

CAA112(r) INSPECTION REPORT

Name: C6 Zero Iowa LLC	
Address: 810 E. South Street, Marengo, Iowa, 52301	Date of Inspection: 04/27/2023
County: Iowa	Case No: 23IA0427
Phone: 970-286-5787	RMP No: NA
High Risk: Yes	FRS No: 7305513
CAA Title V:	Program Level: General Duty Clause
Mailing Address: 810 E South Street, Marengo, IA 52301	
Process: Chemical repurposing of asphalt shingles, using proprietary solvents into a petroleum product, sand and fibrous material.	

SUMMARY OF OBSERVATIONS

A review of the C6 Zero Iowa LLC (C6 Zero) facility revealed the following deficiencies:

- 1. C6 Zero failed to Design a safe facility taking such steps as are necessary to prevent releases per the CAA General Duty Clause 112(r)(1).**
- 2. C6 Zero failed to Maintain a safe facility to minimize the consequences of an accidental release as per the CAA General Duty Clause 112(r)(1).**

INTRODUCTION

I, Diana Chaney and Lynelle Ladd, Compliance Inspectors with the U.S. Environmental Protection Agency (EPA), Region VII, inspected C6 Zero Iowa LLC on April 27, 2023. The facility is located on the southeast edge of the city of Marengo, Iowa. This inspection was part of the EPA's National Compliance Initiative to Reduce Risks of Accidental Releases at Industrial and Chemical Facilities.

I announced the inspection on April 25, 2023. I spoke with Howard Brand, Chief Executive Officer, who is listed as the facility's owner. Howard directed me to Tim Dore, C6-Zero's in house attorney. Tim Dore put me in contact with Michael Kuehner, Zenor Kuehner PLC. I arranged for Michael Kuehner and EcoSource contractors to meet us at C6-Zero on April 27, 2023.

We conducted the inspection to determine if the facility was in compliance with Section 112(r)(1) of the Clean Air Act (CAA), specifically the design and maintenance portions of the General Duty Clause, as amended in 1990. The finalized inspection report as well as the photos

(Appendix #2) will be transmitted via e-mail to the facility owner/operator. A copy of this inspection report, and photographs taken during the inspection, checklists and completed forms will be maintained in the EPA facility file and included as Appendix 2.

HISTORY OF BUSINESS

In response to EPA's December 2022, information request letter, C6-Zero Iowa LLC (C6-Zero) said they recycle asphalt shingles into oil, sand, and fiberglass in a proprietary process. C6-Zero used a solvent, Kaniksu, to breakdown shingles and recover an oil product, diesel blending stock. The facility is located at 810 E South Street Marengo, Iowa 52301. Marengo, Iowa is located in Iowa County, across the street from the Iowa County Fairgrounds and East of the residential area of Marengo. The facility was built in 1982 and renovated in 1990. It began operations as a printing and color graphics facility under many names including Quad Graphics, which ended its operations in 2014. Heartland Crush LLC bought the facility and began a soybean crushing operation in August 2017. The Iowa Department of Agriculture took receivership of Heartland Crush LLC in October 2018 for operating without a grain elevator license.

Kaniksu, a liquid solvent, is a flammable liquid and an oxidizer. Class 2 oxidizers like Kaniksu increase the burning rate of combustible materials they come in contact with and may cause spontaneous ignition when in contact with a combustible material. Kaniksu may be an explosive hazard if it contacts acids or organic materials. In the event of a fire involving Kaniksu, in addition to evacuations, there are specific recommended fire-fighting measures including those in the Safety Data Sheet (SDS) that first responders should be aware of. Kaniksu is also a health hazard. Inhalation of Kaniksu may cause irritation, coughing, shortness of breath, and severe and permanent lung scarring may occur. Kaniksu is corrosive to skin and eyes and can cause severe burns. Ingestion can cause irritation, nausea, and vomiting. Kaniksu is also acutely toxic to aquatic life.

Diesel fuel blending stock has health and physical hazards. Diesel fuel blending stock is flammable, acutely toxic to inhale, causes skin and eye irritation, is an aspiration hazard and corrosive to the digestive tract, and an aquatic hazard. Static accumulation can occur even in bonded and grounded equipment. In the event of a fire involving diesel fuel blending stock, in addition to evacuations, there are specific recommended fire-fighting measures including those in the SDS that first responders should be aware of. Diesel fuel blending stock is hazardous to aquatic life.

C6-Zero is regulated under EPCRA and CERCLA for hazardous substances and chemicals as defined by OSHA Hazard Communication Standard for substances used and produced in the recycling process. C6-Zero is also regulated under the Clean Air Act 112(r)(1) General Duty Clause.

