January 24, 2023

Mr. David Cozad
Director, Enforcement and Compliance Division
United States Environmental Protection Agency
Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Tim Dore
General Counsel
C6-Zero Iowa LLC
810 E. South St
Marengo, IA 52301

RE: Responses to Inquiry dated 12/20/2022

Mr. Cozad:

Please see the below responses to questions from EPA's inquiry letter dated December 20, 2022. C6-Zero Iowa appreciates the opportunity to answer questions from the December 8 incident and strives to answer each question as thoroughly and comprehensively as possible.

Attached are several mandatory environmental and safety documents that C6-Zero produced related to the pilot operation of our Marengo, Iowa facility. These documents are directly referenced in our answers to show consistency with professional engineering standards, assessments, and calculations. All answers are provided by me unless otherwise indicated. C6-Zero employees Howard Brand (Chief Executive Officer) and Daniel Diorio (Chief of Staff, Strategic Affairs), and experts from Los Alamos Technical Associates were consulted in the preparation of this document.

Please contact me with any additional questions the agency may have or if I can provide any additional clarification.

Sincerely,

Tim Dore
General Counsel
C6-Zero Iowa LLC

STATEMENT OF CERTIFICATION

C6-Zero Iowa LLC is submitting the enclosed documents in response to the EPA's Request for Information to determine compliance with the Clean Air Act, Clean Water Act, Comprehensive Environmental Response, Compensation and Liability Act, and Resource Conservation and Recovery Act.

I, Tim Dore, am authorized to represent C6-Zero Iowa LLC.

> I certify under penalty of law that I have personally examined and am familiar with, the statements and information submitted in the enclosed documents, including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, correct, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information, or omitting required statements and information, including the possibility of fine or imprisonment.

Date: 1/24/2023

Signature: _____

Title: General Counsel

C6-Zero Iowa LLC response to EPA Inquiry dated 12/20/2022

1. **Provide the name, title, email, phone number, and mailing address for the person to whom correspondence should be sent regarding the December 8-9, 2022, incident.**

   Tim Dore
   General Counsel
   C6-Zero Iowa LLC
   810 E. South St
   Marengo, IA 52301

2. **Describe the facility, e.g., explain what activities take place on-site and what substances are produced, processed, handled, and/or stored on-site. Include information regarding the duration of operations at the facility.**

   C6-Zero's Marengo facility is a 135,000 ft^2 former soybean crush facility that was converted to remanufacturing asphalt roofing shingles. Through a patented process using a proprietary chemical compound, asphalt shingles were broken down into base components of recovered oil, ATSM .33 granules, and fiberglass.

   - Each ton of shingles processed produced approximately, 2.3 barrels of oil, .75 tons of ATSM .33 granules and 66 pounds of fiberglass.
   - The feed stock of shingles was stored on-site and inside in a completely covered and secure section of the facility.
   - Remanufactured oil was stored on-site in above ground storage tanks registered with the Iowa State Fire Marshal. Granules and fiberglass were stored on-site on site in super sacks.
   - Soybean oil for blending was also stored on-site in above ground storage tanks registered with the Iowa State Fire Marshal.
   - Proprietary chemical compound (kaniksu) was stored on-site in above ground storage tanks registered with the Iowa State Fire Marshal.
   - See the attached C6-Zero blueprint for additional information.

   Initial air pollution control equipment was tested August 1-2, 2022, after equipment buildout. Initial plant shakedown operations began in early November with testing of individual process units and continued until the fire on December 8, 2022.

   Approximately 1,700 tons of shingles were processed at the facility during shakedown operations resulting in a total of approximately 160,000 gallons of recovered oil, 1.7 million pounds of recovered sand and approximately 70,000 pounds of fiberglass. Additionally, 900,000 lbs. of sand and 66,000 lbs. of recovered fiberglass was sent off site for product acceptance by potential clients.

Approximately 101,000 gallons of recovered oil remain stored on site. C6-Zero estimates that nearly 60,000 gallons of oil were in trommel 1 which likely all burned and was lost in the fire.

Additional amounts of limited sand and fiberglass inventory remain on-site in the sand screw, shaker table, and super sacks.

