:

7.5	Plan maintenance	<p>The permittee must revise the Operations Plan, as necessary, to keep the plans reflective of current facility conditions and procedures. The permittee must submit plan revisions to DEQ for written approval.</p> <p>The permittee must submit an updated Operations Plan to DEQ for approval within 60 days after initiating operations <u>completing the process stabilization and performance testing stage.</u></p> <p>The permittee is required to submit a revised or new Operations Plan any time the Operations Plan is updated during the life of this permit.</p>
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DEQ is also requesting that Columbia Biogas provide details about the process stabilization and performance testing stage including schedule, odor controls, procedures, etc.

Permit section 14.1 will also be updated to reflect this change.

55. Permit Section 8.2: The 24-hour reporting requirement in this section should be triggered by discovery.

DEQ Response No. 55:

DEQ will modify permit section 8.2 to clarify the implied notification is required within 24 hours of discovery. DEQ will modify this permit condition to:

8.2	Non-compliance reporting	<p>In the event that any condition of this permit or of DEQ's rules is violated, the permittee must immediately take action to correct the unauthorized condition and notify DEQ within 24 hours <u>of discovery</u> at:</p> <p>(503)229-5353</p> <p><u>Response:</u> In response to such a notification, DEQ may conduct an investigation to evaluate the nature and extent of the violation, and to evaluate plans for additional corrective actions, as necessary.</p>
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56. Permit Section 8.8: This section would require CBG to "resolve" every citizen complaint and to do so within 10 days. While CBG intends to be highly responsive to neighbor concerns, some complaints may not be appropriate and other may not be resolvable. DEQ does not have authority to require resolution of every citizen complaint; moreover, it would be inappropriate for DEQ to abdicate its authority by giving every citizen the

ability to force changes at the CBG facility by merely complaining. This section should be revised to state that CBG will “respond” to every complaint within the prescribed time. CBG will document in its complaint log its response to each complaint and whether and how the complaint was finally resolved.

DEQ Response No. 56:

DEQ understands that not every complaint received is able to be resolved or validated. This is not the intention of the permit condition. This permit condition requires the facility to promptly respond to complainants, investigate, initiate procedures to mitigate concerns and document complaints.

DEQ will modify permit section 8.8 to:

8.8	Complaint log	The permittee must maintain a log recording all complaints received in writing (including e-mail), via telephone or in person by the facility operator or staff that specifically refer to dust, odor, noise, environmental impacts or other nuisance conditions caused by this facility. The log must also record the permittee’s actions to investigate, make a determination as to the validity of the complaint, and resolve the complaint problem, if possible, within two working days, but no longer than 10 working days after receiving the complaint. <u>promptly respond to the complainant. The permittee must immediately initiate procedures as appropriate to reduce or eliminate the concern identified by the complainant and initiate procedures to prevent the concern in the future.</u> The log must be made available to DEQ upon request.
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57. Permit Section 9.4: This section contains numerous errors and misstatements regarding the Oregon release reporting rules. We have suggested revisions to correct these errors on the enclosed copy of the proposed permit. Most particularly, reporting is only required for reportable quantities, and reporting is required immediately, not “after taking any required emergency actions.” This section also misstates the reportable quantity for the release of oil to surface water. Please revise this section so that it is consistent with OAR ch 340, div 142.

DEQ Response No. 57:

The language in permit section 9.4 is compatible with the language in DEQ rules, spill response fact sheets and website. However, there is redundant information in this permit section that DEQ agrees should be clarified.

DEQ will modify permit section 9.4 to:

9.4 Spill
response

~~ORS 466.635 and Solid Waste Rules, OAR Chapter 340, Division 142 require immediate notification to Oregon Emergency Response System (OERS) after taking any required emergency actions to protect human health and the environment when oil or hazardous materials are spilled. The spill must be immediately reported to OERS at 1-800-452-0311 if the spill is of a reportable quantity.~~ Any spill of oil or hazardous material must be cleaned up immediately as described in the facility Operations Plan. In addition to notifying the appropriate DEQ office, the permittee must immediately report the spill to the Oregon Emergency Response System (OERS) at 1-800-452-0311, if the spill is of a reportable quantity as required by ORS 466.635 and OAR Chapter 340, Division 142. Reportable quantities include:

- **Any** amount of oil spilled to waters of the state;
- Oil spills on land in excess of forty-two (42) gallons;
- Two hundred (200) pounds (twenty-five (25) gallons) or more of spilled pesticide residue; and
- Spills of hazardous materials that are equal to, or greater than, the quantity listed in the Code of Federal Regulations, 40 CFR Part 302 (List of Hazardous Substances and Reportable Quantities), and amendments adopted before July 1, 2002.

