State of New Jersey

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May 2, 2019

Mr. James A. Beach
Environmental Engineer Manager
Pennsylvania Department of Environmental Protection
Southeastern Regional Office – Air Quality Program
2 East Main Street
Norristown, Pennsylvania 19401

REFERENCE: Elcon Recycling Services, LLC.
Application No. 09-0228A
APS ID No. 980277, AUTH ID No. 1250768
Falls Township, Bucks Township

Dear Mr. Beach:

This letter provides comments on the referenced Air Permit Application (Application) filed by Elcon Recycling Services LLC (Elcon) for the construction and operation of a commercial facility for treatment and storage of hazardous and residual liquid waste streams. The facility is to be located at 100 Dean Sievers Place, Morrisville, Falls Township, Pennsylvania. On November 1, 2018, the Pennsylvania Department of Environmental Protection (PADEP) issued to Elcon an administrative completeness letter for Elcon's October 16, 2018 application submittal. The Application and Air Dispersion Model and Risk Assessment Report (Report) have both been posted on the PADEP's website at https://www.dep.pa.gov/About/Regional/SoutheastRegion/Community%20Information/Pages/Elcon-Recycling-Services-LLC.aspx .

The New Jersey Department of Environmental Protection (NJDEP) has reviewed both documents and has drafted four areas of comments. These comments are attached and are grouped as follows: Air Contaminant Emissions, Air Pollution Control Equipment, Permit Application Clarifications, and Air Dispersion Modeling and Health Risk Assessment.

The NJDEP requests that the PADEP consider its comments during the technical review of the referenced application. Since the proposed Elcon facility is approximately 1.1 miles west of New Jersey, Elcon's air contaminant emissions may pose a potential health risk to the state's residents. Consequently, it is the objective of the NJDEP to ensure that the Elcon facility will be operated in a manner to minimize health impacts and must conduct sufficient monitoring to ensure that all environmental standards and limits are being achieved.

If you have any questions, please contact Kenneth Ratzman, Assistant Director, Air Quality Permitting Element, at 609-292-0834.

Sincerely,

Francis C. Steitz
Director
Division of Air Quality

C: Krishnan Ramamurthy, Director, PADEP Bureau of Air Quality
Jim Rebarchak, Program Manager, PADEP SERO Air Quality
Thomas Magge, Program Manager - PADEP SERO Water Management
P. Baldauf, Assistant Commissioner, NJDEP AQES
K. Ratzman, Assistant Director, NJDEP DAQ
R. Foster, Acting Director, NJDEP Permit Coordination and Environmental Review

COMMENTS ON THE AIR PLAN APPROVAL PLAN APPLICATION AND AIR DISPERSION MODEL AND RISK ASSESSMENT REPORT FOR THE ELCON RECYCLING SERVICES FACILITY

I. AIR CONTAMINANT EMISSIONS

1. Two maximum nitrogen oxide(s) (NO_x) emission rates (4.0 and 6.5 pounds per hour (lb/hr)) are listed on Page 38, Section C. In addition, the 6.5 lb/hr maximum rate is listed in Attachment 3, page 3-17. Only one maximum allowable hourly NO_x emission rate must be proposed. This should represent the maximum potential feed rate of nitrogen to the facility that results in the maximum potential NO_x emission rate after the urea injection/selective non-catalytic reduction (SNCR) units treat the exhaust stream. Having two separate allowable NO_x emission rates could result in the facility not being able to determine whether one of the two separate SNCR units (CO3A and CO3B) is not operating at its permitted control efficiency and lessens the enforceability of the air permit.

   Table 3-2 lists an annual facility-wide NO_x emission rate as 23.4 tons per year (tpy). Since this is 93.6% of the NO_x major facility threshold of 25 tpy, the establishment of how the NO_x emission rates are determined and how the NO_x emissions will be monitored, recorded, and verified must be done in a detailed and comprehensive manner.