Equipment ran no more than 6 hours in a 24-hour period with significant shut down periods. If the system was in full projected operation of 800 tons/day, the duration of operation during the shakedown period represents no more than 30 hours of operation.

3. **Submit process flow diagrams, piping, and instrumentation diagrams (also known as P&ID's), and equipment layouts for the facility.**

   See attached C6-Zero Draft Air Permit, page 11.

4. **To what engineering standards is process equipment built?**

   Equipment engineered to the following standards:

   ASTM A606/A606M
   IS Codes incl IS 800:2007
   OSHA Steel Erection Std 1926, supart R
   29 CFR, Part 1926

5. **Provide a Safety Data Sheet for each substance used at the facility and provide the maximum intended inventory of each substance.**

   See attached C6-Zero Safety Data Sheets for proprietary chemical (kaniksu), remanufactured petroleum and other substances on site.

   See attached C6-Zero Spill Prevention, Control and Countermeasure (SPCC) plan, section 4.2, page 9 for tank inventory.

6. **Describe the method or source of information used to calculate the quantity of any Section 112(r) regulated substance(s).**

   See attached C6-Zero Draft Air Permit Sections 2-3 and Appendix B.

7. **Provide the composition of the solvent named Kaniksu, including proprietary components.**

   See attached C6-Zero Draft Air Permit Sections 2-3 and Appendix B.

8. **Provide purchase records of all chemicals and chemical components purchased for use at 810 East South Street in Marengo, Iowa in the last three years.**

   See attached C6-Zero Kaniksu Invoices.

9. **Provide all documents associated with the identification of hazards from the process related to the December 8-9, 2022 incident (e.g., hazard assessment, process hazard analysis, hazard review) conducted at the facility.**

   See attached C6-Zero SafeEx review prepared prior to shakedown process.

10. **Describe the measures taken to design and maintain the facility in a way that minimizes the possibility of an accidental release.**

    See attached C6-Zero SPCC Plan.

11. **Describe the measures taken to minimize the consequences of accidental releases which do occur (e.g., coordination with local responders).**

    See attached C6-Zero SPCC Plan, Section 5 and Appendix B.

12. **What relevant industry codes, practices, or consensus standards (for the process or facility as a whole, as well as for particular chemicals or pieces of equipment) does C6-Zero Iowa LLC follow?**

    See attached C6-Zero SPCC Plan and C6-Zero Draft Air Permit. C6-Zero NAICS code is 325998.

13. **Provide the operating procedures for the process.**

    See attached C6-Zero Draft Air Permit Sections 2 and C6-Zero Shingle Vapor Controls pages 28-30.

14. **In addition to the incident on December 8-9, 2022, provide a description of any other incidents that have occurred at your facility in the last 5 years, including the incident that reportedly occurred in October 2022.**

15. **With respect to the incidents in October 2022 and on December 8-9, 2022:**
    a. **Identify whether an investigation or audit was performed for the incident. Provide a copy of any report or other documentation describing the results of the investigation or audit.**
    b. **Describe the measures taken to address the findings, conclusions or recommendations of any investigation or audit.**

c. **Describe any findings, conclusions, or recommendations that have not been addressed and what measures remain to be taken.**
d. **What process chemicals were released?**
e. **What were the root cause and contributing factors of the incident?**
f. **What was the quantity, extent, and duration of the release?**
g. **Describe any property or equipment damage that resulted from the incident.**
h. **What emergency response measures were taken to stop and/or to minimize hazards from the incident?**

October 2022 incident:

i. (a) No formal investigation or audit was conducted
j. (b) See above
k. (c) Not applicable
l. (d) Not applicable
m. (e) Machinery was offline. An employee performing welding ignited residue on the walls of the trommels. Internal investigation found that trommel was not properly swabbed and cleaned per company protocol.
n. (f) Not applicable
o. (g) Damage was minimal, and machinery was back online in 48 hours.
p. (h) Not applicable.

December 8, 2022 incident:

We are awaiting results of investigation from the Iowa State Fire Marshal. Other investigations are ongoing.

See attached C6-Zero Site Assessment Plan Final prepared by C6-Zero's environmental remediation contractor for substances released during the incident.