Spills of liquid wastes must be cleaned up to prevent odors, public health hazards and discharges to waters of the state.

For a complete list of hazardous materials required to be reported, please refer to OAR 340-142-0050.

58. Permit Section 9.8: *Pathogen analysis:* *This condition would require Columbia Biogas' byproducts to be "pathogen free." That is an impossible standard that indicates the absence of any bacteria other disease agent. We are not aware of any law that would impose such a standard on any product derived from solid waste.*

Although CBG is willing to work with DEQ to develop a practical approach to ensuring that its byproducts do not pose any unreasonable health risk, there is no Oregon rule giving DEQ authority to impose a pathogen standard on CBG's byproducts. The only Oregon or federal laws that regulate pathogens in byproducts apply only to domestic sewage (OAR ch 340, div 50 and 40 CFR Part 503) or to composting facilities (OAR 340-096-0130). CBG will not receive or process domestic sewage, biosolids (as defined by OAR 340-050-0010(3)), or biosolids derived products (as defined by OAR 340-050-0010(3)). CBG also does not engage in composting as defined in the Oregon rules. These rules, therefore, simply do not apply to CBG's operations that would be authorized by the proposed permit.

We request that reference to pathogen testing and a pathogen standard be removed from the permit. CBG's draft Operations Plan proposes a testing program for its byproducts to demonstrate that they do not contain unsafe levels of human pathogens.

Hazardous waste analysis: *Except in unusual circumstances, chemical analysis should not be necessary to perform a hazardous waste characterization of CBG's waste or by-products. CBG should not be required to make hazardous waste determinations any differently than any other generator of waste. Please delete from this condition any reference to requiring chemical analysis.*

DEQ Response No. 58:

This permit condition requires Columbia Biogas to make waste characterizations on waste generated at the facility to ensure proper disposal. DEQ agrees that waste characterization may be made using various techniques that do not always require chemical analysis. This permit condition also requires obtaining written approvals from DEQ and Oregon Department of Agriculture for the proposed end uses of the byproducts produced from the anaerobic digestion process.

DEQ understands that Columbia Biogas intends to seek approval from ODA to sell and market the liquid and solid byproducts as fertilizer, agricultural mineral or agricultural amendment. In addition to the ODA certification, Columbia Biogas will need to request an agricultural use exemption from DEQ to land apply the byproducts in agricultural applications. Additional DEQ approvals may be required for non-agricultural uses to ensure the end use does not pose a threat to human health and the environment.

The byproducts must be used in an appropriate beneficial application or properly disposed of at an appropriate disposal site after receiving appropriate agency approvals if needed. Speculative accumulation of byproducts must be prevented. Byproducts stored for more than six months without clear evidence that the byproducts will be beneficially reused or recycled must be properly disposed of.

DEQ will modify permit section 9.8 to:

9.8 Wastes and by-products generated on-site	<p>The permittee must perform chemical analysis of by products and wastes to demonstrate by products are pathogen free and wastes are not a hazardous waste.</p> <p><u>The permittee must make a hazardous waste determination on waste generated at the facility to ensure proper disposal.</u></p> <p>The permittee must obtain written approval from DEQ and Oregon Department of Agriculture, as appropriate, for end use of the liquid by-products and digested fiber.</p> <p><u>The permittee is responsible for ensuring the byproducts end uses comply with applicable regulations and does not pose a threat to human health or the environment.</u></p>
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59. Permit Section 9.10: *The first paragraph of this condition requires cleaning and maintenance to “prevent pollution discharges.” We don’t know what this standard means. The facility will have air emissions and stormwater runoff that cannot be prevented and will be regulated by separate pemrits. The second paragraph states a less ambiguous maintenance standard that should be sufficient. We request that the first paragraph be deleted. Detail on operations and maintenance will be included in the operations plan subject to DEQ approval.*

The last sentence of this condition appears to require backup facilities, without specifying what backup systems would be required. We have assumed that the intent was to require backup systems be properly operated and maintaned, and we have revised the sentence accrodingly.