2. On Page 3-14, Attachment 3, "Emission Estimates and Supporting Calculations," it is stated that heavy metal hazardous air pollutant (HAP) emissions are based on the results of stack tests conducted at Elcon's Israeli facility. The HAP emission rates are listed in Table 3-7. Although stack test results from similar equipment can be used as a basis for determining potential emissions, the stack test results from the Israeli facility cannot be proportioned to propose the maximum allowable heavy metal HAP emission rates for Elcon's Pennsylvania facility. The type and amount of heavy metals in the wastes treated during the stack testing may not be representative of the Pennsylvania facility's potential treatment rates.

   The heavy metal HAP emissions should be determined based upon the following: 1) the maximum amount of each metal processed in any one hour; 2) the maximum amount of each metal processed in any 12-month period; 3) the potential for the metal to volatilize during processing; 4) the capture and removal efficiency of the air pollution control (APC) equipment; and 5) other relevant factors, such as the potential for a metal to combine with a halogen which could cause it to become more volatile. A robust Waste Analysis Plan would be appropriate to determine heavy metal constituent levels.

No control efficiency should be assumed for mercury since activated carbon has not been incorporated into the control equipment which vents to the main stack.

3. The VOC emission rate listed in the application needs to be clarified. In Section C, Oxidizer/Afterburner – C01A and C01B, the VOC Emissions, including organic HAPS, are 4,400 lb/hr (max- both) at the inlet and 4.4 lb/hr (max – both) at the outlet. These levels are different that the 0.59 lb/hr VOC emission rate from the Total Oxidizer Stack in Table 3-9 "Estimated Combustion Products Emissions."

4. Maximum hourly and annual emission rates of individual HAPs, and how they were calculated, should be provided. This should be based upon the maximum HAP charging rate of each individual HAP, 100 percent volatilization, and thermal oxidizer control efficiency.

5. The proposed maximum stack concentrations, dry basis, corrected to seven percent oxygen, of the following contaminants should be listed: oxides of nitrogen, total hydrocarbons as methane, and sulfur dioxide.

II. <u>AIR POLLUTION CONTROL EQUIPMENT</u>

1. Attachment 3, page 3-17 states, "Elcon will use NO_x controls (urea injection), as needed, to meet the proposed emission limit." The two separate selective non-catalytic reduction units (CO3A and CO3B) must be operated continuously, when their control train is operated, to ensure that the maximum annual and hourly allowable NO_x emission rates will not be exceeded. The NO_x generation rate can fluctuate since the types of wastes accepted are highly variable, the wastes are stored in 26 different tanks, and all waste treatment processes (chemical/physical, biological, sludge drying, flash evaporation distillation, brine (salt) crystallization) can occur simultaneously. The Department takes exception to the "as needed" clause as each SNCR must be operated continuously to address this fluctuation.

   Although a NO_x continuous emission monitor (CEM) will be installed on the main facility stack, the NO_x CEM readings may spike without the SNCR units operating and result in a NO_x emission exceedance. In addition, the SNCR units still have to operate during the NO_x CEM downtime.

   Please note that ammonia slip from the SNCR units should not be used as a determining factor whether to operate the SNCR units since ammonia is soluble in water and both units vent directly to a quench/scrubber system.

   As stated above, Table 3-2 lists an annual facility-wide NO_x emission rate as 23.4 tons per year (tpy). Since this is 93.6% of the NO_x major facility threshold of 25 tpy, the establishment of how the NO_x emission rates are determined and how the NO_x emissions will be monitored, recorded, and verified must be done in a detailed and comprehensive manner.

2. A more in-depth explanation should be provided on the storage tank activated carbon system. The mechanism to determine breakthrough should be clearly outlined and incorporated into any conditions of approval. At a minimum, two carbon adsorption units in series should be installed, and the sampling should be done frequently at the location between the carbon units and at the exhaust stream of the secondary carbon unit.