16. Provide any hot work permits active at the time of the incidents in October 2022 and on December 8-9, 2022.

At the time of the October incident the welding work was authorized by the supervising welder. To the best of our knowledge, there was not a hot work permit executed.

See attached Hot Work Guidelines.

17. Did anyone at the facility perform any air monitoring before, during, or after the October 2022 and December 8-9, 2022, incidents, including any routine monitoring? If so, provide the results.

Air monitoring was not conducted during the pilot process during which time the incidents occurred.

18. **Identify and provide copies of any operating procedures, maintenance procedures, or manufacturer's recommendations related to the October 2022 and December 8, 2022, incidents, including equipment maintenance activities, operating activities, and personnel activities involved in the events.**

    See attached Confined Space Checklist and Operating Procedures.

19. **Have any local, state, or federal agencies conducted an investigation or requested information regarding the October 2022 or December 8-9, 2022, incidents? If so, please provide the name and contact information for each agency that conducted an inspection or requested information.**

    See attached Marengo Fire Department Call Sheet for October 2022 incident.

    Investigations into the December 8, 2022, incident are in process and ongoing. We are awaiting final investigation report from the Iowa State Marshal.

    The Iowa Department of Natural Resources issued an emergency order on December 15, 2022, regarding environmental site cleanup (attached).

    The City of Marengo, Iowa sent a letter dated December 21, 2022, regarding nuisance order violations (attached).

    See attached C6-Zero Site Assessment Plan Final.

20. **Indicate all environmental effects that occurred as a result of the December 8-9, 2022 incident, including but not limited to fish kills, vegetation damage, soil removal, groundwater contamination, wildlife kills, etc.**

    See attached C6-Zero Site Assessment Plan Final.

21. **Estimate the dollar amount of property damage that occurred as a result of the December 8-9, 2022 incident as follows:**
    a. **On-site; and**
    b. **Off-site.**

    (a). At this time the current estimate for on-site property damage is approximately $2 million (excludes machinery still being assessed and calculated).

    (b). Additional environmental cleanup costs to exceed approximately $600,000.

22. **Provide any local, state, or federal air permits for the facility or documentation of the facility's exemption from obtaining permits.**

See attached C6-Zero Draft Air Permit.

23. Provide the method of calculating volatile organic compound and hazardous air pollutant emissions for the facility. This should include:

a. Background documents on emissions profiles for different types of enzymes used at the facility.
b. Reports from any performance tests conducted.
c. Any engineering evaluations conducted regarding VOC and HAP emissions.

See attached C6-Zero Draft Air Permit Sections 2-3 and Appendix B and attached C6-Zero Shingle Vapor Controls.

24. Describe how C6-Zero Iowa LLC ensures that no material containing asbestos is received or processed.

As provided to the Iowa Department of Natural Resources, our approach is to eliminate the issue at the supplier. This includes several steps:

- C6 Zero has specification for the incoming asphalt shingles to meet the specification of less than 2.5% deleterious materials and to be from shingles are newer than 1980. Usage of asbestos in shingle manufacturing ended in the 1970s, so this provision eliminates the issue.
- A second provision is that C6 Zero will establish an audit program with suppliers of to audit their records for their source material for shingles (buildings, age of shingles removed) to ensure on a quarterly basis. Shingles from an undocumented source (building or home) are not accepted. For new clients, test monthly for the first quarter and then quarterly.
- If there is ever any question on the origin (age of shingles), C6 Zero has the option to sample the source material to verify and test for asbestos.
- Suppliers must sign attestation that shingles do not contain asbestos to the best of their knowledge

<u>Information requested pursuant to Sections 104(b) and (e) of CERCLA:</u>

25. List federal, state and local authorities notified (e.g., NRC, EPA Regional Office, SERC, LEPC, Police, Fire Department, 911) of the December 8-9, 2022 incident: Please include all notifications made by you concerning this release during and after the release or during multi- day releases. For multi-day events, provide information for every day of release. Provide as an attachment any and all documentation regarding notification made to the agencies.