C6-Zero was constructing machines in the Marengo facility on May 13, 2021, during an Iowa DNR inspection (C6 Zero visit memo 5-13-21). They tested the initial air pollution control equipment on August 1-2, 2022. On October 25, 2022, there was a small fire at C6-Zero. An employee was welding, igniting residue on the walls of a trommel. This welding work was authorized by a supervising welder. C6-Zero's response to EPA's information request revealed

the a hot work permit was not executed. C6-Zero began shakedown operations in early November until the fire on December 8, 2022, stated in their response to EPA's December 2022, Information Request letter. On December 8, 2022, there was an explosion and subsequent fire at the C6-Zero facility. During the fire nearly 60,000 gallons of diesel blending stock burned, releasing CERCLA hazardous chemicals above their reportable quantities (RQ). The cause of the explosion and fire is unclear, but the Iowa State Fire Marshall report suggests that it may have been caused by a hot bearing on a mechanical drive train between trommel 1 and 2.

PERSONS INTERVIEWED AND INDIVIDUAL RESPONSIBILITIES

Representees of C6 Zero included:

Michael Kuehner	Partner, Zenor and Kuehner, PLC
Dillon Brand	C6 Zero Employee

OPENING CONFERENCE

We arrived at the C6 Zero facility located at 810 E. South Street, Marengo, IA, 52301 at 10:30 AM on April 27, 2023. We were directed at the facility gate entrance to enter the property and go to the east side of the building where staff would be waiting for us. We proceeded to the east side of the building, the location where the fire had occurred and where demolition of the building and soil remediation clean-up work had been occurring. Here we were met by Michael Kuehner and the Eco source contractors. I presented my credentials, and I explained that Lynelle Ladd is an inspector-in-training. We were told there was no electricity onsite so there was no conference room to hold an opening conference or set up as a working space. Therefore, the opening conference was held outside near the parked vehicles and was attended by three of the on-site contractors responsible for site cleanup and Michael Kuehner, Zenor and Kuehner, PLC, acting as legal counsel for C6 Zero. No employee union representatives were part of the opening conference. We discussed accessing the interior of the building since there was no electricity. A flashlight was provided so that we could enter the building and look at equipment and chemical storage.

I and Michael Kuehner signed the Notice of Inspection Form (Appendix 1).

Field Tour

Throughout the field tour, I photographed the different equipment used in facility process operations, including the remaining trommels involved in the fire, the various chemical storage tanks and vessels, electrical motors and conveyors, chemical pumping equipment, electrical breakers, and dust control and capture equipment that remained on-site, in and outside of the building. Pictures of the excavated soil waiting for transport to a disposal location, as well as various containers, including frac tanks, open trailers containing scrap metal and closed semi-tractor trailers were observed in the facilities main parking area on the north end of the facility along E. South Street.

When we arrived, we observed (and documented by photograph) two excavator units scrapping one of the facilities trommels (Appendix 2, Photo 213). The entire portion of the east side of the building had been demolished to the fire wall (Appendix 2, Photo 212). The soil around the area had been excavated and moved to storage piles on the northeast part of the property. These piles were mostly covered with tarps, however there were exposed areas that could be impacted by rain and become a stormwater issue. Michael Kuehner told us that they had been unable to find a landfill to accept the materials since the soil had been contaminated with perfluoroalkyl and/or polyfluoroalkyl (PFAs) fire-fighting materials. Later, Lynelle Ladd and I learned that EPA's Superfund had been assigned to take over the clean-up of the site.

Facility Design and Maintenance

EPA received a response to an information request letter (IRL) on January 24, 2023. The IRL response included a Safex review of the C6-Zero Marengo, IA facility. Safex identified "the potential emission sources of the flammable vapor(s) and the likelihood of the presence of flammable vapor(s) in each area" of the facility. Based on the chemical property and the mechanical layout, Safex identified one location as Class 1 Division 1 in the facility and other locations as Class 1 Division 2. Assumptions made by Safex include: "all systems are enclosed, all storage tanks are sealed, emission control system is fully functional." What was left of the emissions control system is visible in Photos 209 to 212 of Appendix 2.

NFPA 70, The National Electrical Code 2023, Chapter 5 Special Occupancies, Article 500 Hazardous Locations, Classes 1, 2, and 2, Division 1 and 2 is one of the standards this facility was compared to in the Safex report. Part 500.8(C) states, "Equipment shall be marked to show the environment for which it has been evaluated. Unless otherwise specified or allowed in 500.8(C)(6), the marking shall include the information specified in 500.8(C)(1) through (C)(5)." Many equipment photos can be found in Appendix 2 Photos 62 to 209. Photo 67 is an image of the motor attached to the screw conveyor. The Pulley and Belt that turns the screw drive is enclosed in the yellow housing box (designed as a safety guard to prevent employee pinch and losing a finger or hand), however the pulley mechanisms and belt would be open to the environment. The design of pulley mechanism is not Class 1 Division 2 complaint. Photos 71, 132, and 133 show data plates of equipment which are illegible and cannot be determine if the equipment is Class 1 Division 1 or 2 compliant. Additionally, Photo 117 (zoom in) shows a joint box located in the chemical storage area. The joint box has knockouts making it noncompliant with previously mentioned standards. Photos 122, 209, and 211 all show Fluorescent T12 lighting which is not Class 1 Division 2 complaint. Photo 176 shows the use of a lamp that is not rated Class 1 Division 2 environments.