3. Each Thermal Oxidizer (CO1A and CO1B) should have its own oxygen and carbon monoxide continuous emission monitor installed to measure the exhaust stream outlet. These will assist in verifying that each Thermal Oxidizer is operating properly and is necessary since variable wastes streams, with different HAPs, are being treated.

4. Attachment 1, Section 1.3 "Main Air Pollution Control System Configuration," provides two operating scenarios for the two parallel sets of air pollution control equipment (APC train). Under "Normal Operating Conditions," 50 percent of the exhaust will vent to each APC train. Under "Design Conditions," a single APC train can be operated when the production is operating up to 75 percent of full capacity. The following are concerns about the dual APC trains:

    a. How it will be determined that production is not exceeding 75 percent of full capacity. This appears to be a very difficult determination given the numerous types of equipment and treatment processes that could be operating simultaneously at different rates and contaminant concentrations.
    b. Three separate stack tests must be conducted. One on each APC train when the treatment systems are operating independently, and a third when the APC trains are operating simultaneously.
    c. Confirmation that back pressure from the main stack will not occur if only one APC train is operating.

III. PERMIT APPLICATION CLARIFICATIONS

1. In the Summary of the Regulatory Approach, Step 3.c. Sludge Thermal Treatment system and on Figure 1-1 "General Schematic Air Pollution Emission Sources," it is stated that a bag filter will be in the treatment area to collect any fugitive particulate emissions and dust distribution in the air. The equipment that emits the fugitive emissions should be identified and an explanation should be provided as to why a venting system cannot be installed to capture all the particulate emissions and vent

them to a control device. The type, hourly, and annual amount of fugitive emissions that are not collected by the baghouse should be submitted along with the discharge point of the emissions.

2. As a means of making the application easier to understand, and ensure consistency among the sections, Elcon should incorporate the following revisions:
    a. On each diagram, a liquid stream should be differentiated from a gaseous stream. For example, liquid streams could be represented with a solid line and gaseous streams could be represented by a dashed line.
    b. In Attachment 2, "Proposed KIPC, Morrisville, Pa. Plant Process Description (Description)," should list the Source ID and Equipment Tag Numbers in each Step, as well as in each diagram.
    c. Each diagram should have a Title, and a designation, and each should be referred to when the equipment is being discussed in the Description.
    d. A new section should be added which just contains the equipment diagrams so that each can be readily accessible and will provide an enhanced overall perspective on the storage and treatment equipment.
    e. Including the hourly and annual mass flows from the equipment in each diagram would assist in verifying material balances.
    f. Each piece of equipment listed in Tables 1-1 and 1-2 should be included in a diagram.

3. There are contradictions between Exhibit A-3 "Storage and Process Tanks" and Tables 1-1 "List of Storage Tanks in Source ID 101" and 1-2 "List of Major Pieces of Process Equipment in Source IDs 102 to 113 and 031 Miscellaneous Units." These include four biological treatment tanks (90220 A/B and 90221 A/B) which are listed in Table 102 but not in Exhibit A-3; and different tank volumes, in gallons, for Biological Treatment Tank T-90206 (18,500/26,500) and Clean Water Tank T-90260 (40,000/55,000).

    These contradictions need to be resolved.

4. On page 8, Step 4, Unit 20 of the process description, the following sentence is provided, "The FED combines complete organics extraction with distillation to achieve total organic destruction with evaporation distillation." It does not appear that the organics are "destroyed," but rather "evaporated."

5. Several sections of the November 28/December 26, 2016 test report are in the Hebrew. It should either be confirmed that the other sections provide the English translation of the Hebrew sections or separate translations should be provided.

6. On page 8, Step 4, Unit 23 of the process description, the following is stated, "In case there is not enough VOCs in the main unit (Unit 20), it is possible to treat high concentrated organic waste (10%-30%). The organic waste is distilled in a dedicated distillation column or in an evaporating vessel." Please clarify this since low levels of VOCs in the main unit would make it easier to treat organic wastes in the main unit.