AGENCY	DATE (mm/dd/yy)	TIME 24 Hour Clock (Please specify time zone)	PERSON CONTACTED
Marengo Fire Department (911)	12/8/22	Estimated time was shortly after the commencement of the fire	
Iowa Department of Natural Resources	12/8/22	Estimated time was shortly after the commencement of the fire	

26. Provide the name, title, and contact information of the individuals who made the notification to agencies listed in the question above.

Multiple on-site employees at the time of the incident contacted local emergency services.

The Iowa Department of Natural Resources was contacted by our office of General Counsel.

27. Indicate the weather conditions at the time of the incident (approximations are acceptable). Identify the source of the information.

Source of Information:	National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS)		
Wind Speed (miles per hour):	n/a from NWS past weather	**Temperature (Fahrenheit):**	**Max:** 40 **Min:** 23
Wind Direction (from):	n/a from NWS past weather	**Precipitation:**	0.15 in.
Relative Humidity:	n/a from NWS past weather	**Cloud Cover:**	n/a from NWS past weather

28. Indicate the number of persons injured, hospitalized and fatalities that occurred as a result of the incident:

See Treated Employee Information - C6-Zero - 12.08.2022.

29. Please provide the facility's OSHA 300 log for the year covering the incident, if you are required to maintain one.

See OSHA Form 300 - Incident 12.08.22[97].

30. **Indicate the number of persons evacuated and/or sheltered in-place as a result of the incident:**

    Approximately 16 individuals evacuated under their own power from the facility.

31. **How was the number of persons evacuated and/or sheltered in place as a result of the incident obtained?**

    Information obtained from employees on-site.

32. **What actions did the facility take between the time the incident was initially detected and the time that federal, state, and local officials (NRC, SERC and LEPC) were notified?**

    C6-Zero implemented its safety and evacuation protocols.

33. **Describe where the incident occurred and attach a map or diagram (to scale) of the facility showing facility boundaries and buildings and identifying the location and path of migration of the release. Where did the release occur, indoors or outdoors? For indoor releases, was the entire release captured inside the building during the entire incident? If yes, explain how.**

    See attached C6-Zero Site Assessment Plan Final, Appendix A.

34. **Did any quantity of the released material migrate off the facility boundaries? (Please note that releases to the air should be assumed to migrate off the facility boundaries.) If not, explain how this was accomplished.**

    See attached C6-Zero Site Assessment Plan Final, Sections 1-2.

35. **Has this facility submitted a Continuous Release Report pursuant to EPCRA § 304 and CERCLA§ 103 for this substance? If yes, what was the total annual amount of the substance(s) released in the previous year (in pounds)? If yes, what are the upper and lower bounds of the normal range of the release (in pounds or kilograms)? If yes, what is the Continuous Release case number assigned by the National Response Center (NRC)?**

    This question is not applicable at this time.

36. **Did the facility receive any inquiries or complaints from off-site sources regarding the incident?**

    To the company's knowledge there have been no complaints from off-site sources.

37. **Was a written follow-up notice provided to the LEPC and SERC? If so, when was it sent? Please provide a copy(s) of the written follow-up notice.**

A written follow-up notice has not been sent.

38. **Did any released material reach a wastewater treatment plant? Is the treatment plant on-site or off-site? If off-site, provide the name and location of this water treatment plant. If off-site, does your facility have a pretreatment permit? Provide a copy of that permit.**

    See attached C6-Zero Site Assessment Plan, Section 3.

39. **Provide the name and location of any waterway (river, stream, creek, lake, or pond) potentially impacted, including tributaries, drainage ditches or storm sewers. Was any water present in the waterway (creek, drainage ditch or storm sewer) at the time of the incident?**

    See attached C6-Zero Site Assessment Plan, Section 3.

40. **What was the amount of the released material deposited on the adjoining shoreline and/or in the above-named waterway, ditch, or storm sewer?**

    See attached C6-Zero Site Assessment Plan, Section 4.

41. **Prior to December 8, 2022, had local emergency responders requested information on chemicals used at the facility? If so, what information was shared with local responders?**

    C6-Zero followed procedures related to the Above Ground Storage Tank Review and Registration with the Iowa State Fire Marshal which included notifying local fire dept and responders.

    Additionally, the Safety Data Sheet for the kaniksu chemical was always readily available for inspection and review on-site.