Equipment not designed to be in an area where volatile flammable gases, flammable liquid-produce vapors, or combustible produced vapors may be present through failure or abnormal operations may cause an explosion or fire. These destructive forces could cause more of the flammable substance to be released, exacerbating the consequences of the release. The electrical standards required and described to EPA on January 24, 2023, are not met.

Given the prior mentioned deviations from the standards, I find the deficiency:

1. C6 Zero failed to Design a safe facility taking such steps as are necessary to prevent releases per the CAA General Duty Clause 112(r)(1).

Emergency eyewash and shower equipment can be seen in Appendix 2 Photos 108 to 110. The emergency equipment is located in the shingle loading area of the facility, there are multiple doorways between the chemical storage area and the location of the emergency equipment. It is unlikely the emergency equipment would be effective in reducing consequences to an individual contaminated with hazardous substances given the distance the individual would need to navigate in an emergency. Additionally, an adjustable wrench and orange cable lay in the eyewash bowl. A layer of soot appears to cover the wrench and cable, suggesting the eyewash station was not ready to be used in the event of an emergency prior to the facility fire. Given the condition of the emergency equipment at the time of the inspection, the requirements of ANSI / ISEA Z358.1 Emergency Eyewash and Shower Equipment were not met.

This facility was also compared to NFPA 70, Article 501 Class I Locations standard. This article specifies requirements for electrical and electronic equipment and wiring in Class 1, Division 1 and 2 locations. Part 501.105(B)(2) requires switches, circuit breakers, and make-and-break contacts of pushbuttons, relays, alarm bells, and horns shall have enclosures identified for Class 1, Division 1 locations in accordance with 501.105(A). 501.105(B)(5) requires general-purpose enclosures are permitted in 501.105 (B)(2) through (B)(4), fuses for overcurrent protection of instrument circuits not subject to overloading in normal use shall be permitted to be mounted in normal use shall be permitted to be mounted in general-purpose enclosures if each fuse is preceded by a switch complying with 501.105 (B)(2). Electrical panels photos can be found in Appendix 2 Photos 2 to 60. Photos 6, 9, 12, 19, 25, 52, 56 show the labeling of the electrical panels. Photo 5 specifically shows a breaker with a UL rating sticker, breaker is not complaint with Class 1 Division 2 requirements. As previously mentioned, Photo 117 (zoom in) shows a joint box located in the chemical storage area. The joint box has knockouts making it noncompliant with the standards.

NFPA 70B, Standard for Electrical Equipment Maintenance 2023 Sections 10.5.1 requires electrical equipment designed for use in hazardous locations shall be fully reassembled with original components or approved replacement components before the hazardous atmosphere is reintroduced. Photos 29 and 30 show an electrical box with a label stating, "coil bad." Photos 134, 152, 154 and 155 show exposed wiring on equipment in the chemical storage area.

NFPA 70 408.4(A) specifics that every circuit and circuit modification shall be provided with a legible and permanent description. These labels are not dated, however, they describe how the circuits were used when the building was used as a printing facility. Photo 19 specifically is titled letter press room.

Given the prior mentioned deviations from the standards, I find the deficiency:

2. C6 Zero failed to Maintain a safe facility to minimize the consequences of an accidental release as per the CAA General Duty Clause 112(r)(1).

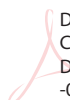
PHOTOGRAPHS

During the site walk-through, nearly 300 digital photographs were taken. Selected photographs appear in a photographic log in Appendix 2.

CLOSING CONFERENCE

At 2:59 p.m. we concluded our field tour of the C6 Zero facility and conducted the closing conference. In attendance was Michael Kuenher and Dillion Brand. I explained that no preliminary finding were identified at the inspection however, that additional findings could be identified via post-inspection review of the photographs obtained. Micheal Kunher signed the Confidentiality Notice, Receipt for Samples and Documents form, and Notice of Preliminary Findings form (see Appendix 1). Mr. Kuenher choose not to claim any CBI. Ms. Ladd and I departed the facility around 3:25 p.m. on April 27, 2023.

DIANA
CHANEY

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CHANEY
Date: 2023.09.14 09:20:04
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Diana Chaney
Compliance Inspector

Dave Hensley
Section Chief
Chemical Accident Prevention Section

Appendixes

- 1 – Inspection Forms
- 2 – Photo Log