7. On page 9, Step 5, Thermal Oxidation, the following is stated, "The majority of the VOC emissions from the plant will be from the FED and distillation column. When the FED and thermal oxidizer are shut down due to process issues, the storage tanks and other vessels that emit negligible amounts of VOCs shall be vented to a carbon filter." The application should clearly list all the source operations that will cease operation if the thermal oxidizer(s) are shut down. This should include, at a minimum, the distillation column.

8. Page 8, Step 4 - Unit 20 Flash Evaporation Distillation and Page 10, Step 6 Flash Evaporation Distillation (FED) describe similar processes. It should be clarified whether there are two different FED processes, with two different sets of equipment. Also, the exact wastes streams being processed should be more fully outlined. Table 1-2 shows four different sources (T-20401, T-20411, H-20410C, H-20410D) related to the FED processes. These designations should be referenced in the Steps 4 and 6 descriptions, as appropriate.

9. A description of the biological treatment process (Source ID 105) must be provided. Such information may include, but is not limited to, a list of additives placed in the tanks, holding time in the tanks, what processes take place in the tanks, the purpose of the "aerobic reactor," and the input streams to and the parameters involved in the "ammonia treatment reactor." On Figure 1-1 and on page 3 of 14 "Thermal Oxidizer System Flow Calculation – No VOCs." no flowrate from the biological treatment system is indicated. This must be addressed since there should be some gaseous flow from the tanks in Source ID 105, the two aerobic reactors (R-90208/90209), and the ammonia treatment reactor.

IV. <u>AIR DISPERSION MODELING AND HEALTH RISK ASSESSMENT</u>

1. The chronic (non-cancer and cancer) risks were determined using the chronic inhalation unit risk factors shown on Table 1 on the link below from EPA's website: https://www.epa.gov/fera/dose-response-assessment-assessing-health-risks-associated-exposure-hazardous-air-pollutants

   However, this EPA website includes Table 2 "Acute Dose-Response Values for Screening Risk Assessments." The NJDEP uses the Reference Concentrations in the MRL and REL columns to determine the potential for a significant short-term, acute health impacts. MRL represents the ATSDR (Agency for Toxic Substances and Disease Registry) minimum risk levels for no adverse effects for 1 to 14-day exposures, and REL represents the California EPA reference exposure level for no adverse health effects. Most REL Reference Concentrations are on a one-hour basis. Elcon should redo its short-term, acute risk assessment for those air toxics which have MRL and REL Reference Concentrations. In addition, the following air toxics have 8-hour and 24-hour exposure reference concentrations, as indicated:

Air toxics with 8-hour reference concentrations: chloro-1,1-difluoroethane (1-), manganese,

Air toxics with 24-hour reference concentrations: acetone, barium, cyclohexane, ethyl chloride, ethylbenzene, lead, methyl isocyanate, trichloroethylene, vanadium.

Elcon should evaluate these air toxics to determine their 8-hour and 24-hour short-term health impacts. The Reference Concentrations for these air toxics have been posted by the NJDEP in the "Toxicity Values for Inhalation Exposure" August, 2018, https://www.state.nj.us/dep/aqpp/downloads/risk/ToxAll2018.pdf.

2. Page 8, Section 3.4 "Emission Estimates" states, "Where available, information was used from emission testing at the facility in Israel. The test results were adjusted to account for the difference in production rates between the Israeli facility and the Falls Township facility." This section then states that a 30% safety factor was applied.

   This methodology for determining the air toxic emission rates is not acceptable. The HAP emission estimates used in the risk assessment are based on the very limited stack testing conducted at a treatment facility in Israel. The type of waste stream the facility in Israel was treating during these stack tests is unknown. Elcon will be processing a wide variety of waste streams; petrochemicals, herbicides, pesticides, and many types of chemicals and pharmaceuticals. Each of these will have its own concentrations of contaminants. A robust Waste Analysis Plan would be appropriate to determine heavy metal constituent levels.