DEQ Response No. 59:

The intent of this permit condition is to ensure the permittee properly operates and maintains equipment and facilities to feasibly prevent upset conditions, equipment failures and impacts to the environment. And when necessary the permittee may need to have backup generators or systems to ensure the facility is properly operated.

DEQ agrees this permit condition needs clarification. DEQ will modify permit section 9.10 to:

9.10 Maintenance ~~The permittee must perform cleaning, maintenance, calibration and repair of equipment and systems in a manner and frequency to prevent pollution discharges. Repairs must be completed as promptly as possible.~~

The permittee must at all times properly operate and maintain all equipment and systems of treatment and control that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision calls for the operations of *The permittee must employ backup or auxiliary facilities or similar systems, as necessary, to prevent nuisance conditions and adverse impacts to human health and the environment.*

60. Permit Section 9.11: *“Adverse impacts” is an undefined concept. Oregon law regulates nuisance odors and DEQ’s rules define nuisance. The Oregon nuisance rule is the only applicable odor standard.*

DEQ Response No. 61:

Not all terms used in DEQ rules and permits are defined DEQ water quality and solid waste rules uses the term “adverse impacts” but do not define the term. The term generally means harmful or negative effect. DEQ uses various tools to address odor concerns and complaints including nuisance; however, DEQ does not set standards to address odors. DEQ considers the terminology

“adverse impact” to adequately reflect the intent of this permit condition and will retain this permit language.

61. Permit Section 9.16: This condition requires reporting and restart approval for “shut-down for any reason.” What is meant by “shut-down?” The facility will be closed every weekend. It may periodically stop receiving waste materials for maintenance reasons. It also may determine to partially or completely curtail receipt of wastes in order to allow time for digestion processes stabilize. What is the concern DEQ is trying to address in this section and how can it be addressed without notice and startup approval for routine shutdowns? We have suggested revisions that would require notice and restart approval for emergency shutdowns of the waste processing. We request that curtailment of waste receipt not be regarded as a shutdown.

DEQ Response No. 61:

The intent of this permit condition is to require the permittee to contact DEQ when the facility needs to stop operating due to an emergency, equipment failure or for other reasons. This permit condition does not apply to normal facility closures such as not operating on Sundays or outside the facility’s operating hours.

DEQ will modify permit section 9.16 to:

9.16	Operation shut-down	<p>In the event that facility operations are shut-down for any reason <u>due to an emergency, equipment failure or for other reasons not related to normal processing schedules</u>, the permittee must immediately cease receiving wastes and notify DEQ at (503)229-5353 within 24 hours.</p> <p>The facility must not accept any wastes until the reason for shut-down is satisfactorily resolved and the approval to resume operating obtained in writing from DEQ.</p>
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62. Permit Section 10.3: CBG will not itself be owning or operating transfer vehicles. Although CBG can request haulers to voluntarily meet certain criteria, CBG does not have that control over them. Route haulers and contract carriers are regulated by municipal governments and the Oregon Department of Transportation. We have suggested revisions to this condition so that it would apply only to vehicles removing wastes from the facility.

DEQ Response No. 62:

This permit condition requires vehicles used to transport waste from the Columbia Biogas facility be constructed, maintained and operated to prevent leaks and spills while in transit. This condition pertains to the vehicles used by Columbia Biogas not by the haulers bringing waste to the facility unless these vehicles are operated by Columbia Biogas (through ownership, lease, contract, etc.). Please also refer to permit section 3.4.

DEQ encourages facilities to communicate applicable regulations with haulers bringing waste to the facility if Columbia Biogas finds that the hauler vehicles are leaking or spilling waste. The permit language is standard permit language used in solid waste disposal permits. DEQ will retain this permit condition language.