<u>Information requested pursuant to Section 3007 of RCRA:</u>

42. **What solvent(s) are used in the process? Is this/are these virgin products? How is spent solvent handled? How much spent solvent has been disposed of since operations began?**

    See attached C6-Zero Draft Air Permit Sections 2-3 and Appendix B.

    The kaniksu chemical, a petroleum-based product, is used in the process to breakdown the asphalt in the shingles and is incorporated into the recovered product and therefore there is not a spent waste generated.

    Approximately 128,565 gallons of kaniksu was brought onto the site to be used during the shakedown/startup process. Approximately 86,571 gallons of this raw material was

used in the process prior to the fire on December 8, 2022. Approximately 42,000 gallons of kaniksu remains in two storage tanks (16,500 gallons each) and two ISO tanks (4,500 gallons each) on-site.

In the course of the breakdown process the solvent is used twice and spent to completion using 10%. There is virtually no solvent remaining when the process finishes. Waste disposal is minimum with no hazardous waste.

43. How are wastes from shingle feedstock (e.g., staples, nails, wood) handled? Do any of these wastes contain solvent residue?

See C6-Zero Draft Air Permit, Section 2.1.

44. Provide all records of all solid waste disposal contracts and events.

Records for solid waste disposal are not applicable currently. C6-Zero had a roll off trash container for construction debris only during prior to facility shakedown process.

See attached C6-Zero Site Assessment Plan, Section 6 for disposal related to environmental cleanup.

45. Provide the inventory of all solid wastes disposed of.

Records for solid waste disposal are not applicable currently. C6-Zero had a roll off trash container for construction debris only during prior to facility shakedown process.

See attached C6-Zero Site Assessment Plan, Section 6 for disposal related to environmental cleanup.

46. Provide sale records for recovered fiberglass, granules, and oils.

No final sales of products have been made at this time.

47. Provide waste determinations and disposal records for cleanup from the December 8-9, 2022, incident. This includes soil, trash, building structural components, equipment, products, raw materials, and any other discarded materials or items.

See attached C6-Zero Site Assessment Plan, Section 6.

<u>Information requested pursuant to Section 308(a) of the Clean Water Act:</u>

48. Provide the total volume of aboveground oil storage capacity at the facility.

See attached C6-Zero SPCC Plan.

49. **Provide the following information for each of the oil storage containers with a capacity equal to or greater than 55 gallons at the facility, including, but not limited to, tanks, drums, totes, appurtenances (including piping, valves, pumps, and transfer or dispensing devices), containers and other equipment, including oil-filled operational equipment (such as generators and/or engines not used for motive power, used oil burners) and oil-filled manufacturing equipment (flow-through process equipment):**
    a. **The type of construction and configuration;**
    b. **Capacity;**
    c. **Contents of the container;**
    d. **The age and date each container was first put into service (applicable to tanks put into service at another facility prior to installation and commissioning at the facility); and,**
    e. **The age and date of installation of each container at the facility.**

    See attached C6-Zero SPCC Plan, Section 4.2.

50. **State whether a Certification of Applicability of Substantial Harm Criteria, as found in Appendix C to 40 C.F.R. Part 112, has been completed for the facility. If so, provide the certification.**

    See attached C6-Zero SPCC Plan, Appendix D.

51. **State whether the facility has prepared a Spill Prevention, Control and Countermeasure (SPCC) Plan in accordance with the oil pollution prevention regulations at 40 C.F.R. Part112. If so, provide a copy of the SPCC Plan. Specify the date it was first prepared, and provide amendments to the Plan, if any, that became effective within the last five years.**

    See attached C6-Zero SPCC Plan.

52. **Identify the containment and/or diversionary structures or equipment that are provided to prevent a discharge of oil as described in 40 C.F.R. § 112.1(b). State whether the entire containment system, including walls and floors, are capable of containing oil and are constructed to prevent escape of a discharge from the containment system before cleanup occurs.**

    See attached C6-Zero SPCC Plan, Section 5.