   HAP Emission rates used in the risk assessment should be based on the unique operating parameters of the Falls Township facility which include, but may not be limited to, maximum waste processing rates, maximum feed rate of substance that will be emitted as air toxics, minimum control efficiencies of the air pollution control equipment, and process operating temperatures. Once these rates have been calculated, a safety factor should be incorporated to ensure that the maximum potential air toxic emission rates are being evaluated.

   It is suggested that the PADEP locate similar types of liquid hazardous waste facilities that process domestically generated wastes, then investigate what type of air toxic compound emission limits are applied to these facilities. This may give guidance on what Elcon's air toxic emission limits should be.

3. Page 9, Section 3.4 "Emission Estimates" states, "The emission estimates are provided only for the purposes of this risk assessment. Elcon is not seeking individual limits on the compounds included in the risk assessment, except for the criteria pollutants that are part of the NAAQS assessment." Maximum air toxic contaminant feed and emission rates must be made part of the APC permit application and become enforceable upon permit issuance.

4. There are other air toxic discharge points, including, but not limited to, the cooling tower, carbon adsorption system, and leaks from equipment including pumps. It should be demonstrated that the risks of these air contaminant emissions from these discharge points are negligible.

5. Five of the heavy metal emission rates listed in Table 8 of the Air Dispersion Modeling and Risk Assessment Report and used to estimate air impacts are significantly lower than those in Table 3-7 of the Plan Approval Application submitted to PADEP. In particular; chromium, manganese, nickel, and zinc emission rates are roughly a factor of 10 lower in Table 8 than Table 3-7. The mercury emissions in Table 8 are a factor of 4 lower than in Table 3-7. The risk assessment must be conducted based on worst case scenarios.

6. When calculated based on Table 3-7 in the Plan Approval Application, the amount of mercury Elcon will release to the surrounding environment when operating 8,400 hours per year will be **34.4 pounds per year**. Much of this could end up in New Jersey waters. This represents a very large source of mercury. Additional measures should be taken to reduce Elcon's mercury emissions. Also, a fish ingestion study should be done to establish the potential health risks from the bioaccumulation of mercury.

7. NJDEP believes that the meteorological data collected at the Northeast Philadelphia Airport would be more representative of the site than the data collected at the Trenton NJ Airport. Please note that the Northeast Philadelphia Airport meteorological data was used when the nearby Fairless Hills Energy Plant was permitted approximately 10 years ago.

8. The predicted 1-hour NO2 and SO2 impact concentrations are well above their Significant Impact Levels (see table below). Therefore, refined multisource modeling is normally required to demonstrate compliance with the NAAQS.

Criteria Pollutant	Emissions (lbs per Hour)	Maximum 1-hour Conc. ($\mu g/m^3$)	1-hour SIL ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
NOx	6.5	**11.2**[a]	10/7.5[b]	188
Sulfur Dioxide	23.4	**54.8**[c]	7.8[d]	196

a) Highest 8th high 1-hour average concentration.
b) NESCAUM and U.S. EPA maximum 1-hour interim significant impact levels.
c) Highest 4th high 1-hour average concentration.
d) U.S. EPA Significant Impact Level.

9. In Section 4.1 it is stated that the chronic cancer and non-cancerous impacts were based on impacts at the nearest residence or area zoned for residential use. However, these locations were not identified and should be.

   Of concern are the many vacation homes located on a private road named Van Sciver Way. Van Sciver Way runs north/south along the banks of Van Sciver Lake. It is approximately 1.5 km (0.93 miles) to the west of the Elcon Stack. If receptors were not included in the modeling of chronic cancer and non-cancerous risks at locations along Van Sciver Way they must be added to the analysis.