63. Permit Section 10.7: This condition regarding leachate is not appropriate for CBG's operations. CBG's processes are designed to extract liquid from the food wastes it receives. Wastes received on the ripping floor will leach liquid, which is a valuable feedstock that will be collected for processing. CBG will manage liquid waste responsibly, but it cannot "deter" leachate production as required by the permit condition because the wastes it receives will have a high liquid content. Please delete the first sentence of this permit condition.

DEQ Response No. 63:

As defined by OAR 340-093-0030, "Leachate" means liquid that has come into direct contact with solid waste and contains dissolved, miscible and/or suspended contaminants as a result of such contact. DEQ understands based on the nature of the solid and liquid food waste Columbia Biogas intends to accept that leachate and other liquids are desirable to the facility's anaerobic digestion process.

The important aspect of this permit condition is the permittee is required to properly manage leachate to prevent impacts to human health and the environment. The language in this permit condition is standard permit language for solid waste disposal sites. DEQ will retain this permit condition language.

64. Permit Section 13.3: This condition regarding financial assurance would require a "notarized certificate" from an unnamed source. Third-party certification is only required by DEQ's rules for alternative financial assurance mechanisms. As a matter of policy, not rule, DEQ has included in its financial assurance forms a form to be signed by an authorized representative of the permittee certifying certain facts regarding its financial assurance mechanism. We have suggested revisions to this condition to make it consistent with DEQ's financial assurance forms.

DEQ Response No. 64:

Permit section 13.3 requires the permittee to submit evidence of financial assurance for DEQ review and approval within 180 days of the permit issuance. As part of the initial submittal the permittee must submit the Initial Certification of Financial Assurance form. This form clearly indicates the permittee must fill out the initial certification. The form also indicates that if the permittee chooses to use an alternative financial assurance mechanism then the permittee must also provide a third party certification (such as a financial institution or independent certified public accountant). The Initial Certification of Financial Assurance form can be found on the DEQ website at

<http://www.deq.state.or.us/lq/pubs/forms/sw/financialassurance/InitialCertificationFinAssurance.pdf>.

Columbia Biogas has yet to determine the financial assurance mechanism that will be used and may decide to use an alternative financial assurance mechanism. DEQ will retain this permit condition language.



MATERIAL SAFETY DATA SHEET

MSDS NO. 12086

Trade Name: SULFATREAT* 410CHP

Revision Date: 03/18/2004

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: SULFATREAT* 410CHP
Chemical Family: Mixture
Product Use: Hydrogen Sulfide Treatment
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: SULFATREAT
A Business Unit of M-I L.L.C.
17998 Chesterfield Airport Road
Chesterfield, MO 63005

Telephone Number: 281-561-1511
Contact Person: Catherine Miller, Product Safety Specialist

Revision Number: 3

HMIS Rating

Health: 1*

Flammability: 1

Physical Hazard: 0

PPE: E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Montmorillonite, calcined	70892-59-0	30 - 60	No comments.
Water	7732-18-5	10 - 30	No comments.
Iron oxides	Various	10 - 30	No comments.
Silica, crystalline, quartz	14808-60-7	5 - 10	No comments.

3. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin, and respiratory tract irritation. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:

UN PIN No: Not regulated

WHMIS Class: D2A D2B

Physical State: Granular Solid

Odor: Odorless

Color: Black

Potential Health Effects:

Acute Effects

Eye Contact: Dust may cause irritation and inflammation.

Skin Contact: Dust may cause skin irritation.

Inhalation: Dust may be irritating to the respiratory tract.

Ingestion: Not considered a likely route of exposure. May be harmful if large amounts are swallowed.

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Carcinogenicity & Chronic Effects:

See Section 11 - Toxicological Information.

Routes of Exposure:

Inhalation. Dermal (skin) contact. Eyes.

Target Organs/Medical

Respiratory System. Skin. Eyes.