53. **Identify which of the following are present at the facility and describe the containment and/or diversionary structures or equipment for each:**
    a. **Bulk storage containers;**
    b. **Mobile/portable containers;**
    c. **Oil-filled operational equipment (as defined in § 112.2);**

d. **Other oil-filled equipment (i.e., manufacturing equipment, flow-through process equipment);**
e. **Piping and related appurtenances;**
f. **Mobile refuelers or non-transportation related tank cars;**
g. **Transfer areas, equipment, and activities;**
h. **Identify any other equipment or activities that are not already listed.**

See attached C6-Zero SPCC Plan, Section 4.

54. **For diked areas of aboveground storage of oil, describe whether drain valves are present, and whether they are manual, open-and-closed design. If drainage is release directly to a watercourse describe whether retained stormwater is inspected and discharged per 40 C.F.R.§§ 112.8(c)(3)(ii), (iii), and (iv).**

See attached C6-Zero SPCC plan, Sections 4-5.

55. **For all undiked areas of aboveground storage of oil, describe whether drainage from undiked area(s) is designed to flow into ponds, lagoons, or catchment basins to retain oil or return it to the facility. If a catchment basin is provided, state whether it is located away from a flood area.**

C6-Zero's process was contained entirely indoors and as such this is not applicable.

56. **If the facility drainage is not engineered, describe whether the facility is equipped with a diversion system to retain oil in the facility in the event of an uncontrolled discharge.**

C6-Zero's process was contained entirely indoors.

See attached C6-Zero SPCC Plan.

57. **State whether the bulk storage containers utilized for the storage of oil are of compatible material and construction with the contents stored and the conditions of storage such as pressure and temperature.**

See attached C6-Zero SPCC Plan, Section 4.

58. **State whether the bulk storage containers were designed for the aboveground storage of fuels and/or oils.**

See attached C6-Zero SPCC Plan, Section 4.

59. **Identify whether any bulk storage container areas have been constructed with secondary containment that is not adequate to contain the capacity of the largest container and sufficient freeboard for precipitation.**

See attached C6-Zero SPCC Plan, Section 4.

60. Provide secondary containment calculations for all bulk storage containers of aboveground storage of oil.

See attached C6-Zero SPCC Plan, Appendix H.

61. State whether the diked areas are sufficiently impervious to contain discharged oil; or, if any discharge to a drainage trench system will be safely confined in a facility catchment basin or holding pond.

See attached C6-Zero SPCC Plan, Section 5.

62. State whether each aboveground container has been tested and/or inspected for integrity on a regular schedule and identify whether material repairs have been made pursuant to § 112.8(c)(6), provide records of completed integrity testing, and provide a schedule of tanks to have integrity testing completed.

See attached C6-Zero SPCC Plan, Appendix E. Containers were tested in August 2022.

63. State whether each aboveground container is equipped with at least one liquid level sensing device pursuant to § 112.12(c)(8). State how the liquid level sensing device is tested to ensure proper operation and provide the date of the last test pursuant to § 112.8(c)(8)(v). If any aboveground storage container is not so equipped, identify the container by name/storage capacity.

See attached C6-Zero SPCC Plan, Section 4. Each container has a mechanical measuring device that was tested in August 2022.

64. Identify water bodies that receive surface water runoff or drainage from the facility and the distance from the facility to each water body.

See attached C6-Zero Site Assessment Plan, Section 3.

65. Identify all storm drains, drainage ditches, and other storm drainage structures within a quarter mile of the facility. In addition, identify water bodies into which the storm water flows.

See attached C6-Zero Site Assessment Plan, Section 3.

66. State whether there is drainage of accumulated, uncontaminated rainwater or surface water runoff from diked areas into a storm drain or an open watercourse.

See attached C6-Zero Site Assessment Plan, Section 3.

67. Provide copies of the last three years of the facility's inspection records, as required by 40 C.F.R. §§ 112.7(e), 112.8(c)(6), and 112.8(d)(4), and 112.7(k).

Three years of records are not applicable currently. C6-Zero's SPCC Plan was finalized in August 2022.

68. Provide copies of the last three years of records for personnel training and discharge prevention escribed in 40 C.F.R. § 112.7(f)(1), (2), and (3).

Three years of records are not applicable currently. Safety training based on SPCC plan began implementation in September 2022 and was ongoing from the beginning of the shakedown process through the fire on December 8.