Conditions Aggravated by

Overexposure:

4. FIRST AID MEASURES

Eye Contact:

Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact:

Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation:

Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General Notes:

Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C):

NA

Flammable Limits in Air - Lower (%):

ND

Flammable Limits in Air - Upper (%):

ND

Autoignition Temperature: F(C)

ND

Flammability Class:

Not combustible

Other Flammable Properties:

ND

Extinguishing Media:

Use extinguishing media appropriate for surrounding fire. This material is not combustible.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Manage water run-off in accordance with local, state and federal environmental regulations.

Hazardous Combustion Products: Metal fumes.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Use personal protective equipment identified in Section 8.

Spill Procedures:

Avoid the generation of dust. Wet product may create a slipping hazard. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions:

Waste must be disposed of in accordance with federal, state and local laws. Manage any release of product into sewers, surface/subsurface waters in accordance with local, state and federal environmental regulations.

7. HANDLING AND STORAGE

Handling:

Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.

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Storage: Keep container closed. Store away from incompatibles.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Montmorillonite, calcined	70892-59-0	30 - 60	NA	NA	NA	(1)
Water	7732-18-5	10 - 30	NA	NA	NA	None
Iron oxides	Various	10 - 30	5 mg/m ³ , (Iron oxide dust, fumes as Fe)	10 mg/m ³ (fume)	NA	None
Silica, crystalline, quartz	14808-60-7	5 - 10	0.05 mg/m ³	see Table Z-3	NIOSH: 0.05 mg/m ³ TWA (10H day/40H wk)	(R)

Notes

(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).

(R) Respirable fraction (ACGIH);

Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m³ / (%SiO₂+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

An independent study conducted for SulfaTreat, a Business Unit of M-I L.L.C., concluded that workers, who manufacture SulfaTreat products, were not exposed to levels of crystalline silica that exceeded the permissible exposure limit (PEL) and the Threshold Limit Value (TLV) established by OSHA and ACGIH, respectively, for this substance. These manufacturing operations included drying; loading, unloading and mixing of raw materials; final product bagging and general housekeeping activities. Both the PEL and TLV represent the time weighted average concentration for an 8 hour workday and 40 hour workweek, to which it is believed that workers may be repeatedly exposed, day after day, without adverse effect.

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: If needed to minimize irritation: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as nitrile or neoprene.

Respiratory Protection: If exposed to airborne particulates: Use at least a NIOSH-approved N95 half-mask disposable or reuseable particulate respirator (dusk mask).

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Black
Odor:	Odorless
Physical State:	Granular Solid
pH:	ND
Specific Gravity (H₂O = 1):	62 lbs/ft ³ (1.0 g/cc)
Solubility (Water):	Negligible
Flash Point: F (C):	NA
Melting/Freezing Point:	ND

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Boiling Point: ND
Vapor Pressure: NA
Vapor Density (Air=1): NA
Evaporation Rate: NA
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: ND
Materials to Avoid: Strong acids. Strong oxidizers.
Hazardous Decomposition Products: None known
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	Component Toxicological Summary
Iron oxides	Long term inhalation exposure to this particulate may cause a benign pneumoconiosis (irritation caused by dust inhalation which may lead to fibrosis (formation of fibrous tissue)). (NIOSH, HazardText)
Silica, crystalline, quartz	Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information:

Product oral LD50 is >3990 mg/kg (rat) (highest practical test level).

Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.

Biodegradation: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

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Waste Management:

Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method:

Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description:

Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description:

Not regulated

UN PIN No:

Not regulated

IMDG Shipping Description:

Not regulated

ICAO/IATA Shipping Description:

Not regulated

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories:Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz	---	---	---	X	---	---	---

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.

Canada DSL - Components are listed or exempt from listing.

China Inventory - Components are listed or exempt from listing.

European Union EINECS - Components are listed or exempt from listing.

Japan METI ENCS - Components are listed or exempt from listing.

Korea TCCL ECL - Components are listed or exempt from listing.

Philippine PICCS - Components are listed or exempt from listing.

U.S. TSCA - Components are listed or exempt from listing.

U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class:

D2A D2B

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16. OTHER INFORMATION

The following sections have been revised: 1, 3, 5, 9, 10, 12, 13, 14, 15, 16

NA - Not Applicable, ND - Not Determined.

*A mark of M-I L.L.C.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guarantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.